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CONTRIBUTIONS REGARDING THE EVALUATION OF THE HUMAN RESOURCES TRAINING PROGRAMMES WITHIN ORGANISATIONS

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INTRODUCTION

In order to progress and survive in the competition due to the market becoming more selective and dynamic, organisations need to continuously develop the human resources training. The Process of Human Resources Development allows the development of the organisation and achieving competitive advantage so necessary for maintenance in the market.

Human Resources Development is a process of *defining*, *creating and providing* learning, development and training opportunities for staff, in order to improve individual, team and organisational performance. To be effective, the Human Resource Development process in the organisation must be properly regulated and integrated with other HR processes.

Human Resources Development is responsible for the development of effective programmes for human resource development in organisations. This area faces a number of challenges including increased workforce diversity, competition in a global economy, eliminating the lack of skills, need of lifelong learning [144], facilitating organisational learning. The increasing complexity of the jobs determines a progressively higher need of training in the workplace and a workforce better educated and trained.

The ability of organisations to accumulate and apply new knowledge is a crucial factor to meet the new competitive standards. Changing diversity plus the need to adapt to changes in the external environment accelerate the pace of evolution and learning. The need to survive in the market require the organisations an increasingly higher rate of learning. New information and communication technologies accelerate the pace of change and increase the need for learning, submitting it to a greater flow of information.

Currently the organisations greatly emphasise on continuous learning process that can bring those improvements needed to achieve the desired success. Learning must permeate all levels of the organisation, an aspect with important implications for the structure of the organisation. The internal environment must allow free movement of knowledge by the functional structure of the organisation and the external environment (especially suppliers and customers) must maintain the need to learn within the organisation. Hence the importance to be credited to creating a learning culture within the organisation.

As a result, one of the most important characteristics of an organisation is its learning ability, this being its chance to adapt to a changing world. Training of human resources is a systematic and planned activity subsumed under this goal, meant to lead to the acquisition and improvement of skills and knowledge of employees.

A modern system of education becomes a vital necessity for any organisation to develop and maintain professional standards of its own human resources. Therefore, organisations spend a considerable part of their budgets for training their staff.

With the increasing cost of training becoming more advanced, many organisations try to determine the value of training on employee performance and the continued growth of the organisation. This is generally evidenced by the return on investment in human resources training. However, as the learning and development of skills are becoming increasingly necessary and integrated with business strategies, the need to assess the effectiveness of the learning function is increasingly important in view of the efficient use of human resources and performance improvement of the organisation. This evaluation process is generated by the fact that human potential is the creative, active and coordinator of economic activity, and its use to its true value becomes the primary means to increase economic efficiency.

In the current economic environment, in which the HR function increasingly gains strategic function status and costs have become priorities in strategy setting, evaluation of the effectiveness of investment in human resources becomes an important and timely topic.

The decision to invest in human resources organisations, maintaining or increasing their budgets in the current period will exist within organisations, but the difference from previous periods will be given the choice of programmes with strict maximum immediate impact on business organisation. In this context, the adoption of methodologies for assessing the benefits of HR initiatives will be a solution to the business efficiency programmes based on a better cost management.

MOTIVATION AND IMPORTANCE OF THE RESEARCH

At the present, there is a growing interest in human resource development, and human resources specialists are seeking in the organisations investing in training and development, to obtain a high assessment level of human resource training [1], [100], [102], [129]. Consequently, HRD specialists who develop training programmes for staff, need to approach issues that affect the efficiency and effectiveness of training programmes for human resources.

Therefore, comprehensive studies are needed on learning within the training programmes conducted for certain periods of time and are intended for determining the perception, knowledge and skills learned, performance at the workplace of learners as well as organisational impact. The findings of such studies can be used in research in the field of Human Resources Development, in evaluating training programmes and how certain assessment indicators are transformed into different levels of performance. However, the results of these studies can be used for future strategic planning of training programmes.

Most managers and HR specialists believe that in the current economic climate, when most organisations talk about efficiency in spending budgets and personnel restructuring, investment in human resources and providing training programmes can have significant results. However, most organisations have difficulties when they have to decide what training programmes to invest in, how much they should invest and whether a human resources initiative will be valuable or not.

For this reason, evaluation of human resources and taking action after such an evaluation process should be present in any organisation. Opportunity to assess human resource training initiatives within an organisation leads to the measurement of the profitability of investment in such projects.

The problem of measuring the return on investment in training programmes is highly debated in recent years and stirs controversy. HR department budgets, competition, profitability, lack of qualified human resources have increased the importance of assessing the effects of measurable initiatives in human resource training.

The present doctoral thesis presents a measurement model in terms of quantitative and qualitative impact that the projects of human resources training have upon economic indicators

of an organisation. The proposed model involves the measurement and evaluation of programmes for human resources training.

Today, over 2000 organisations around the world use different evaluation models of return on investment in training as tools to assess the impact of programmes of human resources training. In the world there are over 3500 practitioners in this field, out of which 34 are Romanians [143].

The model proposed in this research aims to d*etermine return on investment indicator in training*, which is one of the most difficult and interesting issues in the training of human resources dealt with by HR departments of organisations to improve their performance. Interest to determine return on investment in education has increased greatly in recent years, the subject being debated in many conferences, books, research journals and articles, by consulting firms addressing this critical and important issue.

Determining return on investment in training was and is influenced by many factors. Thus, the pressure of training beneficiaries and managers of organisations to demonstrate return on investment in training is probably the most influential element. Also, economic pressures require intense scrutiny of all expenses, including the costs of training human resources in organisations. Total quality management [89] and reengineering caused increased interest in measurement and evaluation, including measuring the effectiveness of training human resources. The general trend towards accountability of decision makers in organisations required human resources departments to assess their own contribution to the organisations objectives [15]. All these have created an unprecedented demand of applications of the evaluation process of return on investment in training investments.

The process of determining the return on investment in training seems to be sometimes unclear, requiring models, formulas and statistics, which often discourage even the best specialists in the field. Add a number of misunderstandings about the process and misapplication of techniques for determining the return on investment in training in some organisations. As a result, experts are reluctant to apply models to determine the return on investment in training, but the knowledge and application of such models can not be ignored. To imply to the customers and managers of organisations that the impact of human resources training and performance improvement cannot be measured is as if it were accepted that training does not create added value or that the improvement of human resources should not be quantifiable.

In practice, models for determining the return on investment in training should be considered, explored and ultimately implemented in organisations that understand the importance of training their own employees. But it is necessary to apply a rational, logical approach, which can be simplified and implemented according to constraints and budgetary resources of the organisation [15].

Such a model for determining the return on investment in training is addressed and can meet the requirements of several major groups of beneficiaries:

- HR professionals who use and apply in their organisations such models to evaluate the effectiveness of training programs for human resources;
- Managers of organisations who must approve budgets of professional training and performance improvement of human resources and who seek measurable results, preferably expressed as a return on investment in training;
- Consultants and researchers in evaluating human resources who develop, explore and analyse new processes and techniques in the field;
- Professionals involved in the design and implementation of organisational change programs [15], other than those for human resources. This group of specialists can be formed of quality managers, refurbishment coordinators, information technology specialists, etc. who aim to measure the impact of retrofit initiatives, cases of implementing new technologies, changes in procedures, practices or policies.

The model of assessment of human resources training in organisations proposed is a measuring and systematic, analytical, comprehensive evaluation instrument. This model helps to highlight the manner in which human resource training programmes contribute to the success of organisations, while developing the skills of strategic analysis and decision making.

MANAGEMENT OF HUMAN RESOURCES TRAINING WITHIN ORGANISATIONS

Training of human resources within an organisation is "a systematic process of behaviour change, knowledge and motivation of existing employees in order to improve the balance between employee characteristics and job requirements" [82].

It is important that training activities are evaluated to verify the effectiveness [62], i.e. the extent to which it brings the desired results and to indicate where exactly any changes or improvements become necessary. Evaluation should be a mandatory aspect of training. In its simplest form, the evaluation consists in comparing targets (performance criterion) to consequences (behaviour obtained), in order to see if the training has achieved its purpose.

Training evaluation process was defined by Hamblin as "Trying to get information (feedback) on the results of a training programmes and establishing the value of training in the light of this information" [2]. Gilley, Eggland, Gilley show that "evaluation is a process, not an event, involving all key decision makers and stakeholders, that should be influenced by a clear understanding of the organisation's performance and business needs, and its strategic goals and objectives"[46]. According to Caffarella, training programme evaluation is "the process used to determine the effectiveness of the training and the results of these activities" [22]. Kirkpatrick clearly defines the purpose of assessing as "measuring behavioural changes that occur as a result of training programmes" [72].

In the case of e-learning training programmes [125] assessment must consider: how e-learning and educational materials are planned, designed, developed, delivered and updated; quality of education; quality training programmes and institutional services; how the e-learning programmes are being perceived by the students and how well they are benefiting from the educational materials offered.

Determining the effectiveness of training is a process that involves evaluating and estimating costs and benefits. To assess training as an investment, it is necessary to have a strategic business plan [16], with specific objectives, an analysis and job evaluation system, a well-designed and functional people performance management, in relation to systems of career development of the employees and to those regarding pay and benefits. They must be supported by a culture of mission and vision of the organisation.

EVALUATION MODELS OF HUMAN RESOURCES TRAINING PROGRAMMES

Many evaluation experts of training programmes have developed various guidelines and assessment models to measure training initiatives, calculate their effectiveness and determine ways of intervention in training. There are several methods of evaluation and measurement referring to the effectiveness of training programmes and the performance of organisations in terms of human resources training. Some of these models are based on financial analysis, others on non-financial data, while others provide a mixed approach to measuring programme outcomes.

Among the most important models of evaluation of training programmes we can highlight: Cost Benefit Analysis, The Kirkpatrick evaluation model on four levels (1959), The Context, Input, Process, Product – CIPP (1966), The Phillips ROI model on five levels (1970), The Context, Input, Reaction, Outcome – CIRO (1970) The six-stage Model Brinkerhoff (1987), The Input, Process, Output – IPO (1990), The Marshall - Schriver model of assessment of knowledge and skills (1994), The five-level Kauffman and Keller Model (1994) and The Holton model of evaluation on three levels (1996).

The Phillips' ROI Model of evaluation of traditional training programmes

Return on Investment (ROI), perhaps the most convincing approach to evaluating training programmes in human resources, requires to compare programme costs to net monetary benefits derived from its implementation. Compared to other approaches, the ROI process proposed by dr. Jack J. Phillips [102] seems to be the most promising method of evaluation for organisations in the contemporary period.

In recent years, applications of this concept have been developed a lot, covering different areas: technology, marketing, quality improvement, change initiatives, training and development, today hundreds of organisations worldwide calculating ROI for many of these initiatives. As the need for productivity and efficiency will increase, as the need to implement programmes/projects in human resources that provide added value to the organisation will increase, investment appraisal using ROI will be used increasingly more.

The Kirkpatrick model of evaluation of training programmes by e-learning

Although training programs for human resources by e-learning have a certain specificity due to technology involvement in the educational process, the Kirkpatrick model can be applied to these training programmes. In this case, evaluating students' learning outcomes can be achieved by applying the four levels, requiring an additional assessment of educational technology infrastructure: communication, Internet, whiteboards, hardware, software or other accessories necessary to learning [59].

PROPOSAL OF EVALUATION MODEL OF PROGRAMMES OF HUMAN RESOURCES TRAINING WITHIN ORGANISATIONS

Model of Evaluating Programmes of human resources Training in organisations (MEPI) proposed sets an evaluation process of the results of a training programme of human resources training in an organisation (Figure 1.). Although the purpose is generally to improve the training process and increase performance at work, one can still identify other specific purposes, among which we can mention:

- improve the quality of training and the results of training;
- fulfilling the objectives of the training programme;
- identify the strengths and weaknesses of the training process;
- cost / benefit analysis for the training programme;
- effective promotion of training programmes aimed at increasing the performance of work;
- determine the effectiveness of the training programme in terms of the satisfaction of the target audience;
- making a database that can help in the decision making process [80] which aims at the training programme;
- setting priorities for funding the training program.

The model allows to determine Return on Investment in Training (RII) based on the net benefits which are divided by the total programme costs. Net benefits are obtained from programme benefits minus total costs. The calculation for RII becomes:

$$RII = \frac{Programme\ benefits - \ Programme\ total\ costs}{Programme\ total\ \ costs} \times 100 \ \ [\%] \quad (1)$$

$$RII = \frac{Programme\ net\ benefits}{Programme\ total\ \ costs} \times 100 \ \ [\%] \quad (2)$$

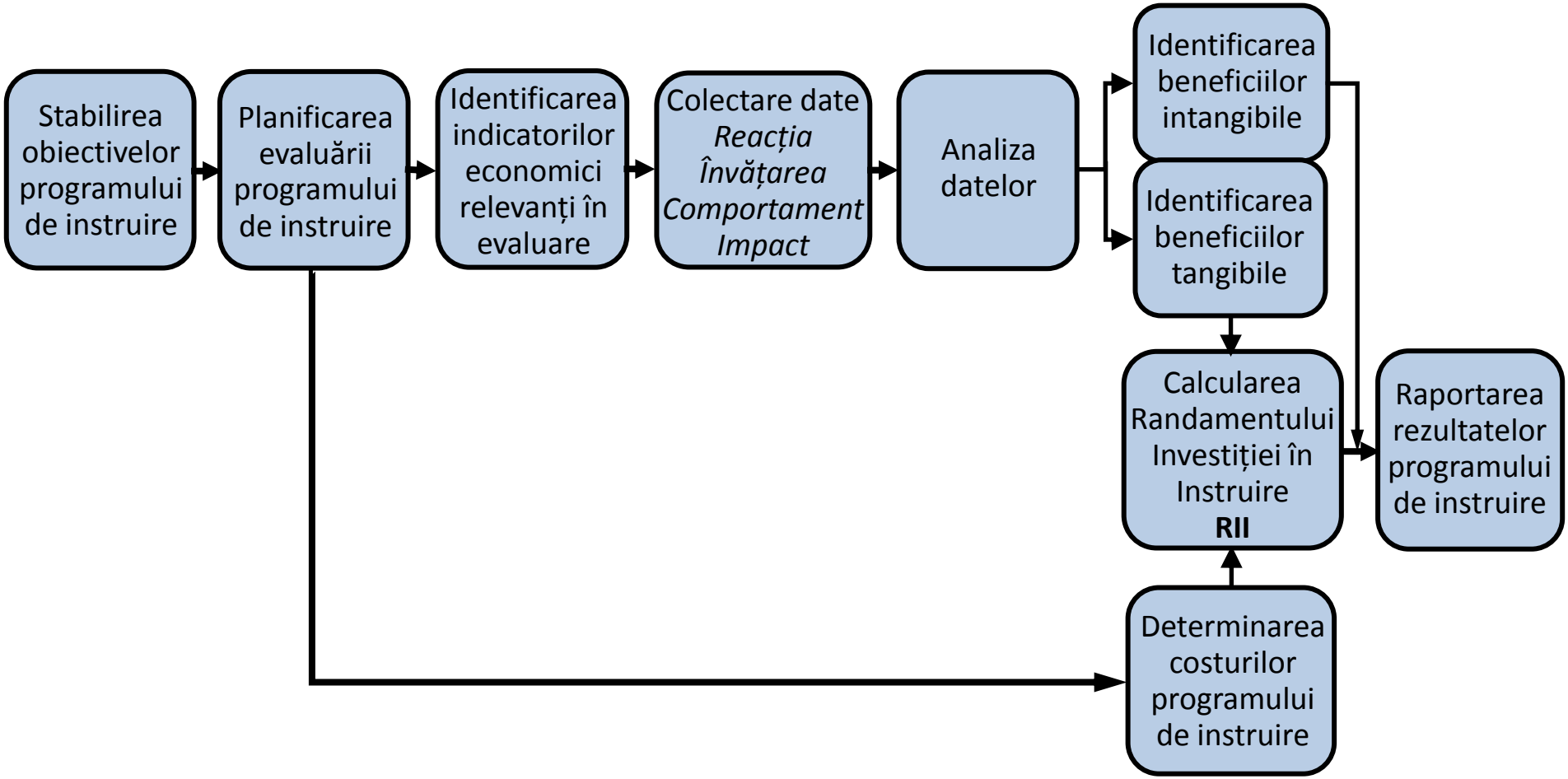

Figure 1. Model of Evaluating Programmes of human resources Training in organisations (MEPI)

Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI)

The ability to determine right from the start, prior to the incipient phase of the human resources programmes, the contribution that they bring to the organisation is one of the most compelling ways to win the support and trust of top management, convincing him to perceive the human resource programmes as investment and not as cost.

Therefore, this research considered appropriate to develop a model to estimate the effectiveness of programmes for human resources training within organisations, model by which both the personnel of the department of human resources and the beneficiary organisation will be able to acknowledge, before initiating the programmes for human resources training, their contribution to the performance of the organisation. Thus, depending on the estimated return on investment in such programmes, the decision to extend, modify or cancel a programme aimed at human resources has some real quantifiable fundament.

The Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI) derived from the *MEPI* model allows the estimation, in financial terms, of the impact that the human resources training projects will have on economic indicators of an organisation, from the earlier phases of the human resources training (Figure 2.).

The estimated return on investment in training (estimated RII) is determined based on the estimated net benefits that are divided by the estimated total costs of the programme. The estimated net benefits are obtained from the benefits of the programme minus the estimated total costs. The calculation becomes:

$$RII_{estimated} = \frac{Programme\ estimated\ benefits - Programme\ estimated\ total\ costs}{Programme\ estimated\ total\ costs} \times 100\ [\%] \quad (3)$$

$$RII_{estimated} = \frac{Programme\ estimated\ net\ benefits}{Programme\ estimated\ total\ costs} \times 100\ [\%] \quad (4)$$

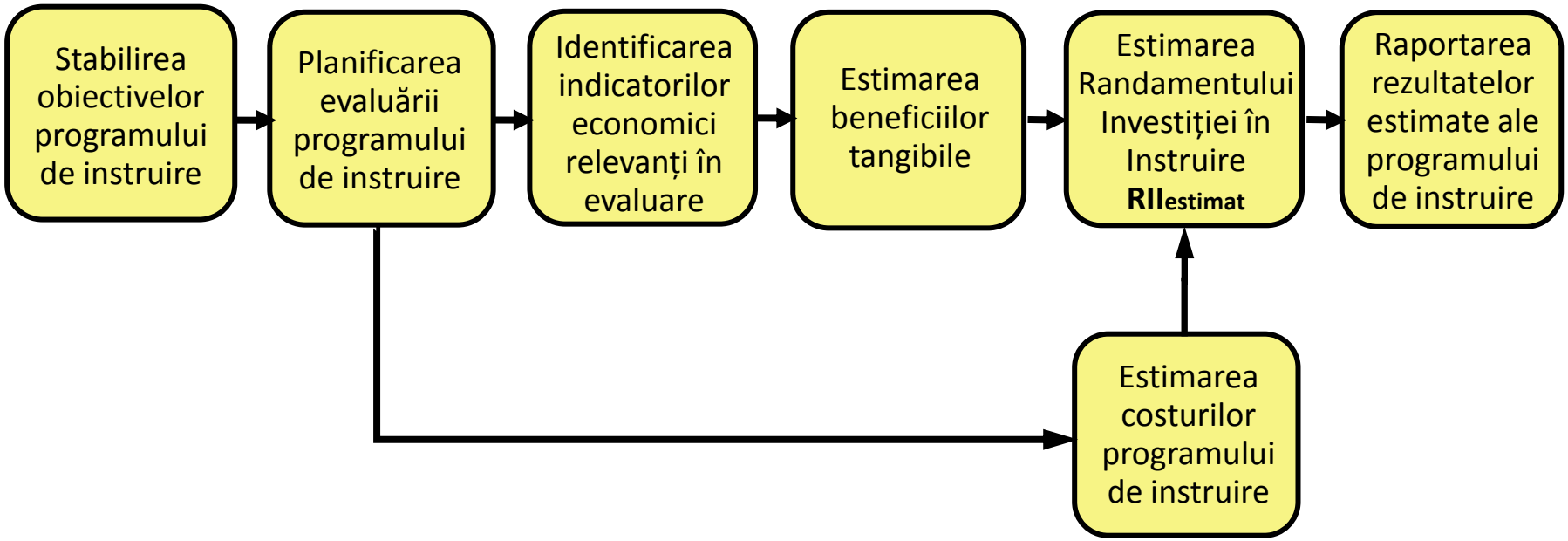

Figure 2. Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI)

MEPI model presented was established to provide those interested with a methodology that gives the opportunity to highlight the contribution of training programs for human resources to the development of the organisation.

MEPI model allows the determination of net monetary benefits (tangible benefits) that were derived from the implementation of training programmes, benefits are compared to the costs of training. Knowing the benefits and costs, one can determine the return on investment in training. i.e. the gain of the organisation in financial terms as a result of the implementation of the training programme. Also, this model allows the determination of non-monetary benefits (intangible benefits) that are equally important in the evaluation process as the tangible benefits.

Such an approach, which can show the effectiveness and efficiency of the implementation of training programmes for human resources, can provide a high level of credibility of such projects, while ensuring the support of the organisation's top management, who can analyse the results of the training programmes for human resources in their organisations, and who can decide the level of funding for such initiatives.

In this sense, The *MEPI* model can contribute to the decision making process of the management of the organisation to invest in its own human resources, to maintain or increase its budgets, by providing the possibility to choose only programmes with impact on business organisation. The adoption of such a model for assessing the benefits of HR training initiatives will provide a solution to streamline the organisation's work programmes based on better cost management.

In case an organisation calls for a new training programme, the management of the organisation needs estimates of the effectiveness of the training programme in order to support its decision to invest or not in this new training programme. This is the reason why the model, allowing the provision of estimative information prior to the organisation of the training programme, was proposed

Therefore, as long as the organisation admits the importance of the costs of the training programmes for human resources and of the desire for recover such investments, the *MEPI* model and *MEEPI* model will be used to assess or estimate investments in improving performance of human resources within organisations.

RESEARCH REGARDING THE EVALUATION OF PROGRAMMES OF HUMAN RESOURCES TRAINING

This research is aimed at measuring the impact of human resource initiatives of the organisation, i.e. measuring the effectiveness of training programmes for human resources within an organisation.

Thus, the research considers the practical application of the theoretical framework of *the Model of Evaluating Programmes of human resources Training in organisations (MEPI)* which consists in measuring the return on investment in training human resources within organisations. The practical application is accompanied by a statistical analysis of efficiency and specific calculations that validate the theoretical data of the model taken into consideration.

The ***objectives*** of this research are:

- setting the goals of the training programmes;
- planning the training programmes;
- identification of relevant economic indicators to assess the effectiveness of training;
- measuring participants' reactions towards the training programmes expressed as: perceptions of the participants regarding the training process; participants' beliefs about the value and usefulness of the training; the extent to which they believe that the knowledge and skills gained will be useful in their workplace;
- assess the level of knowledge acquired within the training programmes, what skills are developed or improved, i.e. measuring the transfer of knowledge and skills from the training programme and the confidence that they can be applied in daily work;
- identify changes in behaviour and attitude of the participants in their daily jobs as a result of the training programmes, determine the extent to which new knowledge, skills and attitudes were transferred from the training process to their workplace;
- highlighting organisational changes as a result of the training of human resources;
- calculation of costs, benefits and return on investment in human resources training;
- reporting the results of assessing the effectiveness of the training programme.

To check the objectives set, the study should address the following ***research issues***, stating:

1. Objectives of training programmes
2. Reactions of the students regarding the training programmes and the influence of these reactions upon improving the training programmes:
   - Are the students satisfied/dissatisfied with the course?
   - What is the perception of the usefulness of the course?
   - What are the course elements which displease learners?
3. Effects of assimilation of knowledge by students and how they influence the improvement of the training programmes:
   - What knowledge and skills have been assimilated immediately after the completion of training programmes?

4. Effects of behaviour change of the learners and how they influence the improvement of the training programmes:
   - How was the knowledge of students applied to project design or problem solving?
5. Impact of training programmes and how it will influence the improvement of training programmes
6. Effectiveness of programmes for human resources training

The research conducted *aims* at the awareness of the beneficiaries of training upon the possibility to evaluate the effectiveness of training programmes for human resources within an organisation after their completion or to estimate a prior effectiveness of a training programme needed to prepare their human resources in an organisation. This research may provide the beneficiaries of training programmes, i.e. organisations' management, with an evaluation model that can generate information and recommendations for action to improve the effectiveness of training human resources within organisations.

In the context of this research, the effectiveness of a training programme takes into account both tangible benefits (return on investment in training, sales growth, increased turnover) and intangible benefits (increased satisfaction in the workplace, improving the image of the organisation, performance improvement within work-teams, increasing in the quality of customer service) obtained by the organisations that benefit from programmes for human resource training.

Organisation of the research

This research aims at the evaluation of the effectiveness of training programmes for human resources by determining the return on investment in training in the pharmaceutical domain, a very dynamic, recently evolving field.

The increasingly complex competitive environment in which the pharmaceutical companies act today, forces them to be concerned with the establishment, development, protection and maintaining a competitive advantage. This is why in the current market economy, more and more pharmaceutical companies have begun to develop their own human resources strategy, which determine their future development directions in this area, as well as practical ways of achieving them.

The pharmaceutical market from the Mures county covers several multinational pharmaceutical companies and booming domestic companies that have adopted a "pro quality" policy to constantly meet customer requirements and expectations.

The current research will be based on the study of three successful companies in the pharmaceutical market of the Mures County, aiming to determine the effectiveness of training programmes that have been organised in the past three years for their human resources.

The first organisation studied S is one of the largest pharmaceutical divisions of multinational companies, totalising 16.2% of the total company sales, with annual sales of $ 9.5 billion, being a global leader in the production of generic drugs. The multinational company offers a range of affordable and high quality products which is no longer under patent protection, with a portfolio of approximately 1,000 products, distributed in 140 countries, to which more than 90% of the world population have access to. Its headquartered is in Germany.

Division S Romania has been present on the Romanian market of drugs for over 15 years and was founded by the merge of three pharmaceutical companies. The headquarters of the division in our country is in Targu Mures. Here are the two manufacturing units, one for the production of penicillin, the other for the production of macrolides (last generation antibiotics). Both units have obtained certified GMP (Good Manufacturing Practice - Rules of Good Manufacturing Practice for Medical Products) of Romanian and European authorities. Macrolides are destined both for domestic market and for the international one. The Competence Centre S for the production of macrolide is to undergo the FDA expertise (Food and Drug Administration - U.S. Food and Drug Administration) in order to export drugs to the United States.

In Romania, S is engaged in the distribution of products manufactured in different countries and in manufacturing activities of drugs in the category of solid oral forms, distributed in over 50 countries on all continents.

The second organisation in the pharmaceutical industry GR, under investigation, was founded in 1998 and is one of the companies of a multinational group based in Hungary.

One of the main concerns of this organisation is to develop and continuously improve product quality, having as the main objective the alignment to the international standards by obtaining GMP certificate in 2002. Therefore, important financial and logistical investments were made that led to the reconstruction of production and the purchase of new equipment to enable compliance with international standards. As a result, the company has passed through many Romanian and international auditing processes, receiving recognition and certification in accordance with GMP. The implemented quality management system enables monitoring of product quality from the stage of raw materials, through manufacturing and to the finished product, which allowed export to markets from Central-Eastern European countries, to the former Soviet space and also Western European markets.

Important acquisitions were made in the distribution sector, where one of the strategic objectives is to provide high quality services by implementing a quality management system based on rules GDP (Good Distribution Practice - Rules for Good Distribution Practice).

The third organisation under study VS, established and authorized in 1998, is a company producing drugs with German capital, relatively young in the domestic medicine market, specialising in the production and distribution of generic medicines for human use in solid oral forms, tablets and capsules.

The entire activity of the company is directed toward improving the quality of life by developing, licensing, manufacturing and marketing of generic modern to the highest international standards. In recent years the company's efforts were directed toward achieving adoption and implementation of international standards GMP certificate in 2004.

As a manufacturer of drugs, today VS goes through a major development process directed towards developing manufacturing technology and expansion of the product portfolio.

The management of the organisation considers that the quality of manufactured products is of utmost importance to the company's image. Therefore, the quality management within the organisation is ensured both by defining quality policy and by specific activities of control, assurance and improvement of quality, thus a quality system being implemented.

The main activity of the company is the production of generic drugs, having a manufacturing department for solid oral dosage forms, comprising a line of compression and capsule filling line. Production processes are conducted under strict production and quality control. The factory has a control laboratory with modern and performing equipment.

VS aims at gaining and maintaining confidence in the internal market by providing interested parties with modern, generic, of constant quality and affordable products.

In order to progress and survive in the competition due to a pharmaceutical market increasingly competitive, the three studied organisations understood the need to increase the efficiency of human resources by improving their training and subsequently evaluating the effectiveness investment in human resources training. The common interest of the three organisations is the maintenance and improvement in the field of quality, knowledge, skills and competencies of their employees regarding the organisation and management of quality systems within organisations.

In order to organise its training programmes, the first organisation chose a provider of education and training and opted for an e-learning training system, as a result of the management decision of the beneficiary and the option expressed by the participants. The other two organisations have organised, with their own resources, the training programmes needed to increase employee performance and have them organised in the traditional, face-to-face system.

The provider of educational service in the case of organisation S is the Centre for Continuous Education (CCE) of the "Petru Maior" University of Tg.Mureş that promotes and coordinates training activities with the objectives of training, qualifications and professional development, aiming to ensure the modernisation of society, providing a professional level consistent with the current pace of development. As part of the university, the Centre for Continuous Education (CCE) has as a main goal the development of complex programmes for continuous training aiming at the performance optimisation within organisations, streamline of human and technical efforts development of activities related to traditional educational activity.

The period of training and evaluation of the 124 employees of the three organisations was in January 2011 - July 2013 and has been determined according to the human resources policy, programme and priorities of this period at the organisation management level.

Research methodology

Taking into account the objectives set and the importance this work has placed on quantitative aspects, the type of research used was the quantitative one, which allows, based on the collected data, their analysis from a statistical point of view.

The approach used to achieve the objectives aimed at the evaluation of traditional or e-learning training programs (reaction/satisfaction, acquiring knowledge and skills, long-term behavior change in the workplace, the impact of training on the organization) is represented by the use of *a method of the quantitative research*, namely *the survey*.

As *a methodological investigation tool* to assess the results of traditional and e-learning training programs *the questionnaire* was used. In order to apply the *Evaluation Model of Training Programs for Human Resources in an Organization*, a questionnaire was made for every step of the *Data Collection Process* (Annexes 1 and 2):

1. *The evaluation of the participants' reaction/satisfaction to the training program* – questionnaire 1 – aims to test the reaction and has 38 questions; 5 other questions were added, regarding the identification of the basic characteristics of the employees' social status.
2. *Evaluation of acquiring knowledge and skills for the participants' in the training program* – questionnaire 2 – analyses learning and comprises a number of questions determined by the complexity degree of learning modules in the training program.
3. *Evaluation of the improvement in the employees' performance in the workplace following the training program* – questionnaire 3 – studies behavior and comprises 20 questions, 5 other questions were added, regarding the identification of the basic characteristics of the employees' social status.

4. *Evaluation of the impact of the training program on the organization* – questionnaire 4 – refers to the organizational impact and comprises 8 groups of questions, detailed in a set of 29 specific questions, 5 other questions were added, regarding the identification of the basic characteristics of the employees' social status.

The questionnaires were designed both for a traditional training program, face to face, and an e-learning training program for human resources, in order to analyze and compare the effectiveness of an e-learning training compared to traditional training.

A presentation on two columns, A and B, was chosen for every questionnaire, designed to delineate the set of questions (items) for the collection of data related to the objectives, from the set of questions meant to identify the basic characteristics of the social status of employees. In drafting the questionnaires, the type of questions was chosen so as to match the specific objectives of the survey and the purpose of this research. The types of questions used were:

- single choice close-ended questions, used for all the items measured with the help of the Likert scale;
- multiple choice close-ended questions, such as question 35 in the questionnaire *Evaluation of the Participants' Reaction/Satisfaction to the Training Program* (Annexes 1 and 2)
- scale close-ended questions, such as question 26 in the questionnaire *Evaluation of the Participants' Reaction/Satisfaction to the Training Program* (Annexes 1 and 2)
- open-ended questions, such as question 8 in the questionnaire *Evaluation of the Impact of the Training Program on the Organization* (Annexes 1 and 2).

The choice of scales for the scale questions was done depending on the studied variable so that appreciation errors could be avoided (the tendency to give neutral or contradictory answers). The types of used scales were:

- the Likert scale in 5 points (1 – strongly disagree, 2 – disagree, 3 – neither disagree nor agree, 4 – agree, 5 – strongly agree) and in 6 points (6 – Much more, 5 – A lot, 4 – Same, 3 – Less, 2 – Much less, 1 – I don't know);
- nominal dichotomous scale (for example: the respondents' gender, their managerial position within the company);
- interval-scale: for the age.

In order to ensure the confidentiality of the respondents' information, and in order to increase the accuracy of the collected data, the respondents were not required to specify their name, only their gender, age, level of education and position held within the company.

The questionnaires were distributed, by direct contact, *to all 124 employees from the three organizations* that were the object of the present research. All 124 questionnaires were filled in correctly, and were the object of the statistical analysis. For the processing of data, the program

Statistical Package for the Social Sciences – SPSS 17.0 was used, which is one of the most used programs in the statistical analysis of data. This program was chosen because of the way it rigorously structures the processed information, as well as its ease of use. Microsoft Excel 2010, a spreadsheet program allowing for the administration and analysis of information was also used.

Establishment and Description of the Sample

The establishment of the *sample* making the object of the performed survey had as a starting point the general population composed by the employees of the three organizations comprised in the study.

As a sampling method the *quota sampling method* was used, and due to the relatively small number of the general population, a 30% quota of the general population was chosen.

Table 1 presents the values for the general population, the quota sampling, the theoretical sample and the empirical sample.

Table 1. **Establishment and description of the sample**

Orga-nization	**General Population (total no. of employees)**	**Quota Sampling**	**Theoretical Sample**	**Empirical Sample**	**Departments where the Subjects Work**
S	225	30 %	67	64	Production (21), Purchasing, Warehouse, Shipping (15), Quality Management (10), Laboratory (12), Technical (6)
GR	250	30 %	75	40	Production (14), Quality Management (10), Human Resources (6), Laboratory (5), Logistics, Sales (5)
VS	75	30 %	22	20	Production (7), Clinics (5), Quality Assurance (4), Laboratory (4)
TOTAL	*550*	-	*179*	*124*	-

The establishment of the empirical sample encountered some difficulties in assuring the representativeness, both due to the different size of the three studied organizations, and to the fact that every organization has a different policy for the professional training and development of human resources. However, the empirical sample is a heterogeneous one, composed of subjects coming from different departments of the organizations (Production, Quality Management, Clinics, Human Resources, Purchasing, Warehouse, Shipping, Laboratory, Technical), which, under these circumstances, assures the representativeness of the empirical sample.

Out of the three organizations that made the object of this research, the set sampling quota could not be assured only in the case of one organization, due to its confidentiality politics, allowing for the paneling of a limited number of respondents.

Analysis and Interpretation

A *horizontal statistical analysis* was used in the first stage of the research, which assumes the independent presentation of the answers to every question in the questionnaires, calculating average scores based on a weighted arithmetic mean. In the immediate next stage, a *vertical statistical analysis* was made, using the methods of the *parametric* statistical analysis (the Pearson coefficient) and *non-parametric* statistical analysis (Kendall coefficient, Spearman coefficient), as well as the χ^2 *bivariat*e *test.* This analysis aims to correlate answers and to identify statistical connections and associations between registered characteristics, both within the same questionnaire and between the four questionnaires, as well as testing the hypotheses of the research and keeping the statistically relevant results.

Two other methods for the analysis of the statistical data were used in the present research, the Principal Component Analysis (PCA) and the regression method. *The PCA method* is based on the existence of correlations between the initial variables in the study, with the purpose of reducing the large number of variables to a more limited number of variables explaining a significant proportion of the total variation explained by all the variables in the study. This method presents as well the advantage of the graphical visualization of the distribution of variables in the two-dimensional space formed by the new components. The *regression method* consists in researching the connections between phenomena with the help of mathematical functions, called regression functions. In using this function, it is very important to have identified the function that best expresses the dependency between the studied characteristics.

The two methods were used in our research in order to highlight the connection and the impact of quality indicators, as well as in order to model the relations between the financial performance indicators and the quality indicators used in the research.

Collection, processing, analysis and interpretation of data were performed taking into account the pursued research objectives.

Limits of the Research Methodology

The approaching manner of the research had several limitations:

- the lack of previous national studies limited the research, in the sense that it could not offer comparative studies relative to the results of previous research;
- the applied sampling method has its own limitations due to the scope of activity of the organization and the small dimensions of the analyzed sample, aspects that limit the generalization of the results and of the conclusions.

- the comparisons of the results for the research in the field of pharmaceutics with those from other fields of activity is difficult due to the specific of each field of activity, their training necessities and the strategies of the organization in the area of human resources.

The Results of the Research

The study conducted in order to measure the impact of the training programs for human resources within an organization started by **setting goals in the field of training for the three organizations in the pharmaceutical sector**, and the objectives aim at developing leadership and quality assurance competences, as well as the skills to identify and apply the analytical and quality assessment methods in the workplace.

The second phase of the researched aimed to **evaluate the organizations in study from the perspective of the implemented training programs**.

By analyzing the three organizations from the point of view of the ***participants' reaction/satisfaction to the training program*** one may conclude that, no matter the type of the implemented training program, the respondents in the three organizations expressed full satisfaction regarding the organization of the training program, the performance of the trainer/tutor, the content of the training program, the effectiveness of the learning process, the impact of the training program on the workplace, the results of the training program on the organization and the return of the investment in training. In terms of the averages scores a greater exigency was noticed for respondents' assessment of the third organizations VS.

In terms of the acquiring ***of knowledge and competences by the participants in the training program***, the evaluation was possible only within the first organization, and it resulted in a high level of acquiring the information presented in the training program. Although the other two organizations did not allow access the evaluation of knowledge acquired by respondents after the organized training programs, the results in the evaluation of the improvement of performances in the workplace show, for these organizations as well, a high level of knowledge acquired during the training programs.

In terms of the evaluation for the ***improvement in the employees' performance in the workplace following the training program*** in the three studied organizations, we have recorded a high level of applicability of the knowledge acquired by the respondents, used in the workplace, which means a significant improvement of their performance in the workplace following the training programs. A significant improvement of the performance within the three organizations was noticed, regarding the respondents' capacity to diagnose unconformities in the main processes of the organization, to identify the situations where methods for the quality analysis and evaluation may be applied and to take decisions in due time in order to increase the effectiveness of the

processes in the workplace, all respondents agreeing on the importance of knowledge and appliance of the quality analysis and evaluation. However, the respondents have identified no change in their ability to identify and collect the main categories of quality costs.

It is also worth mentioning that the respondents of the third organization VS were also the most demanding in the evaluation. Likewise, they perceived no change in their capacity to use internal communication techniques as a tool of quality management or in the extent to which they are stimulated to make suggestions and bring ideas for the improvement of their activity in the workplace.

In terms of the ***impact of the training program on the organizations***, the respondents of the three organizations noticed a moderate to significant change related to both the organization of activities regarding quality, and to the awareness and motivation of the staff concerning the quality. Likewise, all respondents have highlighted that the main benefits of the organization after the training program were the increase of quality and of the customer satisfaction, believing that the training program was a good investment for the organization.

In connection with the influence of knowledge, skills and behaviors acquired after the training on performance indicators of the organization, the respondents of the three organizations highlighted a significant influence on the effectiveness of quality assurance effectiveness and a moderate influence on the increase of the sales volume and customer complaints.

As additional benefits of the training program, all respondents noticed benefits in the organization of activities and benefits in the satisfaction in the workplace.

The third stage of the research aimed **to evaluate the training programs implemented within the organizations subject to our research.**

The results analysis of the ***evaluation of the participants' reaction/satisfaction to the training programs*** organized in an e-learning and traditional system allowed the distinct evaluation of every type of training.

As a whole, both training systems highlighted the participants' satisfaction regarding the *organization of the training programs*, appreciating their development, the e-learning platform – interface/teaching resources – their adequacy, as well as the e-learning/tradition didactic materials that had been used. The participants' education level determined significant differences between them regarding the facilities offered within the training programs in both systems.

After analyzing the *performance of the tutor/ trainer,* the e-learning system is characterized by a greater number of specific aspects, evaluated higher by the participants compared with the traditional system: communication, the coordination and facilitation of discussions, the degree of adaptation to the practical difficulties signaled by learners, and overall performance of the tutor/ trainer.

Regarding the *tutor's/instructor's performance* and the *content of the training program*, distinct aspects were registered for every training system.

Thus, for the e-learning training program, different perceptions were registered, depending on the participants' level of education, regarding: the communication skills, the overall performance of the tutor, the effectiveness and relevance of the practical situations accompanying the theoretical content compared to the themes in the training program.

In terms of the traditional training program, the participants' age and occupational status caused differences in the participants' perception regarding: the instructor's level of education, presentation and communication skills, ability to coordinate discussions, atmosphere, adapting concepts and situations to the participants' questions, relevance of knowledge and skills acquired after the training program.

Several distinct aspects were emphasized regarding the *learning effectiveness* for both training systems. For the e-learning training, the participants' level of education and occupational status did not determine differences between them regarding the clear, concise, and logical presentation of subjects and the applicability in the workplace of knowledge and skills acquired after the training program.

For the traditional training, the participants' level of education, occupational status and the age caused differences between them regarding the degree of development of knowledge and skills by the training program, the presentation of subjects and the applicability in the workplace of knowledge and skills acquired after the training program.

In terms of the *impact of the training program in the workplace* and *the contribution of acquired knowledge after the training program in the organization*, different aspects were registered for the two training systems.

If the participants' occupational status did not lead to differences among them in the e-learning straining system, the occupational status and the level of education did bring differences in the traditional training system, regarding the use for the future of the knowledge and skills acquired after the training program, the performance improvement in the workplace, the impact of the training program of the productivity growth.

The return of the investment in training is characterized by the participants' different perceptions depending on the managerial position within the organization in the case of the e-learning training system and depending in the occupational status in the case of the traditional training system regarding the impact of the training program of their professional career.

The results analysis of the **evaluation of participants' performance improvement in the workplace after the training program** highlighted, for both training systems, a high degree of applicability of the knowledge acquired after the participants' training. Likewise, there was just

one strong common correlation for both groups of participants between the extent to which participants were encouraged as employees to make suggestions and bring ideas to improve their activity in the workplace and the extent to which their suggestions for continuous improvement were taken into account in the decisional act, in the workplace.

Regarding *the extent to which the knowledge acquired from the training program was useful for participants in identifying critical situations, choosing and using the most appropriate methods of analysis and quality assessment* different results were seen for the two training systems.

If the participants' level of education did not differentiate their opinions in the case of the traditional training system regarding their capacity to identify situations in which they could apply the methods of analysis and quality assessment, in the case of the e-learning system, both the participants' level of education and their occupational status led to different opinions regarding their capacity to identify and choose the situations in which they could apply the best methods of analysis and quality assessment. This emphasizes an additional and more involved care of the employees trained in the e-learning system compared to those trained in the traditional system.

Regarding *the extent to which students acquired the ability to diagnose a critical situation, to develop specific forms and assign specific responsibilities to members of a team comprised in order to apply the analytical methods and quality assessment* no common result was found for the two categories of participants. Thus, in the case of the e-learning system only the participants' occupational status and managerial position within the organization caused differences in the opinions expressed, whereas in the case of participants trained in the traditional system three socio-demographical variables led to different opinions: age, level of education and managerial position within the organization.

In terms of *the extent in which the participants developed their skills to set objectives regarding the quality, to use techniques for internal communication, to form suggestions and ideas for improvement and to take decisions in order to increase the efficiency and the effectiveness of processes at the workplace*, one common aspect was determined by the participants' level of education, which led to different opinions about the capacity to take decisions in due time, in order to increase the effectiveness in the workplace. The age variable is seen solely in the case of the participants trained in the traditional system, determining the registration of their different opinions.

In terms of the extent to which *the training program was useful to participants in order to develop skills for the identification, collection and taking into account of quality costs within the decision-making process, as well as in order to understand several aspects specific to production (technical level and reliability*), three socio-demographical variables were registered: the level of

education, the occupational status and the managerial position within the company, which led to the registration of some significant aspects for the two analyzed training systems.

In the case of participants trained in the e-learning system, a significant aspect was registered and is worth mentioning: no matter the occupational status, the participants are aware of the importance of knowing and applying the methods for quality analysis and assessment in the workplace.

Based on the results of the **evaluation of the training program's impact on the organization**, the respondents in both training systems considered that the training of human resources was largely a good investment for the organization.

Analyzing the correlations between the ways to *improve the activities related to the quality and the effect of training* on the staff for both training systems, a strong direct correlation was highlighted between the degree of improvement in decision making and increasing the number of suggestions and ideas for improvement brought by the organization's staff. An additional effect of the e-learning training system can be revealed by another direct strong correlation, related to the improvement of the decision-making process and the increase of the number of applied suggestions and ideas for improvement, which is only at a medium level in the case the traditional training system. Analyzing the correlations regarding the *effects of training on the staff,* the e-learning training system proves to be superior to the traditional one, in that only this system had strong correlations involving staff motivation both in relation to the effectiveness of training measures, and to the increasing number of implemented suggestions and ideas for improvement.

Relevant information for both training systems was collected, from the point of view of the socio-demographic variables, regarding the level of improvement of the *organization of activities regarding quality and staff awareness.*

One common aspect was identified in both training systems, referring to the fact that the level the education does not differentiate participants regarding the improvement of the decision-making process.

In the case of the employees trained traditionally, the age factor led to their different opinion on several issues regarding their activity on the quality issue from those employees trained in the e-learning system.

The socio-demographic variables represented by the occupational status and managerial position within the organization did not cause differences regarding the opinion of the participants trained in the e-learning system on issues of the activities regarding quality, however, their managerial position within the organization differentiated their opinions regarding the training activities.

The occupational status determined differences between participants in the tradition system on the training activity.

In terms of the *benefits of the training on the organization*, no differences were noticed in the opinions of participants trained in both studied systems.

In terms of the *impact of the training on the organization's performance indicators*, several significant aspects were highlighted for the two training systems.

The only common identified aspect refers to the age of the participants in the two training systems, which did not lead to differences regarding the positive influence of applying the knowledge, skills and behaviors acquired after the e-learning training and, respectively, the tradition training, on quality indicators.

The occupational status and the level of education led to differences of opinion for the participants trained in the traditional system on the positive influence of applying the knowledge, skills and behaviors acquired after the training on cost control, respectively on issues regarding the sales activity of the organization.

In terms of the e-learning training system the participants' managerial position within the organization did not lead to differences regarding the positive influence of applying the knowledge, skills and behaviors acquired after the training on quality indicators, client satisfaction and complaints, but did determine differences on the positive influence of applying the knowledge, skills and behaviors acquired after the training on the measures to eliminate the causes of the faults.

The next stage of the research **studied the relevance of the connection and impact of quality indicators on the financial indicators of the organization**, a study for which two methods of data analysis were used: Principal Components Analysis (PCA) and linear regression.

The first method was applied in order to reduce the initial number of variables (four quality indicators and twelve indicators of the economic performance of the organization) to a smaller number of variables (main components), which allowed their visualization depending on the direct or reverse correlations, resulting in a distribution of the initial variables on the two principal components obtained by applying the method. The results and their graphical representations highlighted the connection, intensity and impact of the quality indicators on the organizations' performance, which was also shown in the grouping of quality indicators with the most relevant financial indicators, respectively the total costs, total expenses and net turnover.

The second method, linear regression, was applied in order to obtain models where the independent variables where the four quality indicators, and the dependent variables were considered, for every model, the net turnover, the total expenses and the total incomes.

Both methods were used to describe and explain the causal connections and interdependencies between the quality indicators and the indicators for the economic performance of the organization.

The last stage of the research consisted in determining the ***return of the investment in training*** for the training programs implemented in the three studied organizations, by calculating the monetary benefits generated by the studied quality indicators. The three presented case studies show the necessity in performing studies on the effectiveness of training programs, as this is the only means of showing the tangible and intangible benefits of the training programs. Likewise, it resulted that the return of the investment in training was not the decisive factor in determining the type of training for human resources in the three analyzed organizations. Thus, in the case of the second and third organization, following studies on the effectiveness on the traditional training programs, these could have decided to organize e-learning training programs, taking into account an important tangible benefit of training: the return of the investment in training.

CONCLUSIONS

General Conclusions

The purpose of this doctoral thesis is to raise awareness on the possibility of evaluating the effectiveness of training programs within an organization after their finalization or to estimate a priori the effectiveness of a training program necessary to the training of human resources within an organization. This research may offer to the participants of the training programs and to the company management an evaluation methodology that may generate information and recommendations in order to improve the effectiveness of training program for the human resources within organizations.

The general conclusions of this work may be systematized as follows:

- The necessity to maintain a competitive advantage in the market requires organizations an increasingly larger involvement of the HR function in supporting the business strategy in order to bring more added value to organizations. Measuring the effectiveness of the return in training, the development and the improvement of the performance of human resources is a serious challenge for professionals in the learning field and in the field of obtaining performance in the workplace, because they have to offer convincing data regarding the contribution the training programs specific to human resources. The need to measure the

effectiveness of the return of the investment in human resources training programs has never been greater.

- The bibliographical research we made regarding the evaluation of initiatives meant to train human resources in organizations has revealed that worldwide, over 2000 organizations use different models to evaluate the efficiency of investment in training as a tool for assessing the impact of training programs for human resources and there are over 3500 practitioners in this field.

- The research has found that in Romania there are relatively few attempts to measure the return on investment in human resources training programs based on empirical models, which do not emphasize the complexity of the entire process of determining the effectiveness of training programs. In most cases analysis of training program effectiveness considers only the first stages of evaluation of their effectiveness (reaction and learning). In Romania there is only one full case study conducted at the company MedLife, market leader in the provision of private healthcare, in 2008, by the ROI Institute Romania, organization of research, benchmarking and consulting, offering workshops, publications and consulting services based on ROI methodology [114].

- Amid rapid change and technological progress, as well as the globalization trend of higher education and the elimination of boundaries between students, new perspectives have been opened for the educational practice, which is complemented by modern methods of teaching, learning and assessment, which are specific to the information society.

  In this framework, *e-learning* is an extremely effective way to implement educational programs for both higher education and for other forms of education, as it adapts to the needs of students, pupils, and adults who want to train in areas and in latest technology when they lack time, when they have varying degrees of training and different abilities to assimilate.

- Traditional training does not always provide adequate solutions to meet the need to acquire new knowledge, because the adaptation speed of courses to the new requirements is low, specific costs (classrooms, lecturers salary, travel, etc.) are constantly increasing, the time the learners are forced to allocate to training is considerable, often not being used effectively. The solution to these problems may be e-learning training, but to achieve maximum educational effectiveness a new educational system has to be created, that would allow combining training methods based on information technology with traditional training, respectively mixed training (blended learning).

- Managers know exactly how much they invest in training activities, but it is very difficult to calculate the return on these activities, which is why most often they are reluctant to invest in training their employees because they feel they have no control over such an investment. Therefore, the existence of a model to quantify the benefits obtained from the training of human resources is of great importance and interest to the management of organizations.
- There are several models of evaluation and measurement referring to the effectiveness of training programs for human resources. Some of these models are based on financial analysis, others on non-financial data, while others provide a mixed approach to measuring program outcomes. In the research, the most important models for evaluating the effectiveness of training programs for human resources were analyzed and compared.
- The analysis of evaluation models presented in this thesis allowed the identification of their advantages and disadvantages, which led to the shaping of an original model that takes into account these aspects.
- In this context, the *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* proposed in this thesis was created in order to provide those interested a methodology that gives the opportunity to highlight the effectiveness of training programs for human resources in the development of an organization. Likewise, the *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* allows determining net monetary benefits (tangible benefits) that were derived from the implementation of training programs, benefits which are compared with the costs of training. Knowing the benefits and costs can determine the return on investment in training, respectively the financial gain of the organization from the implementation of the training program. The model presented also allows the determination of non-monetary benefits (intangible benefits) that are equally important in the evaluation process as tangible benefits.
- If the organization calls for a new training program, the management of the organization needs estimates of the effectiveness of the training program to support its decision whether to invest in this new training program. For this reason this thesis proposed a *Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI)*, which enables the provision of estimate information prior to the organization of the training program.
- The *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* was validated by its application to three organizations in the pharmaceutical industry, evaluating the effectiveness of training programs in the field of quality management, the

programs were organized both in traditional and e-learning system. Applied research highlighted the advantages of using such a model which allows obtaining information on the effectiveness of training programs organized. This information is useful to base organizations management decisions regarding human resources.

Personal Theoretical and Practical Contributions

Following the set objectives and analyzing the results obtained while writing the doctoral thesis, the following personal contributions result:

- Presenting the importance of continuous development of the level of training of human resources in organizations in the current period, emphasizing the need to initiate investment in human resources training which enables organizations to compete in an increasingly selective and dynamic market.
- Identifying the importance of new information and communication technologies which have led to the registration of a true revolution in the training of human resources due to the advantages offered by the possibility of continuous training and to the fact that they can be applied in various fields.
- Highlighting the need to evaluate the effectiveness of a program of investment in the training of human resources and the way the results of such an investment can be presented to the management of an organization.
- Analyzing the main models for evaluating training programs for human resources identified in the specialized literature.
- Comparative study of models for evaluating the presented training programs for human resources.
- Developing the *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* which aims to base an evaluation of the results of a training program for human resources in an organization.
- Developing a *Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI),* derived from the *Model of Evaluating Programmes of human resources Training in organisations (MEPI),* which allows the financial estimation of the impact the projects for training of human resources will have on the economic indicators of an organization, ever since the start of training programs for human resources.

- Applying the *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* in three organizations in the production of medicines in order to measure the return on investment in training human resources in the organizations surveyed:
  - Using the questionnaire-based survey as a method of the applied quantitative research, drafting three and, respectively four questionnaires for a traditional training program and an e-learning training program for human resources, in the field of quality management, evaluating the reaction/ satisfaction of participants in the training program, acquiring knowledge and skills in the training program, improving participants' workplace performance after the training program and the impact of the training program on the organization.
  - Applying statistical methods and methods for the analysis of relevant statistical data, allowing the analysis and interpretation of the collected data:
    - The evaluation of the organizations surveyed in terms of the implemented training programs.
    - The evaluation of the implemented training programs in the surveyed organizations.
    - Proving the relevance of the connection and of the impact of quality indicators on the financial indicators in the organizations surveyed.
  - Calculating training programs costs, benefits derived from training and the return on investment in training in the studied organizations.

Future Research Directions

The results obtained in this thesis, following our research, lead to new horizons of research in the field. Among possible research directions that can be addressed in the near future, the following may be mentioned:

- Performing a larger study on the effectiveness of training programs taking into consideration a higher number of organizations in the pharmaceutical industry leading to conclusions with a high degree of generality.
- Applying the proposed models in other fields, besides the pharmaceutical one, to enhance their overall character.
- Customizing the *Model of Evaluating Programmes of human resources Training in organisations (MEPI)* for e-learning training programs taking greater account of the specificity of this training system.

- Creating a database on different fields to allow the use of the *Model for Predicting Efficiency of Programmes of human resources Training within organisations (MEEPI)*, based on previous experience.
- Creating a collection of efficiency indicators relevant to training programs in various fields in order to assist beneficiaries of training programs in the process of taking decisions.
- Making an interactive information system for the collection and analysis of data necessary for the application of models.
- Using modern models of data analysis based on Artificial Intelligence inspired methods (Neural Networks, Fuzzy, Genetic Algorithms etc.).

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