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T. SAATY'S METHOD IN DIRECTORS' 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 telecommunications companies and definition of vectors of weight coefficients of professional competence components for designing and prioritizing pedagogical influence on the investigated category of managers. 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 and value, intellectual and cognitive (professional, psychological, andragogical, organizational and managerial knowledge), operational (professional, communicative, andragogical, organizational and managerial skills) and personal components. T. Saaty's method was used to identify the weight factors of professional competence components, which made it possible to find out the following most significant professional competence components of heads of sales and customer service departments in telecommunications companies: intellectual-cognitive and operational.

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

Introduction

The analysis of internal training systems makes it possible to assert that there is often groundless, non-systematic, discrete impact on staff aimed at the professional competence development. It leads to suboptimal use of company's resources, the impairment of the idea of continuous professional development, decrease of the performance and motivation of staff. We believe that scientifically substantiated pedagogical influence on heads of sales and customer service departments in telecommunication companies should be reflected in the conceptualization of the system of their professional competence development, 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 relevant 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 professional competence components 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 researches. 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 issue.

The paper aims to substantiate the component structure of the professional competence of heads of sales and customer service departments in telecommunication

companies and define vectors of weight coefficients of professional competence components for designing and prioritizing pedagogical influence on the investigated category of managers.

Research Methods

Theoretical analysis (analysis of scientific literature and functional analysis), expert evaluation method (the method of critical incidents, the method of SERVQUAL, foresight), method of pairwise comparison, determination of vector of weight coefficients (T. Saaty's method).

Discussion

In order to substantiate the essence of the professional competence development of the heads of sales and customer service departments in telecommunication companies, it is necessary to find out its component structure.

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

1. Based on the functional criterion (decomposition of the manager's functional responsibilities to different business processes; the identification of behavioral manifestations, abilities, personal qualities, level of readiness that are necessary for the effective performance of functional responsibilities in certain 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 which involves specific professional knowledge; operational component – professional skills; motivational component – personal motivation for functional duties fulfillment and professional development; value compo-

ment – professional values); personal component – professionally significant personal qualities 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-centered 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 (which implies that the use of specific pedagogical technologies and their combination will significantly improve the development of professional competence), it is necessary to highlight the professional competence components based on structural criteria.

We distinguish the following professional competence components of heads of sales and customer service departments in telecommunication companies: *motivational and value* (which includes key values and attitude to work and its objects as a basis that determines the motivation focused on the result of work and the ability for continuous professional development), *intellectual and cognitive* (as a knowledge basis for effective professional activity, multiplication of knowledge within the subordinate structural subdivision, the ability to cognize, understand and address professional challenges, the continua-

tion of thinking outside the task assigned to it and the solved problem as the basis of proactive creative decisions), *operational* (as a set of skills necessary for the practical solution of tasks of professional activity focused on the result), *personal* (as a set of professionally significant personal qualities that contribute to occupation-related results, professional self-realization, awareness of the importance of professional activity through the prism of personal goals).

In order to reveal the essence of the professional competence components of the investigated category of managers, we have created a model (a set) of competencies, which meet the requirements to the employee in a particular position and are necessary for the efficient performance of his/her functional duties. 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 Critical Incident Technique, the method of SERVQUAL, foresight), which made it possible to generate a wide range of individual competencies of the investigated category of managers. In order to organize and structure the results we used the method of focal objects [5, p.69-87], which made it possible to distinguish the subsets of competencies within the proposed components of professional competence (intellectual and cognitive, operational) (Table 1).

Table 1.

Professional Competence Components of Heads of Sales and Customer Service Departments in Telecommunication Companies

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

In order to determine the direction of pedagogical influence on the examined category of managers we determined the weight coefficients of certain components of their professional competence using the pairwise comparisons method [3], which makes it possible to synthesize a great number of experts’ opinions, and the statistical processing of the results helps to obtain vectors of weight coefficients of the investigated phenomenon (in our case, the components of professional competence). The significance 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 subse-

quent statistical processing of which will make it possible to obtain weight coefficients of the professional competence components.

The method of pairwise comparisons itself is the determination 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 appears as follows:

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

where the elements of B matrix in our case are determined according to the following rule:

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

The experts had to 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) competence components (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 to compare them using rule (1). As a result,

we received 19 questionnaires, which contained square matrix of order 11.

Experts' assessments were assembled into 11 tables, each of which outlined the opinions of every 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 professional competence components.

According to the results of the questionnaire analysis we obtained an average weighted score of the advantages of each of 11 professional competence components over others. The weighted average score were matched to 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 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 professional competence components 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 K_i component in comparison with the K_j component. 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:

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

$i = 1, n$ — 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 professional competence components 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 experts' opinions. 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) the maximum value of the actual number of matrix is calculated using the formula $\lambda_{max} = \frac{\sum_{i=1}^n \lambda_i}{n}$;;
- 4) the degree of consistency (the Consistency Index by Saaty) is calculated.

Experts' opinions are considered to be consistent if the calculated Consistency Index does not exceed 10% of the reference one. For our study, using the formulas above, the following results have been obtained: $\lambda_{max} = 12,46367$, $J = 0,14637$. In our case, the reference value is 1.51. It follows that the degree of consistency 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 Professional Competence Components of Heads of Sales and Customer Service Departments in Telecommunication 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 has been revealed using the T. Saaty's method, the most significant professional competence components of heads of sales and customer service departments in telecommunications companies are as follows: intellectual and cognitive (weight coefficient = 0,25) and operational (weight coefficient = 0,69). Instead, motivational and 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 andra-

gogical knowledge as a cognitive basis for skills development. Motivational and value, as well as personal components will be affected by integrating specific assignments, cases, exercises into the basic training courses, which will foster the values and professionally important personal qualities necessary for the functional duties fulfillment. The experimental verification of the effectiveness of pedagogical influences on the investigated category of managers based on revealed component structure of their professional competency is considered to be promising and thus will be covered in our further research studies.

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МЕТОД Т.СААТІ В МОДЕЛЮВАННІ ПРОФЕСІЙНОЇ КОМПЕТЕНТНОСТІ КЕРІВНИКІВ

У статті представлено результати дослідження компонентної структури професійної компетентності керівників (на прикладі керівників структурних підрозділів з продажу послуг та обслуговування споживачів підприємств сфери зв'язку). Обґрунтовано підходи до моделювання професійної компетентності – на основі функціонального (декомпозиція функціональних обов'язків керівника на окремі бізнес-процеси; виявлення поведінських проявів, здатностей, особистісних якостей, рівня готовності, які є необхідними для ефективного виконання функціональних обов'язків за окремими бізнес-процесами) та структурного критеріїв (когнітивний компонент – специфічні професійні знання; діяльнісний компонент – професійні уміння та навички; мотиваційний компонент – мотивація особистості до виконання функціональних обов'язків та професійного розвитку; ціннісний компонент – професійні установки, цінності); особистісний компонент – професійно важливі особистісні якості, необхідні для ефективного здійснення професійних обов'язків). З використанням методів теоретичного аналізу, експертних оцінок (методу критичних інцидентів, методики SERVQUAL, форсайту) було виявлено компонентну структуру професійної компетентності, яка включає мотиваційно-ціннісний, інтелектуально-когнітивний (професійні, психологічні, андрагогічні, організаційно-управлінські знання), операційно-діяльнісний (професійні, комунікативні, андрагогічні, організаційно-управлінські уміння) та особистісний компоненти. Для здійснення узагальнення й синтезу думок експертів та статистичної обробки отриманих результатів було використано метод попарних порівнянь, який дав змогу отримати вектори вагових коефіцієнтів компонентів професійної компетентності. Для виявлення вагових коефіцієнтів компонентів професійної компетентності було використано метод Т. Сааті, що дало змогу з'ясувати найбільш значущі компоненти професійної компетентності з метою моделювання та пріоритетизації педагогічного впливу на досліджувану категорію керівників: інтелектуально-когнітивний та операційно-діяльнісний, натомість, мотиваційно-ціннісний та особистісний мають значно нижчі вагові коефіцієнти. Запропоновано підходи до виділення у змісті навчання аспектів, які сприятимуть розвитку професійних, організаційно-управлінських та андрагогічних умінь та професійних, організаційно-управлінських та андрагогічних знань як знанневої основи формування умінь. Педагогічний вплив з метою розвитку мотиваційно-ціннісного та особистісного компонентів доцільно здійснювати шляхом інтегрування в основні курси специфічних завдань, кейсів, вправ, які мають на меті розвиток необхідних для виконання функціональних обов'язків цінностей та професійно важливих особистісних якостей.

Ключові слова: професійна компетентність, керівник структурного підрозділу, підприємство сфери зв'язку, модель компетенцій, система розвитку професійної компетентності, внутрішньофірмове навчання персоналу.

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