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MEASUREMENT OF THE RETURN ON INVESTMENT IN EDUCATION AND IN-HOUSE TRAINING¹

Abstract. The level of awareness and acceptance of the need to enhance volume and intensity of investment in education and in-house training is increasing. This phenomenon stems from the following facts: the aging of the European societies; an intense technological and organizational progress; and a noticeable process of extension of the scope and length of professional and personal development and activity; accompanied with employees' expectations for better quality of life.

The increase in the level of acceptance of the need for increased investment in education and training of employees is accompanied by new challenges, including, in the first place, the need to redefine the approach to investment in training and to the evaluation of its results. The 'High-Efficiency' point of view, alongside the assessment of the advisability of investment in education and training within a company, raises the need to move away from the traditional system of input oriented financing (i.e. financing resources) and to move towards output oriented funding (i.e. financing results). In other words, instead of paying for teaching, companies want to pay for teaching results. This means that the companies which finance education and training, rise - in the process of assessing the training results – fundamental questions about the improvement of the efficiency of the company; and how an increase in the qualifications of workers facilitates the achievement of organizational objectives. On the other hand, the training results assessment from the participant's point of view includes a question about the efficiency of the supplier of educational and training programs, and whether the supplier is able to achieve the promised results.

The existing business reality is that the efficiency and effectiveness assessments often do not go beyond the survey measuring the level of satisfaction and self-esteem of the participants. This, in turn, causes a visible quantitative pressures, accompanied by insufficient care for quality and inability to use modern techniques to measure the impact of education and training on business performance.

As a result, many entrepreneurs treat the investment in training and education of their employees solely as an expense and a disruption of operations. This is due to the fact that managers do not see a direct effect of the investments on the performance of the company. In addition, managers fear possible hazards in the form of expense claims; loss of trained personnel to competitors' companies, or excessive self-empowerment of the employee.

The study is devoted to presentation and discussion of modern techniques measuring the effectiveness of investment in education and training. The list of methods includes an analysis based on objectives, the targeted evaluation, systemic evaluation, judicial evaluation, and assessment prior to the program.

Keywords: training efficiency, training effectiveness measurement, in-house training.

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1. MOTIVATION

The European Employment Strategy sums up political developments in EU and stresses the importance of employability of wide range of population groups. This is possible only with high quality of professional qualifications. High demand for staff qualifications leads to increased intensity in education and training needs. Political agenda in this regard follows the real world needs, by the inclusion of social development, increased urbanization, changes in employment culture; extension of employment range, increased numbers of women in the workplace, extension of the number of part time jobs available on the market and length of professional activity. New patterns of family life lead to professional activation of new groups of population. Additionally, in many companies, the lack of investment capital is a normal situation, and not the outcome of exceptional decision strategy. This is accompanied by new developmental trends where cheap labour is no longer a source of competitive market advantage. This in turn forces companies' management to seek new possibilities for growth. Highly qualified staff form a new source of competitive market advantage. In other words, the quality of staff's qualifications is as important as the level of innovation within any given company.

Another important issue is the progress acceleration within socio-economic and technological areas which creates a need for higher specialization of employee qualifications. This manifests as an increased demand for staff with highly specialized qualifications. Contemporary professionals are defined not just by occupation but additionally by specific, detailed skills, e.g.: welder specialized in (...); office professional specialized in (...). This new understanding of staff's qualifications is probably most visible within the new fields of expertise such as: bio-technology, information-technology, etc.

The traditional situation where an acquired profession was enough for the entire career span, and were the employee often stayed with one employer for life, does not apply any more. Instead, there is a need for lifelong learning (LLL), which in fact means that lifelong learning is transforming into lifelong learning life style.

The response of the education system to the changes described above includes extended training provisions, diversification of the educational offer, as well as the development of informal sector. This leads to growth of education and training diversity, with respect to forms, methods and duration of education and training. One important element of the newly developing trend is the establishment of private education sector and strong expansion of non-governmental organizations. Most interesting in this regard is the new approach to education and training management, characterized by liability for results, and introducing effective and highly functioning mechanisms for quality assurance. This is mainly due to an increasing organizational autonomy in connection with

the education and training provider's liability for results manifesting in institutional (internal) and external systems of quality assurance (accreditation programs; qualification certification mechanisms, etc.).

This paper focuses on corporate education, understood as in-house training, however, presented findings could easily be extended to similar issues concerning labor market institutions, households, or institutions using EU funds.

In-house training poses new challenges for measurement and evaluation of results. The traditional input oriented approach, also referred to as cost based pricing technique, concentrates on financing resources. There is a need for new approach which is output oriented with focus on results. The buyer of education and training services is willing to finance specific results. This approach needs a precise definition of the training product (effect, result), as well as methods of measurement and evaluation of the said product. In other words, instead of paying for learning, the buyer wants to pay for results. This new approach introduces new terms such as objectives, efficiency, effectiveness, as well as achievements criteria.

The main characteristics of results oriented approach include:

- a close link of the training programs with specific needs of the financing firm;
- focus on the acquisition of specific, new skills and their anticipated impact on the functioning of the organization;
- communication of results to participants;
- mechanisms designed to support the transfer of newly acquired knowledge, skills and attitudes to other members of staff.

All this may be summed up in a specially designed cost-benefit analysis. In Europe (and OECD countries) there are no universal education financing options. Frequently used financing mechanisms include among others: formula (formula based funding); result (performance based funding); competition based funding, contract based funding, negotiation (competitive and targeted funding) and traditional past cost-based funding. Recently a new framework has been created within the existing education and training system in Europe, called the European and National Qualifications Framework. It requires that the training product description includes details of the acquired knowledge, skills and other personal attitudes (staff social attitudes and so called soft qualifications).

2. THE FINANCING ENTERPRISE

Within the European business environment any training is understood to be a methodical and regular shaping of attitudes, knowledge, skills and behaviors among the members of staff, necessary for the effective task performance in the workplace. The US definition states that training is any procedure, initiated by

the organization, aimed at enhancing the learning of its members, and therefore increasing their contribution to organizational effectiveness. Regardless of the adopted definition, the assessment of training becomes a question of improving the efficiency of the company. In other words, employees' skills development makes it easier to achieve the organization's objectives. While evaluation on the part of the organization is a question of efficiency, evaluation from the participants' point of view is to do with effectiveness. One has to remember that effective personal development must consider individual potential, individual learning styles and overall development of life skills.

Once agreed, training becomes a process of raising of the skills' level of the participant (employee). Within the training cost context the benefits for the organization include improvement of the business efficiency. Efficiency may be understood either as achieving the same results at a lower cost, achieving better results at the same cost or improvement of productivity, i.e. achieving better results at a lower cost. If we go into details, the list of benefits of staff training within an organization includes: increase of the individual effectiveness of staff members, increase of the teams' effectiveness and company efficiency improvement. The improvement of effectiveness may occur as a product or service quality improvement or as an individual and team productivity growth. Creativity growth results in market share price rise; increase in the versatility of employees and improvement in entering new markets. Next group of benefits covers improvement of customer satisfaction through: betterment of the organization or department's image of the organization or department, reduction in the number of complaints and returns and increase in the number of on-time deliveries. Important results are connected to the improvement of the internal processes within teams of employees such as better communication or heightened sense of community; improvement of the quality of supervision, providing assistance in solving problems related to the competence of individual units of organization, and increase in the ability of managers to determine realistic and specific goals for employees in their departments. All this leads to an overall improvement in the organization's efficiency.

Organizations which finance training for their employees increasingly pay attention to how the expenditure on training translates into functioning businesses². The reason is that in the private sector global competition and investors are increasingly demanding greater accountability for results and expenses incurred. Accordingly, the public sector manifests the emphasis on the evaluation of how

² In North America a wave of discussion on the effectiveness of measuring the effectiveness of training was settled in mid-nineties. The problem was urgent because the share of training financed from public funds was negligible, and commercial financing always raises questions of economic efficiency. A summary of the discussion can be found e.g. in studies by Arthur et al. (2003) and Broad and Newstrom (1992).

judiciously the public funds are managed to demonstrate cost-efficient use of money spent on training.

Although training outcomes might be seen as difficult to identify, reliable measurement of training results is possible. Credible measurement (at a reasonable cost) that shows the impact of training on the company and its performance can be reliably performed. Credible measurement requires prior decision on how will the data be collected and analyzed, how to define (identify) the results of training, how to perform cost estimation, how will the collected data be translated into financial indicators, how will the value of non-monetary benefits be determined and how to measure the return on investment in training.

The discussion of the education and training financing efficiency should also include traditional tools. One of the popular approaches is the evaluation of training effectiveness by the means of perceived and demonstrated learning outcomes. Perceived learning is what the students think they have learnt, and how the course has met their expectations. It may be measured with post course, in class or online survey. Additional tools include phone interviews with a sample of students, student testimonials, debriefing sessions with trainers after the exam, student evaluations of trainers, and peer grading where students assess each other's performance. Demonstrated learning outcome is what the students can show they have learnt, through test results or performance at the work place, etc. The measurement tools include comparison of pre and post course questionnaires and quizzes (there should be the same questions on each, for comparison), external evaluation methods, take home exams or projects (to give time to synthesize the material), follow up surveys to test knowledge retention and attitude (such as cultural sensitivity) change over time, witness or shadow audits to measure performance of auditors in the field and the long term impact of the training on operational knowledge, skills and behavior.

The classical approach to the quality assurance concept first published by Donald Kirkpatrick in 1959, was updated in 1975, and in 1994, when his best-known work was published (Kirkpatrick 1994). The model consists of four levels of measurement, reaction, learning, behavior, and results. For details one may look at official site (www.kirkpatrickpartners.com). For further classical tools, one may refer to (Rae 2013). This training evaluation guide is complemented by a set of free learning evaluation and follow-up tools (www.trainingevaluationtools.pdf), created by Leslie Rae. The list of tool kits measuring skills improvement and training effectiveness includes: three-test tool; Bloom's Taxonomy of learning domains³; Psychosocial (Life Stages) Theory⁴; Multiple Intelligence theory⁵; Learning Styles theory⁶; VAK learning styles model⁷; Conscious Competence

³ Available on: www.businessballs.com/bloomstaxonomyoflearningdomains.htm [Access 01.09.2015].

⁴ Available on: www.businessballs.com/erik_erikson_psychosocial_theory.htm [Access 08.09.2015].

⁵ Available on: www.businessballs.com/howardgardnermultipleintelligences.htm [Access 09.09.2015].

⁶ Available on: www.businessballs.com/kolblearningstyles.htm [Access 09.09.2015].

learning stages theory⁸; and several other techniques. In addition, the Return on Investment (ROI) eventually achieved by the organization financing the training constitutes an important issue for its management (Dziechciarz 2012, 2015). The list of reasons for evaluation processes being rarely performed consists of: lack of appropriate skills; insufficient time in disposal, lack of sufficient resources (staff and money). One has to stress that a good methodical evaluation is an excellent source of good, reliable data. On the other hand, due to the fact that evaluations are seldom performed, knowledge about the effectiveness of the training is mostly negligible. A good introduction to the topic could be provided here by L. Rae's book (2002). Modern techniques⁹ of measurement of education and training results include, among others: targeted assessment; responsive evaluation, systematic evaluation; quasi-judicial (legal) evaluation; pre-program evaluation (input evaluation), etc.

3. TECHNIQUES OF MEASUREMENT OF TRAINING EFFECTIVENESS AND EFFICIENCY

Regardless which technique is used, there are common questions used for education and training rating. The list of criteria include questions such as: what are the advantages of different training techniques? Is it possible to conduct training within the organization, or does one need to use the services of an external provider? Does the age and origin of the participants constitute an issue in taking advantage of a particular training technique? How much time will be devoted to training? What were the results obtained in the past?

Evaluation criteria considered prior to the program include:

- Socialization: do employees know what behavior is expected of them?
- Commitment: are employees happy to accept the change of their own accord or are they being forced?
- Allocation of prizes: are prizes (benefits) awarded to people progressing in the desired way?
- Diffusion: are the new patterns of participants' behavior transferred to other employees of the company?
- Feedback: are results transparent and can they be used to take corrective action within the company?

⁷ Available on: www.businessballs.com/vaklearningstylestest.htm [Access 08.09.2015].

⁸ Available on: www.businessballs.com/consciouscompetencelearningmodel.htm [Access: 09.09.2015].

⁹ The text of two following chapters relies heavily on works by Bramley (2011); Phillips and Stone (2011) and Phillips (2010).

Data needed for the evaluation of the education and training effectiveness include hard and soft information (metric and nonmetric). Hard information includes performance (quantity, number, rotation, etc.); costs (unit, according to accounts, investments, etc.); time (downtime, overtime, breaks, etc.); quality (waste, scrap, accidents, etc.). Soft information includes: habits (absenteeism, interruptions, delays, safety, etc.); attitudes (desirable reactions of duty, loyalty, self-acceptance, etc.); skills (decision-making, conflict, advising, listening, etc.); development (promotion, raise, efficiency, etc.); atmosphere (complaints, satisfaction, legal complains, etc.); initiative (ideas, projects, etc.).

Distinguishing the impact of education and training from the routine functioning of a company is not an easy task. One may use a pilot group versus a control group techniques, or forecasted values versus values obtained after the training. Supervisors might estimate the impact of the training program on productivity. Alternatively, one may use external test (independent experts) that provides knowledge about the effects of the training program. Signals identifying positive changes may come from the customer who may provide information about the extent of their decision to buy the product or service based on knowledge or skills of the staff. These positive changes may be attributed to training results. The estimation of the financial effects of training includes additional profits or savings resulting from the decrease in insufficient quality costs (scrap, waste), savings in staff time converted to salary and bonuses savings as well as the data on the costs of negative growth measures (e.g. complaints). Additionally, internal or external experts, supervisors, managers, or staff members may estimate the financial value of training effects. Also, external databases exist, which may provide the approximate value of the measured effects. Any calculated measure is a combination of the individually estimated measure of the training effects and other measures, for which it is easier to estimate the costs and which are treated as approximate or as variable substitutions (proxy). The measurement of return on investment in education and training is the final step.

Measurement algorithm of return on investment in education and training requires: collection of appropriate data (before, during and after the training), isolation of the effects of the program from the influence of other factors, transformation of data on hard and soft benefits into monetary values, estimation of total cost of staff participation in training program. Eventually, an attempt to calculate the value of return on investment in education and training (ROI – rate of return from investment) may be undertaken.

Not all benefits are convertible into monetary units. Therefore, non-financial benefits (immeasurable, intangible) should be identified and should contribute to the final report on the training results. One should mention a special value added

here: the improvement of the ability to accurately forecast the return on investment in future education and training projects.

As stated earlier, the list of modern techniques for measuring the effects of training includes:

- evaluation based on goals,
- directed evaluation,
- system assessment,
- judicial evaluation,
- evaluation prior to program.

Evaluation based on goals. The technique based on goals was developed in 1968 for the British Army. It requires very detailed list of targets and is especially useful for the assessment of training relating to repetitive operations (craft like). Algorithm of evaluation based on goals starts with careful formulation of a list of targets, identification of connections between the targets and the desired behavioral changes, description of the purposes of the behavior expected to be formed by training participants and design of a tool for measuring progress in achieving each of the objectives. The measurement tools should guarantee objectivity, integrity, and validity. The technique is designed as a self-improving process. Measurement serves as the information source for the modification of the program. For this purpose, the tools determining the level of knowledge, skills and attitudes before and after various stages of the training are used. Additionally, the analysis of results is undertaken in order to assess the quality of the program and to introduce corrective steps improving the said quality and removing defects of the program.

Targeted assessment. Targeted assessment is oriented towards rating (responsive evaluation) and focuses on the program's objectives. Achieved results should address the needs of staff members involved in the training. For the task, the stakeholders are usually divided into three groups: agents who create, implement or utilize the program to be assessed, beneficiaries who benefit from the program and victims of the negative aspects of the program. Stakeholders in the case of the training include: the organizers, the operator and the employees remaining within the impact of the training (participants, their superiors and senior managers). Targeted assessment covers the interests of all groups, taking into account positive comments about the training program as well as doubts and disputes relating to the program. The person performing the targeted assessment must know the attitudes of the involved parties toward the program and their expectations about the results of the assessment. To meet this requirement, respondents are asked the following question: do you know anyone with views radically different from yours? It helps to extract opinions crucial for further study – to include into the sample staff with different opinions. Sometimes it is necessary to use formal methods of sample selection (e.g. assembly of

representatives of the production department, finance, marketing and HR). The evaluators perform an independent observation of the training program in order to familiarize themselves with the training content. The evaluators gradually learn the objectives of the program (both formal and real) including any doubts that may come to mind to different interest groups. Based on identified and formulated issues, the focus of evaluation is constructed.

Systematic evaluation. System (systematic) evaluation consists of an analysis of the entire system, including the relationships between its constituent subsystems. The purpose of this analysis is to improve relations between the subsystems and to increase the efficiency of the entire system. In order to achieve such ambitious objective, the evaluator, in accordance with the provisions of this method should look for answers, among others, to the following questions:

- Is a given training program used by those for whom it was designed?
- Is this program effective?
- What are the costs of the program?
- Are expenses incurred to carry out the program effectively?

System evaluation may be used to perform the analysis of various aspects of organizational effectiveness. Evaluator examines the extent to which training has contributed to greater labor productivity, assuming the performance criteria, which are considered to be most important in certain parts of the organization. When evaluating the effectiveness of training, it is worth paying attention to the relationships that exist between the expected benefits of participation in comparison with its estimated cost. It is worthwhile to ask additional questions: are there needs that should be met by the training and whose satisfaction must be measured by analyzing various aspects of efficiency? Is the learning process designed in such a way to ensure the participant will be able to use the knowledge acquired during the training in the workplace?

Quasi-legal approach. Judicial assessment (quasi-legal approach) is the method developed by L. Porter and L. McKibbin in 1988 to evaluate the effectiveness of MBA programs (Porter, McKibbin 1988). They collected information from thousands of interested parties and forwarded it to a small group of business schools professors who were asked to interpret the resulting data. The results of the analysis were favorable for business schools: the growing number of students applying for an MBA is synonymous with the success of these schools. Graduates also consider their qualifications acquired in business schools as valuable. The method name *judicial* comes from the approach to assess the effectiveness of training and is associated with the use of techniques similar to those used in a court of law. Actors are given *witnesses'* roles, and they are 'called for *questioning*'. Their opinions consist of *confessions*. The algorithm puts special emphasis on checking the *confessions* (opinion, values

and beliefs) formulated by program organizers; those responsible for funding as well as the participants. The method is used most often to evaluate the effectiveness of social programs, less so to evaluate trainings conducted in organizations. The problem with this technique is that it requires a selection of an impartial *judge* and achievement of consensus on the selection of key *witnesses*.

Assessment prior to the training. Program assessment prior to the training requires an evaluation which determines whether the proposed training procedures can actually produce the desired changes. This type of training evaluation can also be called assessment of the contribution (input evaluation). Evaluation that occurs prior to the program covers techniques determining whether teaching content and provision are properly selected and constructed. It includes elements of informal evaluation that take place before training. Such an approach is useful in deciding how to organize training and how to best allocate the available resources. The condition for the usefulness of this method is the access to the data on the level of the existing qualifications of the potential participants and their estimated numbers. Additionally program objectives and learning habits of participants undergo evaluation that occurs prior to the program. The assessment considers the following questions:

- What are the advantages of different training techniques?
 - Is it possible to conduct training within the organization, or is there a need to use the services of an external company?
 - Does the age and origin of the participants suggest that they should take advantage of this and not another training technique?
 - How much time can be devoted to the training?
 - What results were obtained using this particular technique previously?
- The typical criteria list, for evaluation prior to the program, includes:
- Socialization (do your employees know what behavior is expected of them?)
 - Involvement (do your employees accept the change of their own accord, or have they been forced or coerced?)
 - The allocation of the prizes (are prizes awarded to employees manifesting biggest progress in the desired manner?)
 - Diffusion (are the new patterns of behavior of participants transferred to the other employees of the company?)
 - Feedback (is it available and can it be used to take corrective action?).

Regardless of the chosen evaluation technique, the core goal of the analysis is to fulfill the imperative of accountability. The need for assessment of training results is particularly pressing once a decision is taken to finance the training from the company budget.

4. MEASUREMENT FOR EVALUATION OF TRAINING EFFECTIVENESS AND ITS EFFICIENCY

To stress the complex nature of the problem of the measurement for evaluation of training effectiveness and its efficiency, it may be repeated that the data needed to evaluate the effectiveness include hard information (metric, measurable) such as the capacity (number, quantity, rotation, etc.); costs (individual, according to accounts, investments, etc.); time (downtime, overtime, breaks, etc.); quality (waste, defects, accidents), etc. As well as soft information (non-metric, unmeasurable), which covers habits (absenteeism, interruption, delay, safety, etc.); attitudes (desired reactions, dutifulness, loyalty, self-acceptance, etc.); skills (conflicts resolving skills, advising, listening, etc.); development (promotions, hikes, efficiency, etc.); atmosphere (complaints, satisfaction, litigation, etc.); initiative (ideas, projects, etc.).

The list of techniques used to determine the impact of the training results on performance include: comparisons of pilot groups with control groups, forecasts versus values obtained after training; participants (stakeholders) estimating the changes resulting from training; superiors estimating the impact of the training program on productivity; external research (independent experts) providing knowledge about the effects of the training program. One may identify other, unexplained positive changes and attribute them to training. Customers may provide information about the extent to which their decision to purchase a product or service depends on staff knowledge or skills.

A special issue is the estimation of the financial effects. The input data are converted into additional profits or savings. Costs are calculated based on (hard) measures of quality (defects, waste); saved employee time converted into salary and bonuses savings, etc. The cost data of negative measures (e.g. complaints) may be valued by internal or external experts, supervisors, managers. Also, alternatively, the training participants may estimate the value of the training effects.

The data may be imported from external sources. The external databases can provide an approximate value. All measures are combined with other information, for which one can estimate the costs (variable surrogate, proxy).

5. CONCLUDING REMARK

The problem of measurement of the return on investment in education and in-house training is more and more important. New methods and techniques are needed to evaluate each of the following stages of the process of training: the identification of additional required skills, the design of the training content, training mode selection, the choice of training deliverer, the measurement of the training effects and the assessment of their impact on organization effectiveness and efficiency. For all these actions to be undertaken, appropriate data is needed.

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Józef Dziechciarz

MIERZENIE EFEKTYWNOŚCI NAKŁADÓW NA EDUKACJĘ I SZKOLENIA W PRZEDSIĘBIORSTWIE

Streszczenie. W przedsiębiorstwach obserwuje się wzrost poziomu świadomości i akceptacji konieczności zwiększenia wolumenu i intensywności nakładów na edukację i szkolenia pracowników. Wspomniane zjawisko wynika z faktu, że w starzejących się społeczeństwach Europy, przy intensywnym postępie technologicznym i organizacyjnym pojawia się fenomen rozszerzenia zakresu i długości aktywności zawodowej oraz rozbudowę oczekiwań pracowników odnośnie jakości życia. Wzrostowi poziomu akceptacji konieczności zwiększenia nakładów na edukację i szkolenia pracowników towarzyszą nowe wyzwania, polegające głównie na

konieczności przedefiniowania podejścia do finansowania i oceny wyników. Efektywnościowy punkt widzenia, przy ocenie celowości nakładów na edukację i szkolenia w przedsiębiorstwie rodzi konieczność odejścia od tradycyjnego systemu finansowania zasobów i przejście do proefektywnościowo zorientowanego finansowania efektów. Innymi słowy, zamiast dotychczasowego płacenia za uczenie, firmy chcą płacić za nauczanie. Oznacza to, że finansujący edukację i szkolenia oceniając szkolenie zadaje pytanie o poprawę efektywności firmy; o to, na ile wzrost kwalifikacji pracowników ułatwia osiągnięcie celów organizacji. Z drugiej strony, ocena od strony uczestników zawiera pytanie o skuteczność działań oferenta przedsięwzięć edukacyjnych i szkoleniowych. Dotychczasowa praktyka polegała na tym, że często ocena efektywności i skuteczności treningu nie wychodziła poza ankietowy pomiar poziomu satysfakcji i samooceny uczestników. To powoduje, że obserwuje się presję ilościową, której towarzyszy niedostateczna troska jakościowa oraz nieumiejętność stosowania nowoczesnych technik pomiaru efektu kształcenia. W efekcie, wielu przedsiębiorców traktuje szkolenia i edukację swoich pracowników, jako koszt i zakłócenie funkcjonowania. Jest to spowodowane tym, że nie widać bezpośredniego efektu inwestycji w przyszły rozwój firmy. Dodatkowo, obserwuje się obawę menedżerów przed zagrożeniami w postaci roszczeń płacowych, ucieczki wyszkolonych pracowników do firm konkurentów, lub nadmiernego usamodzielnienia pracownika. W opracowaniu zaprezentowano i przedyskutowano nowoczesne techniki pomiaru efektywności nakładów na edukację i szkolenia. Lista metod obejmuje analizę opartą o cele, ocenę ukierunkowaną, ocenę systemową, ocenę sądową, oraz ocenę poprzedzającą program.

Słowa kluczowe: pomiar efektywności szkolenia, skuteczności szkolenia, szkolenie finansowane przez przedsiębiorstwo.

JEL: C1, F2.