

Competence-Based Human Resources Selection and Training: Making Decisions

O. Starineca, I. Voronchuk

Abstract—Human Resources (HR) selection and training have various implementation possibilities depending on an organization's abilities and peculiarities. We propose to base HR selection and training decisions about on a competence-based approach. HR selection and training of employees are topical as there is room for improvement in this field; therefore, the aim of the research is to propose rational decision-making approaches for an organization HR selection and training choice. Our proposals are based on the training development and competence-based selection approaches created within previous researches i.e. Analytic-Hierarchy Process (AHP) and Linear Programming. Literature review on non-formal education, competence-based selection, AHP form our theoretical background. Some educational service providers in Latvia offer employees training, e.g. motivation, computer skills, accounting, law, ethics, stress management, etc. that are topical for Public Administration. Competence-based approach is a rational base for rational decision-making in both HR selection and considering HR training.

Keywords—Competence-based selection, human resource, training, decision-making.

I. INTRODUCTION

ORGANIZATION'S HR selection and training could be a challenge. Sometimes these Human Resource Management (HRM) activities are necessity, sometimes a sign of organization's "luxury". HR selection and training are time and resource consuming activities; therefore, making decision on selection of the best candidate for the position and organization, as well as selecting the relevant training for a certain employee is not likely to be emotion driven. There are various rational approaches to help managers to make the evidence-based decision. We utilized one mathematical approach for each activity. For HR selection, we propose to apply AHP, for HR training consideration we have developed a mathematical model based on linear programming.

We used competences of candidates/employees as basis for our proposed approaches. Competences are possible to measure and develop. Competences are the core index of the employees' human capital level – proficiency in their "ability to decode explicit knowledge" and use their tacit knowledge [1].

Previous researches showed that professional development opportunities offered by employers is one of the key criteria for job seekers whereas considering application for a vacant position. However, in many cases, employers tend to recruit a

candidate that is as professional and competent as possible in order to save resources on his/her training, if he/she is selected [2], [3]. Employees' professional advancement and training costs are usually a concern of many organizations in Latvia and other countries.

The aim of our research is to propose rational decision-making approaches for organization's HR selection and consideration of training for HR. Public Administration (PA) organizations in Latvia are the research basis. The tasks of the research are:

- 1) Describe the essence of competence-based approach and define its suitability for rational decision making on HR selection and training
- 2) Define possible training challenges based on the observed organizations experience
- 3) Propose rational HR selection approach
- 4) Develop and propose rational HR training selection approach.

We used our previous research findings and results, scientific literature, on-line organizations' publicity as major sources of information. The main methods applied are literature review, AHP, linear programming, synthesis, and comparison.

II. COMPETENCES AND COMPETENCE-BASED APPROACH

Competence is "a range of questions, where a person has extensive knowledge, experience" [4] and "the ability to do something successfully or efficiently" [5]. Competence is also defined as "a person's basic characteristics, which have a causal relationship with effective and outstanding performance based on the certain criteria" [6]. F. Delamare Le Deist and J. Winterton [7] publishes a more detailed summary of competences definitions answering on the question 'What is competence?' They also mentioned G. Cheetham's and G. Chivers's [8], [9] holistic model of professional competence [10]. Their competence framework includes five dimensions [7]-[10]:

- 1) Cognitive competence - knowledge (know-that), underpinned by understanding (know-why), is distinguished from competence
- 2) Functional competences - skills or know-how, things that 'a person who works in a given occupational area should be able to do...[and] able to demonstrate'
- 3) Personal competency (behavioral competencies) - 'know how to behave', a 'relatively enduring characteristic of a person causally related to effective or superior performance in a job'
- 4) Ethical competencies - 'the possession of appropriate

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personal and professional values and the ability to make sound judgements based upon these in work-related situations'

- 5) Meta-competencies - concerned with the ability to cope with uncertainty, as well as with learning and reflection.

Set of competences that is important for the certain position working with the certain organization differs. It should be adapted to the peculiarities of the working field. Project management practitioners in Latvia [11] usually use the International Project Management Association Competence Baseline's (ICB) framework that "offers access to the technical, behavioral, and contextual competence elements of project management" – "the eye of competence" [12]. They might use a project manager's competences defined in the local occupational standard selecting a project manager [13].

Competences might be used selecting HR, assessing performance of HR, and defining a need of competences development as the result. Afterwards, managers might plan the certain professional development activities for their employees. Competence approach takes into consideration abilities and knowledge of people [6]. The competence is more complex criterion for selection other possible aspect [10].

Competence-based selection requires, however, good preparation work that includes definition of competences that are relevant for the position based on daily and temporal responsibilities/duties of the employee. It is important also define the exact level of the competence that might an employee on the certain position have [3]. Sometimes it is difficult to find an appropriate candidate for a vacant position that would correspond to the all requirements. In this case, it is useful to evaluate a level of required competences that all candidates have to consider the appropriateness of selecting the maximally suitable candidate from the pool and invest into his/her training to develop the competences to the needed level.

Competence-based approach can be helpful for several HR activities implementation. It is rational. It is possible to have a rational approach to test the level of the competences. Based on this assessment and the set goals (in case of selection – a job description and list of required competences), it is possible to make a rational decision of the selection or further steps of activity.

We focus only on two interconnected HRM activities – selection and training describing a possible rational application of some methods based on the competence approach.

III. NON-FORMAL EDUCATION – TRAINING CHALLENGES

Defining training topics actual for Latvian PA employees, we focused on concept of non-formal education. Training usually "refers to the non-formal education and sometimes is connected to both weaknesses of formal education that have the employees and some changes in external or internal organizational environment that cause a need" [14] of knowledge, skills, and competences development.

"If a given [formal] education system is not presential most

of the time - non-contiguous communication - we may say that it has non-formal education features. Likewise, non-formal education characteristics are found when the adopted strategy does not require student attendance, decreasing the contacts between teacher and student and most activities take place outside the institution - as for instance, home reading and paperwork" [15]. "Non-formal learning is perceived as being the opposite of the „formal” educational system, seen as institutionalized training, which represents compulsory education, variable as time period from one school system to another and that ends with a specific certification of acquired skills" [16]. Characteristic of non-formal education could be defined as [15]:

- 1) Flexibility in curricula and methodology
- 2) Adaptation to the needs and interests of students
- 3) Time dependence on the student's speed of work.

Challenges of training implementation have connection with the preparation phase. This phase is time consuming i.e. training should be designed and developed based on the certain learning needs [17] as well evaluation of the training afterwards [18]. Responsible for training process employees/specialists should collect information on learning needs, think on training organization process, evaluating training opportunities. Some training possible to organize inside the organization using internal resources, however, not all competences advancement is possible on the working place. When the organizations cannot provide training opportunities using its single resource, most probably they need to outsource training [14].

Training outsourcing sometimes can be costly for organizations, "it requires an additional work from the internal specialists that evaluate performance of employees and define learning needs, develop education/ training program" [14].

To identify the attitude to the HR training of Latvian PA organizations, in August 9 - September 2, 2014, we questioned five organizations from the population (Latvian ministries' subordinate PA organizations). The surveys limitation are the voluntary bases of the application for the survey i.e. convenient sample. The proposition for the participation in the survey sent to all organizations from the population via e-mail [14].

The survey carried out showed that majority of the observed PA organizations provide education for new employees. All organizations offer internal and/or external seminars/ workshops/ training for their employees. We considered that all of them are interested and involved into the training outsourcing despite additional costs that may appear as the training brings additional value to the organization in form of improved its employees' performance.

Organizations also highlight that there is the Latvian School of Public Administration (LSPA) that provides different kind of courses for PA employees; however, these courses quality is discussable, however they are not free of charge.

Comparing the topics that the respondents marked as actual for their employees training and major groups of topics that provide different types of educational organizations (private training organization, formal education institution, e-learning

private organization, public education institution); we concluded that all demanded trainings are also supplied (Table I).

Both an appropriate training choice and HR training costs minimization are topical challenges for the organizations. The observed case is not an exception. One more challenge is to investment allocation to the certain employees' professional development. Organizations need to realize whom to offer the training opportunity and whom is beneficial to replace.

TABLE I
SUPPLY AND DEMAND COMPARISON OF PA TRAINING TOPICS IN LATVIA [14]

No.	Major group of topics provided by the observed training delivery organizations	Actual training topics for the observed PA organizations
1	Management/ Administration/ Organisation	Human resource management Quality management Risk management Taxation
2	Finance and Economics	-
3	Marketing	-
4	Languages	English language
5	Computer studies/ Information Technologies	Computer studies
6	Accounting	Accounting
7	Ethics	-
8	Communication and Public Relations	Communication in customer service Public speaking Customer service
9	HR	Human resource management Recruitment
10	Law	Law (changes in legislation)
11	Other	Field topics Exchange of experience

IV. RATIONAL HR SELECTION POSSIBILITY

There are various rational approaches for HR selection fulfilment. These can be decision trees, certain test results, etc. We propose to use competence-based approach selecting HR i.e.:

- 1) A job description should be developed and adjusted
- 2) A list of needed competences and their levels should be defined based on the job description
- 3) A list of testing methods should be defined to assess each competence required
- 4) An assessment of the competences should be fulfilled
- 5) A decision based on the test results should be make.

For the last decision-making process, we propose to use AHP [19], [20]. At the step 2), selection criteria are defined. Alternatives (applied for the position candidates) will be evaluated by these criteria based on pair-wise comparisons [21]. However, before at the second step responsible for the selection employees need to be the experts or involve experts to define the relative importance of each competence (criterion). This process is called the eigenvector calculation [22]. For importance evaluation, "Saaty created nine-point scale is used. 1 in this scale means-equal, 3-moderate, 5-strong, 7-very strong, 9-extreme level, 2, 4, 6, and 8 - the intermediate values" [22], [3].

Next, "the decision matrix of judgments of the main aspects with respect to the objective is calculated. Then decision

matrixes of judgments of the criteria [each competence] with respect to each aspect/criteria are calculated" [23].

"Comparing alternatives with AHP there is an assumption that criteria A is absolutely more important than criteria B and is rated at 9, then B must be absolutely less important than A and is graded as 1/9" [21]-[23].

"In order to obtain the numerical values of ratings, a comparison matrix between the rating intensity levels was built. Through this matrix, the relative importance among levels of intensity was found, calculating the self-vector that represents the "performance" for each intensity level" [24], [23].

To calculate the Consistency Ratio (CR), (1) is applied [20], [21]:

$$CR = \frac{(\lambda_{\max} x - n)}{(n - 1) * RI} \quad (1)$$

RI is the Random [Consistency] index, which is taken from Saaty's table "The Reference Values of RI for Different Values of n"; n is the number of alternatives (candidates); $\lambda_{\max} x$ is a result of the Selected Criteria (competences) Pair-wise Comparison Matrix (λ_{\max}) and Eigenvector (row averages, x) multiplication [20], [21], [23].

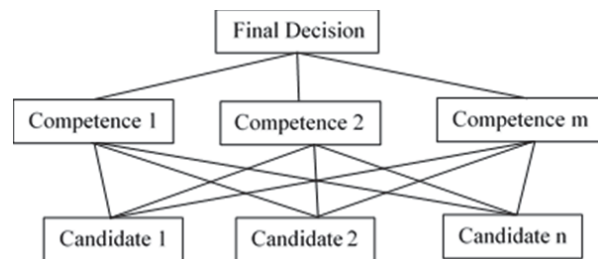


Fig. 1 Hierarchy for a three-level Multi-Criteria Decision-Making problem for competence-based selection [25]

The final step is each normalized alternative score multiplication by the corresponding normalized criteria weight. Afterwards the results for all of the alternative criteria are summed up. The candidates, who has the highest weight by each competence, can be selected as the best one from the pool of applicants [23] (Fig. 1).

One more important step to highlight is the step 3). The tests should be adapted to the candidates' peculiarities, take into consideration possible emotional condition that the tested candidate might have. Test, criterion, and content validity should take place [26]. The tests validity and reliability of the results should be checked before use the results as a resource of decision.

J. Varajãoab and M. M. Cruz-Cunhac [27] also propose to use a gerund of the ICB and AHP approach selecting project managers [10]. The AHP and competence based approach are two tool that can make HR selection more rational and structured as well as more clear from the perspective of further new HR management. They could help to identify the competence potential of new employee and lack of knowledge

in the certain area or the certain level of skills important for the performance and simplify the training plan development for that employee.

V. RATIONAL POSSIBILITY OF HR TRAINING SELECTION

Our previous researches [14], [17] made us conclude that there is a need to have tools that could help managers to make rational decisions on training selection and resource allocation to employees training. When the organization can allocate the limited amount of money for their employees, training costs optimization process can take place. After the "problem identification, [...] the last step is planning for solving those problems based on possibility, existing resource, and responsibility of the group, reality, and real timing" [28].

The main challenge of the organizations could be decision-making on training to the employees. Which training to choose to be the most useful for the employees and the less expensive for the organization. It is an optimization challenge. This kind of challenge could be solved using e.g. linear programming [29]. The competence-based approach is more than helpful considering about training. It provides rational ground for the decision. If there is a lack of HR competence, an organization can set the exact minimal need of the certain competence or a list of competences that should be developed.

We propose to develop an approach that should be individual for each organization and each individual's case. We describe the core positions of the possible approach. Assuming that a number of the various competences that can be developed by each training is known as well as costs per each training. The organization could need to choose the certain type (by education approach and content) of training and a number of the certain training units (or hours of training, it depends on the peculiarities of the composition and content of the training), so each competence in the certain amount could ensure the general competence of the organization's HR. The costs of the training should be minimized (4). The optimal training course/program (x_1, x_2, \dots, x_n) will be a plan, which needs to satisfy two mainly possible limitations:

$$\begin{aligned} x_j &\geq 0 \\ (x_1 \geq 0, x_2 \geq 0, \dots, x_n \geq 0), \end{aligned} \quad (2)$$

where x_j is a number of the training hours/units of training type j that is included into the training course/program that can be defined (variable) and $j=1, 2, \dots, n$. Limitation (2) means that a number of the training hours/units cannot be negative.

$$\sum_{j=1}^n a_{ij} x_j \geq b_i \quad (i=1, 2, \dots, m), \quad (3)$$

where: n - a number of different types of training ($j=1, 2, \dots, n$); m - a number of the different competences ($i=1, 2, \dots, m$); a_{ij} - a proportional unit of a competence i that the learner can develop through the training hour/unit of the training type j ; b_i - the minimum of the competence i required/needed by HR ($i=1, 2, \dots, m$).

The limitation (3) represents the total number of the competence i that could be obtained from the certain training course/program that should not be less than set b_i (the minimum of the competence i required/needed by HR that can be defined by the results of the certain HR testing/assessment e.g. selection tests or performance assessment integrated tests). Each training can develop the certain aspect of the certain competence.

The goal of the organization could be the optimal training course/program costs minimization:

$$\sum_{j=1}^n c_j x_j \rightarrow \min, \quad (4)$$

where c_j is a price of a training hour/unit of the training type j ($j=1, 2, \dots, n$).

There are several possibilities of costs optimization. We proposed one of them that is the linear programming as one of the commonly used in optimization [29]. The main concerns here would be definition of all training goals and methods of evaluation of competences before training and after them. Additionally, we can highlight that this rational possibility of HR training selection can be applied in both cases after the performance assessment of HR and after selecting the new HR that suits the organization and position the most, but have to improve one or more competences.

VI. CONCLUSION

Literature on HR selection and training consideration for HR provides description of various methods that not always focuses on their rationality. Competence-based approach itself is quite rational; however, it needs to be applied appropriately with a set of other rational tools to give a truly rational outcome.

The aim of our research was a proposition of some rational decision-making approaches for organization's HR selection and consideration of training for HR. Firstly, we described the essence of competence-based approach and defined its suitability for rational decision making on HR selection and training. Secondly, we proposed possible rational HR and HR training selection approaches.

Competence-based approach can be helpful for several HR activities implementation, because it is rational one. It is possible to have rational approach (e.g. valid and reliable testing) to assess the level of the person's competences. Based on this assessment and the set goals, it is possible to make rational decision of the assortment or further steps of the HRM activity.

The competence-based HR selection is a rational approach that presumes adjustment work by HR selectors. They need to work on each vacant position, think on each competence and its level needed to fulfill the job tasks. The competence-based HR selection is a time-consuming process that requires a lot of preparation work. Applying the competence-based selection process, the AHP can be used to make rational decision on the candidates' selection. AHP requires also additional work from

the experts' side that could be direct managers (of a person, who will work on the vacant position) and HR specialists of the organization. They need to define the level of each competence importance and select the appropriate competence level assessment methods.

In case of HR training consideration, the competence-based approach is helpful, because it also provides rational ground for the organization's decision. If there is a lack of HR competence, an organization can set the exact minimal need of the certain competence or a list of competences that should be developed and define some other limitations. In many cases, the HR training challenge can be limited resources. There are various HR professional development opportunities internal and external. Some of them are financed from some public or private funds, some are free of charge, and some are paid ones. Therefore, the organization need to leverage their needs and resources considering on HR training.

Considering on HR training organizations also need to be involved into the employees' professional development planning and learning needs identification before making any decision. The next step could be exploration of the training possibilities evaluating them by time and resources framework, as well as topicality of the themes offered. Training programs need to focus on organizations requirements to the HR competences, as it should help to develop certain competences. In addition, organizations need to choose what kind of training by the design and content is the most suitable for the HR to develop the certain competence. PA organizations in Latvia can outsource training on management/administration/ organization, finance and economics, marketing, various languages, computer studies/IT, accounting, ethics, communication and PR, HR, law and many other topics. Training could be online, face-to-face, as courses, and professional development programs, seminars, and workshops. Most probably, these serious approach to the decision making is most suitable for larger companies that have the employee(s) that will deal with this process and have possibilities and willingness to train their HR.

Various approaches can be applied to help organizations make rational decision considering on training for their HR (e.g. decision trees etc.). We proposed to use linear programming, if the main concern is connected to the organization's limited resources that can be allocated to the HR training.

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