

Model of developing advanced competences among in-demand specialists of a new type at PDA enterprises

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Abstract— The article analyses the scientific and pedagogical works of Russian and foreign scientists on the subject of various models and modelling methods. The authors analysed the details of specialists with new types of competencies demanded by PDA (priority development area) enterprises, undertook a functional analyse of staff work, questioning and interviewing, determined the list of their functions ensuring effective activities performance of the list of personnel competencies demanded by PDA (using the example of Siberian Investment Group LLC) and necessary to perform official functions. The article presents the author's scheme for the functional analysis of PDA staff activities taking into account the requirements for staff professionalism, the model scheme of competency of in-demanded staff at PDA. The authors created an image of an "ideal" specialist based on the involved experts' work results, who determined the list of necessary competencies for the in-demand specialist of a new type using the example of a particular enterprise.

Keywords - *competencies, model, specialists, PDA, competency-based approach, the competencies' formation, a new type specialist*

I. INTRODUCTION

In meeting the challenges in the pedagogical research, we determine a specialist competency-based model in the considered field of activity according to the specifics of the modelling method application.

As we know, modeling quite often is the basis for various scientific and experimental practices in building both theoretical and organizational-methodological factors for improving educational approaches and systems.

This method today is a learning tool in science, modeling is a method that studies individual, selected sides of the objects studied.

This is rather a method of studying than the object itself, but this model further analyses the modeling results (B.S. Gershunsky). By V.V. Krajewski definition Modeling is "the reproduction of the characteristics of some object on another object specially created for studying them" [1].

For an incomplete empirical picture of the investigated phenomenon or object, which is incomprehensible in details, modelling as a cognition method has particular importance. The main modelling advantages are the synthesis of knowledge about this object and the definition of the important for its study parties.

The essence of the modelling scientific method consists in forming analogies, the correspondence of one object to another from certain positions. On this base, a simple structural object is displayed in a more complex object, which allows, by analogy, to transfer data to the original from the model.

A model is a modelling tool and product, resulting in an intelligent process. Using it the researcher in the studying process receives the necessary information characterizing the main object.

In our study, we relied on the author's approaches to constructing specialist models and competencies in the theory of professional activity and work psychology (A.A. Derkach, E. A. Klimov, A. K. Markova, A. A. Verbitsky, N.V. Shestak and A.A. Dulzon) [2, 3, 423]. In our work, we also studied approaches in the field of model development [4].

The approaches are used for the educational practice of demanded by the PDA (priority development area) staff. Investigations are presented in the scholarly writings aimed at studying the staff professionalization problems: A.V. Novokreschenova, I.P. Marchenko, V.I. Gorb, T.D. Pshenichnikova, T.M. Mineeva, etc.

On March 30, 2015, Federal Law No. 473-FZ "On the territories of advanced socio-economic development in the Russian Federation" entered into force. According to the law, the territory of advanced socio-economic development is part of the territory of the Russian Federation, establishes a special legal regime of realisation of enterprise and other activity in order to create favourable conditions for attracting investment and achieving accelerated socio-economic development and create comfortable conditions for the viability of the population.

PDA is focused on the search of new entrepreneurs, development and support of already existing enterprises. Enterprises and society urgently need staff with a new type competence, entrepreneurial thinking, business activity for developing and supporting Russian small and medium-sized businesses that will help make our near future economically healthy, according to the means of organizing production, focused on domestic and export market and job creation.

II. MATERIALS AND METHODS (MODEL)

As a conceptual basis we propose the model of named staff group, the model of its professional education, the methodological basis for the training standards formation.

We note that for the staff demanded by the PDA, the content of the competency model is reflected in the FSES HE.

In the study according to the competency format:

- functional analysis of staff work was conducted, a list of their functions ensuring the effective activities' implementation was determined. Regulatory legal acts were analysed;
- surveys and interviews were conducted, the working day photograph was taken;
- the list of staff competencies demanded in PDA (by the example of Siberian Investment Group LLC) and necessary for the performance of official functions was determined. Questioning and interviewing were conducted, an expert method applied. Staff duties for solving tasks according to the labour regulations and official duties were considered.

The research result in the functional analysis of the staff work of Siberian Investment Group LLC consists in determining the main activities for the effective performance to address the tasks set by the company's management according to the labour charter and official duties. The formulation of these work types has become the basis for the list of competencies required by the staff of Siberian Investment Group LLC and PDA.

We present a scheme that reflects, in general, the conclusions determining the requirements for the staff professionalism that are currently in demand on PDA.

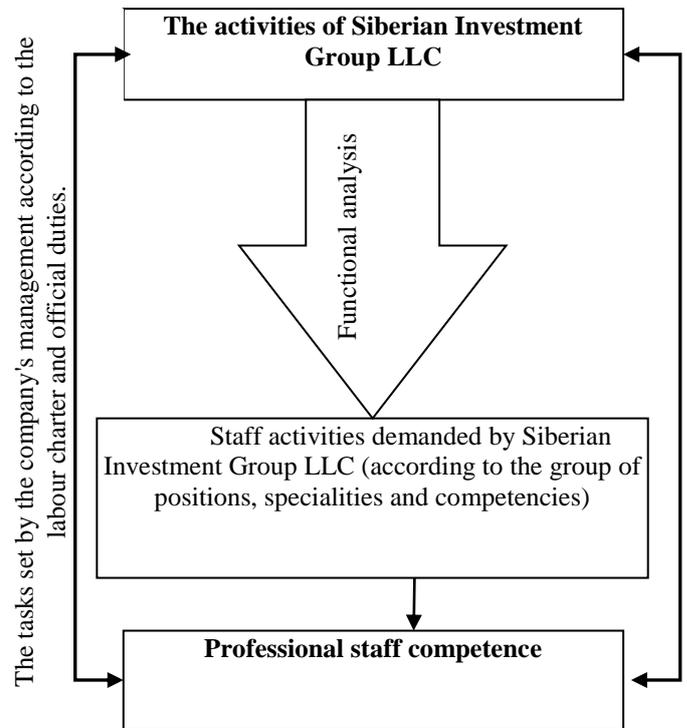


Fig. 1. Scheme of the functional analysis of PDA staff activities in the context of the requirements for the employees' professionalism of Siberian Investment Group LLC

From our point of view, scientific and methodological developments are necessary to build an accurate, complete Concept of the professionalism of modern staff demanded by the PDA, "in a competence format" (based on the competency model according to the FSES HE). Primarily, it is necessary to determine a complete list of the mentioned competencies, and secondly, to highlight the competencies most significant for the professional performance of an employee represented in any job family. We will call these competencies significant. Significant competencies allow most accurate determining the competence characteristics of modern staff demanded by the PDA, in contrast to already existing characteristics reflecting the competencies of the above-mentioned staff of various professional groups [5,6].

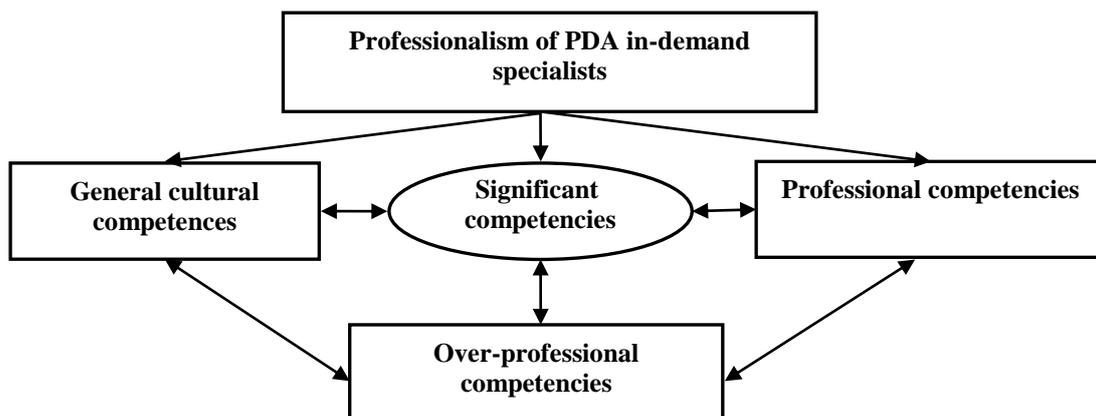


Fig. 2. Scheme of the competence model of staff demanded at PDA

We consider that the complex of “significant” competencies, confirming the uniqueness of the professional activity of PDA specific staff, should be used in conducting various personnel procedures that evaluate professionalism (for example, in conducting staff appraisals, at competitions for candidates for vacant positions, in selecting staff reserves). It is also necessary for the design of training programs offered to PDA staff [7].

A competency-based model of staff demanded PDA developed schematically (fig. 2), is presented. The presented scheme reflects the general structural logic of the professionalism of a PDA specialist. It reflects the individual elements of a specialist’s professionalism, which are defined as an integrated system [8,9]. For the formation of a list of significant employee competencies, we applied the method of pairwise comparisons according to L. Thurstone [10].

III. RESULTS AND DISCUSSION

The basis of our study is the pairwise comparison approach, which is performed by the following steps:

1. Definition of the goal of our research, that is, we create the image of an “ideal” specialist who is a tool for the development of PDA enterprises. Consequently, areas of improvement include the applicants’ identification for vacant positions; objectification of the results of staff certification demanded at PDA; increase the effectiveness of educational programs for the professional staff training; creating a staff reserve for the PDA, management its implementation.

2. Creation and structuring of a complex of competencies. We analyse the professional literature (according to the requirements of employers), the theory of principles of in-demand positions and specialities, the professional psychology and management theories, the organization and formation of legal documents.

3. The composition of expert groups The expert groups (a total of 283 people) included:

- heads of municipalities of the Yurga city and the Yurginsky district, consisting of 14 people, including the leadership of local governments (municipal districts, urban, rural settlements, the considered managers` seniority is at least three years);
- newly elected heads of municipalities, consisting of 8 people, including the leadership of local governments (municipalities, urban, rural settlements);
- employers of enterprises, consisting of 54 people, including managers and deputy heads of enterprises located in the territory of the Yurga city;
- representatives of the educational cluster of PDA, consisting of 27 people, including heads and deputy heads of universities, secondary vocational education. Teachers who are participants in educational programs for vocational training of employees in the municipal sphere (experience not

less than three years), also teachers - practitioners, PDA, a group of 24 people

- employees of the employment centre of Yurga, consisting of 7 people
- investors in PDA, consisting of 29 people, planning to open their business on PDA;
- in-demand specialists at PDA, consisting of 120 people.

4. The formation of tables of pairwise comparisons, interviewing. In this work, we present a list covering the significant competencies of the staff demanded by PDA (using the example of Siberian Investment Group LLC) [11].

TABLE I. SIGNIFICANT COMPETENCIES OF THE MAIN EMPLOYEES

№	Significant competencies of the main employees of Siberian Investment Group LLC
1	The ability to manage production and business, financial and economic activities
2	The ability to manage cooperation of all structural subdivisions, workshops and production units.
3	The ability to ensure fulfillment of all commitments assumed by the enterprise
4	The ability to recruit, select and assign staff based on an assessment of their qualifications, personal and business skills
5	The ability to conduct of staff performance appraisal, its methodological and information support, to participate in the analysis of the assessment results, in development of activities for the follow-up to the certifying committees, to determine the staff number for the reassessment.
6	The ability to conduct a systematic analysis of staff work in the enterprise, to formulate proposals for its improvement.
7	The ability to lead the preparation and adoption of a chart of accounts, forms of primary accounting documents used for processing business transactions for which have no models: the development of the documentary forms of internal accounting records of the organization
8	The ability to participate in the preparation of the activities of the internal control system, preventing the shortages and illegal spending of cash and inventory, violations of financial and economic legislation.
9	The ability to organize technical preparation of production (construction) or other types of the enterprise’s main activity
10	The ability to lead the drawing up of requirements specification for the design of newly built plants, constructions, technical means, its expansion, development and reconstruction, for the introduction of automation and mechanization.
11	The ability to analyse the audience of potential customers, identify customer needs, their level and focus
12	The ability to suggest clients solutions to problems and issues that have not been agreed upon during negotiations, emerging after the completion of legally relevant actions.
13	The ability to design an effective development strategy and the main sections of the enterprise development plan
14	The ability to prepare and present enterprise development projects to senior management and owners, protect and justify, coordinate and manage them
15	The ability to manage the production and business activities of the workshops and the enterprise as a whole.
16	The ability to ensure that the section perform according to schedule work assignment of the output products (works, services), of the quality, of the required nomenclature (range), of the increase productivity, of the reduction labour intensity of producing based on rational equipment load and use of its technical capabilities, of the increase the shift-work ratio of equipment, of the effective use of commodities, materials, fuel, energy and of the cost-saving.
17	The ability to control compliance with biotechnology and bio-standards of fish farming, control the quality of work

№	Significant competencies of the main employees of Siberian Investment Group LLC
18	The ability to take part in the development and implementation of progressive technology of fish farming
19	The ability to engage in fishing, control fishing, transplanting, sorting by type and size-weight groups and count juveniles of different age.

After analyzing the FSES HE, 2017-2019, using the method of pairwise comparisons, we determined the basic activities for staff demanded by PDA (using the example of Siberian Investment Group LLC) (Table 2).

TABLE II. BASIC ACTIVITIES OF STAFF DEMANDED ON PDA (ON THE EXAMPLE OF SIBERIAN INVESTMENT GROUP LLC) ACCORDING TO THE JOB FAMILIES

Job families	Job title in Siberian Investment Group LLC	Main professional activities
Management	Director, Head of HR, Ch. Accountant, Ch. Fish Farmer, Production Manager (Top Management). Account Manager, Development Manager, Accountant, Assistant, Assistant Production Manager.	institutional and management ; personnel management; control; information and analytical; financial; accounting; project; research; communicative
Production process	Shopkeepers, Masters, Foremen, Specialists of fish farming, Fish farmers, Hydraulics engineers, Shop mechanics, Technical inspection department employee	institutional and management; project; research; information and analytical; production; control; communicative; administrative technological; performing; consulting
Packing and service process	Merchandiser, Packer, Prepacker, Senior Storekeeper, Storekeeper, Plumber, Electrician for repair and maintenance of electrical equipment, Carpenter, Industrial and office cleaner	production; control; communicative; administrative technological; performing; consulting.

In the analysis the table below 2 we define the lists of professional competencies in accordance with the designated job families of the demanded staff on Siberian Investment Group LLC

IV. CONCLUSION

We give an example of the requirements for the professionalism of the staff demanded by the Siberian Investment Group LLC of the Top Management job family (Table 3).

TABLE III. STAFF COMPETENCIES OF THE JOB FAMILY "TOP MANAGEMENT"

Job title	Staff competences of Siberian Investment Group LLC
Director, Head of HR, Ch. Accountant, Ch. Fish Farmer, Production Manager (top management).	<ul style="list-style-type: none"> - ability to navigate in regulator legal environments defining employees; - knowledge of legal acts that formulate requirements for the carrying out duties; - knowledge of the fundamental principles of the theory and practice of staff management; - knowledge of the principles defining the legal, economic base of subordinates; - law-abiding; - the ability to implement basic management functions, such as focus and planning, coordination and control, stimulation; - the availability of strategic thinking; - focus on results; - ability to make effective management decisions; - analysis capability; - ability to conduct negotiations, public speaking; - ability to effectively delegate authority to subordinates with follow-up control; - ability to build effective interpersonal relationships; - the ability to resolve conflicts productively; - stress resistance; - ability to manage production and business, financial and economic activities; - ability to manage cooperation of all structural subdivisions, workshops and production units; - ability to recruit, select and assign staff based on an assessment of their qualifications, personal and business skills; - ability to conduct of staff performance appraisal; - ability to conduct a systematic analysis of staff work in the enterprise, to develop proposals for its improvement; - ability to lead the preparation and adoption of a chart of accounts, forms of primary accounting documents used for processing business transactions; - ability to organize technical preparation of production (construction) or other types of the enterprise's main activity.

We formed a set of professional competencies that meet the requirements for the staff professionalism in the management area in solving the issues of direction and management of the organization for more accurate formulation the competence model of staff in demand on PDA (using the example of Siberian Investment Group LLC, the "Management" job family)

TABLE IV. STAFF PROFESSIONAL COMPETENCIES OF THE "MANAGEMENT" JOB FAMILY OF SIBERIAN INVESTMENT GROUP LLC (EXAMPLE)

Issues resolved by the "Management" according to the position	Types of activities conducive to resolve the issue	Staff professional competencies of the "Top management" job family
1. Management of the organization (director)	Coordinating activities of the organization through interaction with subordinates	knowledge of legal acts that formulate requirements for the carrying out duties knowledge of the fundamental principles of the theory and practice of staff management; ability to implement basic management functions

<p>2. Development and maintenance of staffing policy in the organization (Head of Human Resources Department)</p>	<p>Managing the work of recruiting, selecting and assigning staff. Providing, receiving, placing and positioning of in-demand staff. Organizing staff certification</p>	<p>ability to recruit, select and assign staff based on an assessment of their qualifications, personal and business skills; ability to conduct of staff performance appraisal, its methodological and information support, to participate in the analysis of the assessment results; ability to conduct a systematic analysis of staff work in the enterprise, to develop proposals for its improvement;</p>
<p>3. Maintaining the documentary forms of internal accounting records of the organization (Chief Accountant)</p>	<p>Leading the preparation and adoption of a chart of accounts. Coordinating the expenditure of funds with the director. Performing an economic analysis of the economic and financial activities of the organization.</p>	<p>abilities to develop a chart of accounts, to perform an economic analysis of the economic and financial activities of the organization; abilities to prepare and carry out the activities of the internal control ability to organize the supervision income and expenditure of the organization, the performance of cost estimates, the product sales, the performance of work (services); ability to develop and implement activities to strengthen financial discipline in the organization.</p>
<p>4. Monitoring compliance with biotechnology and bio-standards of fish farming (Chief Fish Farmer)</p>	<p>Planning and organizing work of shops and departments. Controlling work on acclimatization of fish. Managing pilot work on fish farming and fish breeding.</p>	<p>ability to engage in organizational and management activities; ability to develop and implement measures to improve production efficiency; ability to introduce and develop new and improve existing technological processes.</p>
<p>5. Ensuring the enterprise performs according to schedule work assignment of the output products (Production Manager)</p>	<p>Organizing the production process. Leading subordinates. Controlling production processes. Maintaining technical oversight.</p>	<p>knowledge of the management and organization of subordinate employees; knowledge of technological processes in the enterprise; ability to develop and draw up technical assignments and bring them to the staff; ability to conduct technical control.</p>

These lists of designed professional competencies demanded on PDA (on the example of the “Management” job family of Siberian Investment Group LLC) for the designated Positions "Job title" (Table 3) and Issues solved by the "Management" according to the position" (Table 4), it required the design of competency certificates of demanded staff. In our opinion, in the long term, this certificate is an annex to the job description of a specialist in-demand on PDA. Competence certificate can be one of the main documents that contribute to the selection and training of qualified staff in-demand on PDA [12].

Summarizing the research in this chapter, we assume: the competence model of a specialist specifies the content of the definition “professionalism”. It is the fundamental element of the Concept, aimed at the quality training of the in-demand staff of the PDA. Competence model is a standard of professionalism of a specialist, a tool for goal setting, designing results of innovative training programs based on the competence approach [13].

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