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### **T. SAATY'S METHOD IN LEADERS' PROFESSIONAL COMPETENCE DESIGN**

*The article deals with substantiation of the component structure of the professional competence of heads of sales and customer service departments in communications companies and definition of vectors of weight coefficients of components of professional competence for design and prioritizing of pedagogical influence on the investigated category of managers. The article presents the results of the study of the component structure of the professional competence of leaders (on the example of heads of sales and customer service departments in communications companies). Using the methods of theoretical analysis, expert evaluation (the method of critical incidents, the method of SERVQUAL, foresight), a component structure of professional competence was revealed which includes motivational-value, intellectual-cognitive (professional, psychological, andragogical, organizational and managerial knowledge), operational-activity (professional, communicative, andragogical, organizational and managerial skills) and personal components.*

*T.Saaty's method was used to identify the weight factors of the components of professional competence, which made it possible to find out the most meaningful components of professional competence in order to design and prioritize the pedagogical influence on this category of leaders. As it was revealed using the T.Saaty's method the most significant components of the professional competence of heads of sales and customer service departments in communications companies are: intellectual cognitive and operational-activity. Instead, motivational-value and personal component have considerably lower weight coefficients. Therefore,*

*designing content of training, we highlight aspects that will primarily contribute to the development of professional, organizational, managerial and andragogical skills; professional, organizational, managerial and andragogical knowledge as a cognitive basis for skills development. Motivational-value and personal components will be influenced by integrating into the basic training courses of specific assignments, cases, exercises, which will nourish the values necessary for the fulfillment of functional duties and professionally important personal qualities.*

**Key words:** *professional competence, head of sales and customer service department, communication company, competency model, system of development of professional competence, intra firm training.*

**Introduction.** An analysis of the systems of intra firm training allows us to assert that there is often an unwarranted, non-systematic, non-holistic impact on staff in order to develop its professional competence. It leads to suboptimal use of company's resources, the impairment of the idea of continuing professional development, lower performance and low motivation of staff. We believe that scientifically based pedagogical influence on heads of sales and customer service departments in communications companies should be reflected in the conceptualization of the system of development of their professional competence, in particular, in clarification of methodological approaches, principles and pedagogical conditions, and also design of the target, content, pedagogical technologies and assessment components of such a system. Therefore, the actual task is to identify the component structure of the professional competence of the investigated category of managers, as well as to determine the vectors of weight coefficients of the components of professional competence in order to design and prioritize the pedagogical influence.

The development of professional competence of heads of departments in telecommunication companies has become a subject of sufficiently wide scientific interest in domestic and foreign research. In particular, R.Bat, F. Bauman, E.Varun, J.Volsha, M.Dasanayake, V.Jiamna, S.Iruma, N.Kravchuk, N.Makovskaya,

A.Manuta, R.Meynerta, N. Mekhmood, Dzh.Mueller, B.Patil, N.Sousseng, A.Sultani, V.Trokhin, J.Hondy-Okitsu, G.Hori dealt with this topic.

The main objectives of the article is substantiation of the component structure of the professional competence of heads of sales and customer service departments in communications companies and definition of vectors of weight coefficients of components of professional competence for design and prioritizing of pedagogical influence on the investigated category of managers.

**Methodology.** Theoretical analysis (analysis of scientific literature and functional analysis), method of expert evaluation (the method of critical incidents, the method of SERVQUAL, foresight), method of pairwise comparisons, determination of vector of weight coefficients by T. Saaty method.

**Discussion.** To substantiate the content component of the development of professional competence of the heads of sales and customer service departments in communications companies, it is necessary to find out the component structure of the professional competence of the investigated category of managers.

The analysis of scientific literature [1, 2, 4, 6-9] allowed to distinguish two main approaches to the allocation of components of professional competence:

1. Based on the functional criterion (decomposition of the manager's functional responsibilities to separate business processes; the identification of behavioral manifestations, abilities, personal qualities, level of readiness that are necessary for the effective performance of functional responsibilities in separate business processes). For example, based on this approach the component structure of professional competency was created by the International Telecommunication Institute [8], which included the components of "analysis, study and evaluation", "implementation", "interpersonal relations", "management".

2. Based on the structural criterion (cognitive component - specific professional knowledge; operational component - professional skills; motivational component - personal motivation to perform functional duties and professional development; value component - professional settings; values); personal component

- professionally meaningful personal qualities which are necessary for the effective performance of professional duties).

Taking into account the traditions of the national scientific school of professional pedagogy, the specificity of the context of the professional activity of the investigated category of managers (with the need for constant operational capture of large amounts of information, ensuring the effectiveness of the development of professional competence, the implementation of customer oriented behavior and attitude towards clients, the need for multiplication of knowledge and experience to the staff of the subordinated structural unit), the hypothesis of our study (in particular, the assumption that use specific pedagogical technologies and their combinations significantly improve the efficiency of professional competence), we are inclined to highlight components of professional competence based on structural criteria.

We distinguish the following components of the professional competence of the heads of sales and customer service departments in communications companies: *motivational-value* (which includes key values, settings and attitude to professional activity and its objects as a basis that determines the motivation to result oriented professional activity and the ability to continuous professional development), *intellectual-cognitive* (as a know-how basis for effective professional activity, multiplication of knowledge within the subordinate structural subdivision, the ability to cognize, understand and solve professional problems, the continuation of thought activity outside the task assigned to it and the solved problem as the basis of proactive creative decisions), *operational-activity* (as a set of skills necessary for the practical solution of tasks oriented to the result based professional activity), *personal* (as a set of professionally meaningful personal qualities that contribute to professional-oriented results, professional self-realization, awareness of the importance of professional activity through the prism of personal goals).

To reveal the internal structure of professional competence of the investigated category of managers, we have created a model of competencies - a set of competences that meet the requirements of the employee in a particular position and

are necessary for the qualitative performance of his functional duties. To do this, we used the author's technique, the essence of which is the consistent implementation of theoretical analysis (the analysis of scientific literature and functional analysis), the method of expert evaluation (in particular, the method of critical incidents, the method of SERVQUAL, foresight), which made it possible to generate a wide range of individual competencies of the investigated category of managers. To streamline and structure the results we used the method of focal objects [5, p.69-87], which made it possible to isolate within the proposed components of competence (intellectual-cognitive, operational-activity) subsets of competencies (Table 1).

Table 1.

**Components of professional competence of heads of sales and customer service departments in communications companies**

№	Name of the component	Subset of competencies
1.	Motivational-value	
2.	Intellectual-cognitive	Professional knowledge
		Psychological knowledge
		Andragogical knowledge
		Organizational and managerial knowledge
3.	Operational-activity	Professional skills
		Communicative skills
		Organizational and managerial skills
		Andragogical skills
4.	Personal (professionally meaningful qualities)	

To determine the direction of pedagogical influence on the category of managers we examined, we have done work on determining the weight coefficients of certain components of their professional competence. To do this, we used the method of pairwise comparisons [3], which allows to synthesize a large amount of

expert opinions, and the statistical processing of the results allows us to obtain vectors of weight coefficients of the investigated phenomenon (in our case, the components of professional competence). The value of this method for our study is the possibility of formalizing the opinions of experts, as well as the transfer of their judgments into quantitative indicators, the subsequent statistical processing of which will allow us to obtain weight coefficients of components of professional competence.

The method of pairwise comparisons by its very nature is the establishment of the advantages of factors (objects) when comparing all possible pairs. When comparing  $n$  different factors, the expert should indicate  $n \cdot (n-1) / 2$  grades. As a result, a square matrix of  $n$ th order is formed. In general, this matrix has this form

$$B = \begin{pmatrix} 1 & b_{12} & \dots & b_{1n} \\ b_{21} & 1 & \dots & b_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{n1} & b_{n2} & \dots & 1 \end{pmatrix},$$

where the elements of matrix  $B$  in our case are determined by the following rule:

$$b_{ij} = \begin{cases} 0, & \text{If component } j \text{ predominates component } i; \\ 1, & \text{If components } i \text{ and } j \text{ are equally important;} \\ 2, & \text{If component } i \text{ predominates component } j. \end{cases} \quad (1)$$

The expert must establish either the ratio of equivalence or the ratio of strict order between the two proposed objects (components of competence).

The experts were presented eleven, identified in the preliminary stage of the study, components of competence - professional knowledge; psychological knowledge; andragogical knowledge; organizational and managerial knowledge; professional skills; communicative skills; organizational and managerial skills; andragogical skills; values, settings, attitudes; motivation; personal qualities and suggested comparing these components using rule (1). As a result of the work of

experts, we received 19 questionnaires, which contained square matrices of the order of 11.

Experts' assessments were assembled into separate eleven tables, each of which outlined the opinions of each of the nineteen experts on the relationship between the object (component of competence) and the other ten. As agreed with the experts, the comparison was made for the object, which is in the left column, in relation to the object from the upper line. Thus, we obtained a matrix of pairwise comparisons for components of professional competence.

According to the results of the questionnaire analysis we obtained an average weighted estimate of the advantages of each of the eleven components of professional competence over others. The average estimate were consistent with the scale of the relative importance of the objects according to the following rules: the interval corresponding to the importance of "1" - the same significance - should be symmetric relative to 1 (or number 1 should be the middle of this interval); the number of intervals equals the largest number of degrees of importance - 9; the maximum value of the weighted average should be in the second half of the last, the ninth interval and is given in Table 2.

Table 2.

**Scale of the relative importance of the objects of comparison**

Level of importance	1	2	3	4	5	6	7	8	9
Medium range interval	0,955– 1,045	1,045– 1,135	1,135– 1,225	1,225– 1,315	1,315– 1,405	1,405– 1,500	1,500– 1,590	1,590– 1,680	1,680– 1, 770

Source: created by the author.

Thus, we have formed a matrix of pairwise comparisons, which corresponds to the scale of the relative importance of objects.

The calculation of the vector of weight coefficients of components of professional competence was carried out according to the following algorithm. We consider the components  $K_1, K_2, \dots, K_n$ . By  $a_{ij}$  we denote the number that according to the scale of the relative importance of the objects determines the significance of the component  $K_i$  in comparison with component  $K_j$ . Thus we get a square matrix of eleventh order. In our case, this is a square matrix  $A = (a_{ij})$  of eleventh order. For elements of the matrix  $A$ , we calculate the relative value of each combination:

$$W_i = \frac{\sqrt[n]{a_{i1} \cdot a_{i2} \cdot \dots \cdot a_{in}}}{\sum_{i=1}^n \sqrt[n]{a_{i1} \cdot a_{i2} \cdot \dots \cdot a_{in}}}$$

$i = \overline{1, n}$  — index.

Thus, we obtained a vector of weight coefficients. The calculated vector of relative values gives the opportunity to determine the weight coefficients of the components of professional competence and helps to set priorities of pedagogical influence.

In carrying out the evaluation of the vector of relative values (weight vector), there is a need to determine the degree of consistency of expert opinion. In accordance with the algorithm described in [3], the following mathematical calculations are performed:

1) the original matrix of pairwise comparisons is multiplied to a vector of geometric mean;

2) the resulting vector is subdivided into corresponding values of the weight vector  $w$ ;

3) it calculates the maximum value of the  $\phi$ ctual number of matrix using the formula  $\lambda_{max} = \frac{\sum_{i=1}^n \lambda_i}{n}$ ;

4) the degree of consistency (the Saaty Coordination Index) is calculated.

Expert opinions are considered to be consistent if the calculated Saaty Coordination Index does not exceed 10% of the reference. For our study, using the formulas above, the following results were obtained:  $\lambda_{max} = 12,46367$ ,  $J =$



0,14637. In our case, the reference value is 1.51. It follows that the degree of consistency (the Saaty Coordination Index) is 9.69% of the benchmark. The level of consistency is acceptable.

The vector of weight coefficients of components of professional competence is given in Table 3.

Table 3.

**Vector of weight coefficients of components of professional competence of heads of sales and customer service departments in communications companies**

Number of component	Name of the component of professional competency	Weight coefficient
1	Professional knowledge	0,054970942
2	Psychological knowledge	0,027855008
3	Andragogical knowledge	0,092306516
4	Organizational and managerial knowledge	0,078780301
5	Professional skills	0,140040261
6	Communicative skills	0,02993107
7	Organizational and managerial skills	0,205377686
8	Andragogical skills	0,312596548
9	Values, attitude	0,016924679
10	Motivation	0,024655908
11	Personal qualities	0,016561081

**Conclusions.** As it was revealed using the T.Saaty's method the most significant components of the professional competence of heads of sales and customer service departments in communications companies are: intellectual cognitive (weight coefficient 0,25) and operational-activity (weight coefficient 0,69). Instead, motivational-value and personal component have considerably lower weight coefficients (0.04 and 0.02 respectively). Therefore, designing content of

training, we highlight aspects that will primarily contribute to the development of professional, organizational, managerial and androgical skills; professional, organizational, managerial and andragogical knowledge as a cognitive basis for skills development. Motivational-value and personal components will be influenced by integrating into the basic training courses of specific assignments, cases, exercises, which will nourish the values necessary for the fulfillment of functional duties and professionally important personal qualities. Promising is the experimental verification of the effectiveness of pedagogical influences on the investigated category of managers based on revealed component structure of their professional competency.

## REFERENCES

1. Koval', L.V. (2010). Sy`stema profesijnoyi pidgotovky` majbutnix uchy`teliv pochatkovoyi shkoly` do zastosuvannya zagal`nonavchal`ny`x texnologij: dy`s...d-ra ped.nauk: specz.13.00.04 «Teoriya i metody`ka profesijnoyi osvity`» [*The system of professional training of future primary school teachers for the use of general education technologies: Doctoral Thesis*]. – Berdyansk, 538 p. [*in Ukrainian*].
2. Markova, A. K. (1996). Psihologija professionalizma : [tekst] [*Psychology of professionalism: Text*]. – Moscow, 256 p. [*in Russian*].
3. Saati, T. L. Prinjatje reshenij. Metod analiza ierarhij / Per. s angl. R.G. Vachnadze: [Elektronnij resurs] [ *Decision Making. Method of analysis of hierarchies*]. – Rezhim dostupu: [http://bsuir-helper.ru/sites/default/files/2011/03/11/met/Tomas\\_Saati\\_-\\_Prinyatie\\_Resheii.\\_Metody\\_analiza\\_ierarhii.1993.pdf](http://bsuir-helper.ru/sites/default/files/2011/03/11/met/Tomas_Saati_-_Prinyatie_Resheii._Metody_analiza_ierarhii.1993.pdf)
4. Sayuk, V.I. (2012). Profesijna kompetentnist` – osnova rozvy`tku suchasnogo vy`kladacha sy`stemy` pislyady`plomnoyi pedagogichnoyi osvity` [*Professional competence as the basis of the development of a modern teacher of postgraduate pedagogical education system*]. Nova pedagogichna dumka. #3 (71), – pp.68-73.
5. Petrenko, L.M. (2013). Teoriya i metody`ka rozvy`tku informacijno-anality`chnoyi kompetentnosti kerivny`kiv profesijno-texnichny`x navchal`ny`x zakladiv: monografiya [*Theory and methods of development of information and analytical competence of heads of vocational schools: monograph* ]. – Dnipropetrovsk, 456 p.

6. Bartman, D. (2012). The SHL Universal Competency Framework. White Paper. – CEB, 11 p.
7. Grobbelaar, R., Roodt, G., Venter, A. (2004). Critical Competencies to Promote a Customer Service Core Capability in a Human Resources Call Centre. – SA Journal of Human Resource Management, pp.16-24.
8. Sectoral Dictionary of Competencies. Telecommunications (2012). – International Institute of Telecommunications, Montreal, Quebec, 72 p.
9. UN Competency Development – a Practical Guide (2010). – UN Office for Human Resources Management, 194 p.