

FORMATION AND DEVELOPMENT OF PROFESSIONAL COMPETENCE OF BACHELORS IN ENGINEERING IN THE PROCESS OF ECONOMIC EDUCATION

Natalia Nikolaevna Kostina, Anton Vasilevich Ivlev,
Natalia Vladimirovna Skvortsova, Tatyana Pavlovna Rakhlis,
Natalya Rinatovna Balynskaya*, Makhabat Gumarovna Abilova

The problem of formation and development of the future employees' economic competence becomes increasingly relevant since for each developed country in the modern open world community the role of not only Bachelors in Economics keeps getting bigger but also of Bachelors in Engineering who are ready to innovative development of economic potential of their country. The most important goal of higher professional education is training of competent, competitive future employees with creative way of thinking who would be able to adapt to the changing economic conditions, respond fast to the labor market demands, be knowledgeable in information flows and ready to the further professional self-improvement and self-fulfillment. In the present article, a model of formation of professional competence of the future employees which obtain their education in the technical fields is offered. This model includes pedagogical conditions aimed at improving the efficiency of formation of business and economic competence of the students. Based on data on pedagogical conditions, the authors suggest the methods of economic education which facilitate formation of professional competence.

Keywords: pedagogical conditions, economic education, professional competence, business and economic competence, teaching techniques

INTRODUCTION

Introduction to the problem

The problem of education of skilled personnel has been and remains relevant in the entire world and our country is not an exception. Professional education of the future employees makes scientific and pedagogical personnel of higher education institutions as well as employers more often look for the optimal ways of improving the efficiency of the process of economic socialization of young students. Modern society and developing production have need of the employees being capable of understanding the system of economic processes in the economic activity of a company, being self-determined in competitive conditions as well as being capable of analyzing and modeling their professional activity.

In the concept of the Federal Target Program of Education Development for 2016 -2020, the necessity of creating the organizational-educational conditions is outlined. These conditions are necessary for the formation of a competitive personality of a new generation, his or her social and professional culture and

* Nosov Magnitogorsk State Technical University, Magnitogorsk, Russia

Correspondence author* *E-mail: balynskaya@list.ru*

professional direction as well as reorientation of the process of education to the new living conditions and educational requests of a personality, society and country. Economic education of the students and formation of their economic competence are of paramount importance for the achievement of this goal. The authors state that the effective formation of professional competence of the future employees in the process of economic education will take place, if in a model of formation of this competence a combination of pedagogical principles of system, activity and person-centered approaches is implemented and pedagogical conditions as a single set are fully met. The authors assume that professional competence includes a system of business and economic competence. Production-technological, organizational and managerial, economic and scientific-research types of competence form a structure of business and economic competence of the future employees. Formation of business and economic competence of the future bachelors takes place in the process of their professional education. Formation is connected with the necessity for the future employees to successfully solve production, financial, marketing, resource and other tasks of business and economic activity of the companies which determine competitive advantages of these companies.

Problem relevance

Integration of Russia into the European education space resulted in significant reformation of higher education institutions – switching over to the leveled system on the basis of competency-based education programs.

One of the professional tasks which the bachelors of the engineering should solve is ability to properly process economic data array, make analysis, give an estimate and interpret the results obtained and prove conclusions.

The existing system of higher education does not provide formation of entrepreneurial skills of the students first of all, from the viewpoint of formation of business-economic competence. As a consequence, a discrepancy between theoretical background of the students' education and demands of the employers occurs.

The main goals of economic education are as follows: formation of a modern economic way of thinking and system views on the development of all the elements of an enterprise; teaching the students the rational methods of justification of economic decisions and ways of tangible embodiment of these decisions. Not only the required knowledge, abilities and skills of the futures managers are supposed to be developed but also a significant improvement of education process organization. New knowledge requires new forms of presentation of learning materials.

Problem background

Many researchers discourse upon the problem of economic education of bachelors doing their course of study in the engineering. Thus, T.M. Spilman and M.G. Babin point out that:

- The future bachelors of the technical and technological fields should be capable of making analysis and giving an estimate of the operational and non-operational expenditures for provision of the required product quality as well as of making analysis of the activity results of production divisions;
- Should prepare initial data for making and justifying scientific-technical and organizational decisions based on economic calculations associated with creating or arranging work sites and plan the work of the personnel and wages funds, etc. (Shpilman and Babin, 2012).

R.M. Shaidulina, L.T. Bakhtigareyeva and R.R. Stepanova assume that fundamental task solved by higher technical education institution is education of economically socialized bachelor which has a certain level of economic competence in selected professional field and which can perform his activities in the conditions of market economy and is ready to production upgrading and changes in socio-economic conditions (Shaidulina *et al.*, 2015).

N.P. Puchkov in his research work makes actual the problem connected with absence of government (single) order for education of the specialists which makes higher education institutions focus on meeting the demands of particular consumers. At the same time, the aforementioned author believes that one should acknowledge the fact, that in the conditions of market relations the goal oriented mindset is a complicated function which considers not only direct current interest of a customer but also the whole dynamics of change and impact of scientific and technical progress on production, nature of change of long-term recruitment needs, new information technologies and other ones actively implemented in the work of any specialist (Puchkov, 2000).

Hypothesis

The effective formation of professional competence of bachelors doing their course of study in the engineering in the process of economic education will take place, if in a model of formation of such competence a combination of pedagogical principles of system, activity and person-centered approaches is implemented and pedagogical conditions as a single set are fully met:

- The dominant of the content of economic education of bachelors of technical fields should be the content of the activity of production, financial and marketing departments of the private enterprise;
- In the process of economic education, revealing the interrelation between the content of the activity of economic and marketing services as well as of production support unit and the content of personnel management service of the private industrial enterprise is provided;
- Teaching techniques of economic education include a combination of didactic methods and methods of solution of business and economic tasks

which equally provide presenting the students as the subjects of business and economic activity of as mid-level managers as well lower level ones, which facilitate formation of orientations of the students to professional career of a manager of the private industrial enterprise

METHODS AND DATA

The following methods could be referred to the research ones: analysis of scientific-theoretical literature which reveals the problem of the future employees' professional competence; instantiation of the notions connected with this problem to which the concepts "competence", "competency", "competent", "competency-based approach" and other ones refer to; collection of information and its systematization; analysis and assessment of the State Educational Standards of the engineering. The model, which includes pedagogical conditions aimed at the improvement of the efficiency of the students' business-economic competence formation, is offered as a method of the future employees' professional competence formation during their course of study in the engineering.

MAIN PART

Professional competence: content and significance in professional education

One should point out that for the time being in the scientific community the concept "professional competence" is determined ambiguously. Commonly accepted definitions among these superordinate, subordinate and co-subordinate concepts are the definitions of the concepts "competence" and "competency".

According to Modern Dictionary of Foreign Words and Large Definition Dictionary of the Russian language "competence" is "possession of competency, possession of knowledge which enables to judge about something, "competency" is a scope of questions someone is very much aware of and "competent" - someone who has profound knowledge in some field of knowledge.

While studying the concept of "professional competence", it is typical for the scholars striving to determine the content and scope of this concept taking into consideration the specificity of their scientific research. The findings of the following scholars laid the foundation for the analysis of the concept "professional competence": Belikov and Safronov, (2014), Vrublevskaya (2002), Duranov and Duranov (2001), Kondrukh *et al.* (2012).

For example, Kondrukh and his followers stating that in the theory of professional education a professional competence is determined by qualification requirements of a specialist, under competence understand the integrated professional personality characteristic which determines the willingness and ability of a person to fulfill professional duties pursuant to the regulations and standards currently accepted in society. Professional competence according to the above

scholars can be considered as an indicator of qualification level of a specialist (Kondrukh, 2012).

E.S. Vrublevskaya and I.V. Rezanovich state without rejecting the above viewpoint, that not as much integrative as integral internal feature of a person should be understood under professional competence due to which he or she can carry out the relevant activities on a certain quality level. The above scholars consider professional competence as developing educational system (Vrublevskaya, 2002).

The opinion of V.G. Severov that professional competence is determined by the level of professional education, experience and individual abilities of a person, his or her motivated aspiration to continuous self-education and self-improvement, creativity and responsible attitude to professional duties, is important for the research of our problem – problem of business and economic competence formation. We agree with the aforementioned author that “awareness – education – professional competence – culture – mentality” reflect dynamics of personality development (Severov, 2002)

Analysis of modern approaches to definition of the concept “professional competence” enabled us to distinguish the following most common views of the researches:

- “Professional competence” as professional personality characteristic as well as personal quality determines not only willingness but also ability of a person to implement professionally important knowledge and abilities in his or her activity;
- The level of formedness of professional competence of a personality should be evaluated based on the current regulations and standards accepted in society;
- In a greater degree, professional competence appears on the level of possession of professionally important knowledge and abilities as well as in the mindsets, professional directions, value orientations, and motives of a person and in his or her abilities to implement professionally important knowledge and skills in his or her activity.

In our research which provides for the study of pedagogical problems associated with formation of professional competence, we will proceed from the fact that professional competence is professional personality characteristic which determines willingness and ability of a person to fulfill professional functions in conformity to the regulations and standards accepted in society for the time being.

We consider that professional competence of a personality to the fullest extent is characterized by three components: conceptual component (system of professionally important knowledge and abilities), motive and value component (professionally important mindsets, professional direction, value orientations and

motives) and activity component (implementation of professional knowledge and abilities) (Kostina, 2004).

How are the concepts “professional competence” and “business and economic competence” connected with each other? What are the levels of subordination and co-subordination of the concepts of this kind? What is the content of the concept “economic competence” which reflects a combination of the essential properties of this concept?

To answer the above questions, it was required to make analysis of the Federal State Educational Standards of Higher Education in the engineering, namely: Metal Technology, Machine Manufacturing, Transportation Process Technology, Electronics and Nano-Electronics, Heat-Power Engineering and Thermal Engineering, Construction, Electrical Power Engineering and Electrical Engineering, Chemical Engineering and Surface Transport-Technological Systems.

The results of the analysis showed, that the concept “professional competence” for all engineering has the main subordinate concepts of the first decomposition level.

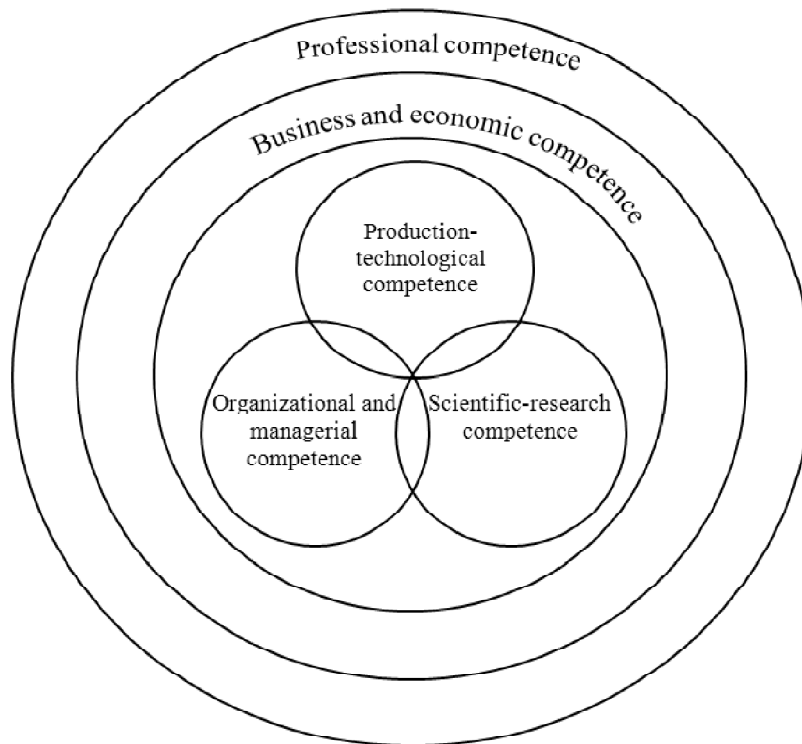


Figure 1: Decomposition of the system of professional competence formation

Each of the subordinate concepts forms a part of the concept “professional competence” and possesses a conceptual component which is unique only to this or that concept. Each of the subordinate concepts also contains the required list of professionally important knowledge and abilities each student should possess after completing the course of education program.

Does economic education provide such ability as decision making, taking into consideration interrelations between the content of the activity of financial and marketing services and production support unit? To answer this question, we made analysis of the conceptual components of business and economic competence using the qualification requirements to the graduates. The analysis was made based on the State Educational Standards of Higher Education and Managers, Specialists and Office Employees Qualification Reference Book Guide. We added economic competence to the assessment of significance of the structural components of professional competence of a contemporary bachelor (Rakhlis, 2007)

253 fourth-year students of full-time department who were doing their course of study in the engineering participated in significance assessment of the structural components of professional competence of contemporary bachelors. 126 students of correspondence department, who work at the enterprises and are familiar with the content of work in engineering field, also participated in the assessment as well as 24 graduates who had got Bachelor’s degree in engineering, 30 graduates with Bachelor’s degree and 27 tutors involved in education of bachelors at Magnitogorsk State Technical University. All these students were offered to do an assessment of significance of the structural components of professional competence and specify their grade.

The analysis of the results show that according to the opinion of the experts, the production-technological, organizational and managerial, economic and scientific-research types of competence are the most significant in the structure of professional competence of contemporary bachelors (1, 2, 3 and 4 grade correspondently).

Thus, there are foundations to believe, that for the time being in the education fields of the system of higher education the most significant thing is possession by the graduates with Bachelor’s degree of knowledge and abilities in production-technological, managerial and economic fields i.e. possession of production-technological, managerial, economic and scientific-research types of competence (Abilova *et al.*, 2015). The unity and integrality of all the elements of professional competence are the dominants of professional activity and consequently, education of graduates with Bachelor’s degree (Figure 2).

It should be mentioned that in the functions of a modern industrial enterprise to which the majority of the scholars refer “manufacture of a product for industrial use and personal consumption in compliance with activity field of an enterprise, as well as sale and supply of a product to a customer, after-sale service of a product,

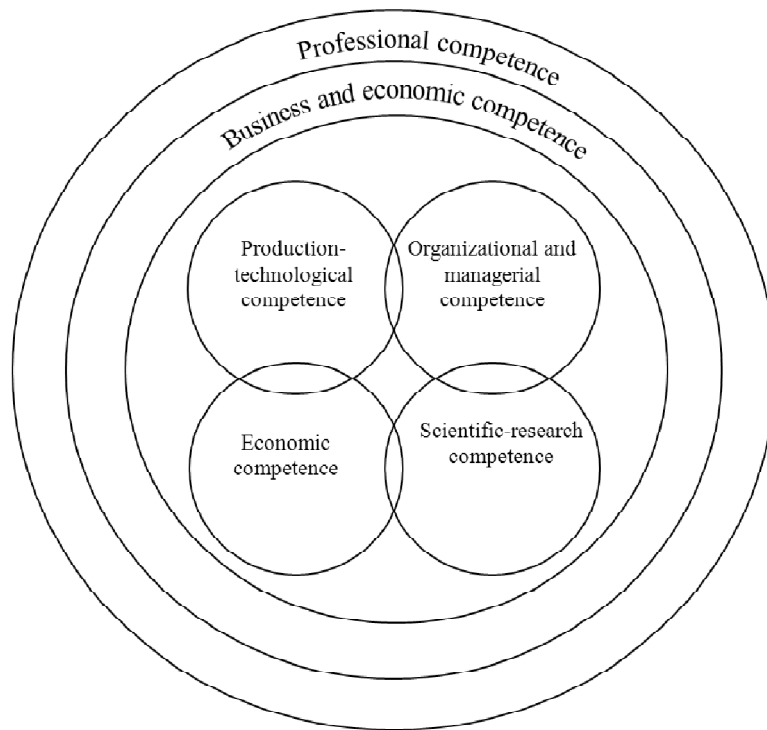


Figure 2: Offered decomposition of the system of professional competence formation considering analysis

logistic and maintenance support of a product , labor management, improvement of product quality, reduction of unit costs, increase of production volumes, entrepreneurship, tax payment and compliance with current standards, regulations and laws”, just an entrepreneurial field of the activity of a manager determines a combination of ownership relations which in their turn determine the main “drivers of enterprise growth” (Raitsky, 2011).

Model of professional competence formation of bachelors of the technical education field

Formation of business and economic competence is one of functional-conceptual subsystems of education. For which reason, the composition of its elements should correspond to the composition of the elements of education system, i.e. the system of formation of business and economic competence should be represented by the following composition of elements (Belova and Kashkareva, 2016)

- Goals of formation of business and economic competence;

- Tasks of formation of business and economic competence;
- Composition of formation of business and economic competence;
- Methods, means and organizational forms of formation of business and economic competence;
- Willingness of a tutor to interact with students for formation of business and economic competence of the students;
- Willingness of a student to interact with a tutor and willingness for self-government for business and economic competence formation;
- The results or experience of a previous activity associated with formation of business and economic competence.

All the elements of formation system are united into the one whole by means of various connections.

The authors believe that at formation of business and economic knowledge of the future bachelors – managers of industrial enterprises, one should follow the below requirements:

- Formation of business and economic knowledge should be aimed at providing the entirety of perception of the scientific world picture;
- Formation of knowledge should provide revealing the content of business and economic phenomena in the frame of the content of the students' education fields;
- Formation of knowledge should provide flexibility of business and economic knowledge, i.e. ability of the future bachelors to independently find the ways of applying knowledge in the changing business and economic situation.

Based on the aforementioned, there is an opportunity to develop a model of formation of business and economic competence of the future bachelors in the process of their professional education.

Figure 3 shows a block form of a model of the future bachelors' business and economic competence formation.

Pedagogical conditions of formation of professional competence of bachelors doing their course of study in the engineering in the process of economic education

According to the authors' model of formation of professional competence, pedagogical conditions determine a combination of measures and requirements to the functioning of the subsystems of professional competence. Improvement of the functioning efficiency of the subsystems under effect of these measures and requirements results in the improvement of the functioning efficiency of the system of formation of professional competence of the students.

In this research pedagogical conditions are understood as a combination of pedagogical measures and requirements which facilitate the formation of professional competence of the students.

When studying the content and scope of the concept “professional competence”, we proved that business and economic competence and its components (production-technological competence, economic and managerial types of competence) are characterized by three components: conceptual, motive and value and activity ones (Green and Henseke, 2016). It suggests, that seeking the conditions which provide the improvement of the efficiency of the system functioning should be aimed at finding the measures which enable to activate conceptual, motive and process functions of the system.

In the present research, initial data for revealing and justifying pedagogical conditions of formation of professional competence of the students of the technical fields during their economic course of education at higher education institutions became as follows (Burganova *et al.*, 2016):

- Analysis of the peculiarities of operation of modern production enterprises in Russia and determination of the requirements to professional activity of the managers of these enterprises;
- Research of the students ‘and tutors’ assessment of the significance of pedagogical conditions for formation of professional competence of the students;
- Analysis of conceptual component of professional competence of higher education institution graduates and powers of office of managers of different management levels.

In the structure of any enterprise there are always two types of labor division of managers: horizontal and vertical ones.

Horizontal division of labor in management is connected with specialization of managers mainly with respect to functional features, i.e. attachment for managers of one or several subject (conceptual) functions.

Vertical labor division of managers depends on nature of the processes under way, range of activity, field of this activity and is represented in the composition of management levels. Distinguishing three hierarchical management levels at the enterprises is commonly accepted: high, middle and low levels.

Both scope and significance of the repercussions of managerial decisions made on each level, increase in going from low level to high one. Top management includes one or several persons (depending on the form of incorporation) – these are General Manager of the enterprise and his Senior Deputy in functional fields of activity. Middle management – these are managers and heads of the units, services and administrative bodies of the enterprise. Composition of this staff encompasses up to 60% of all managers at the enterprise. The managers of production sites refer to low management level (foreman, headman, head foreman and the heads of

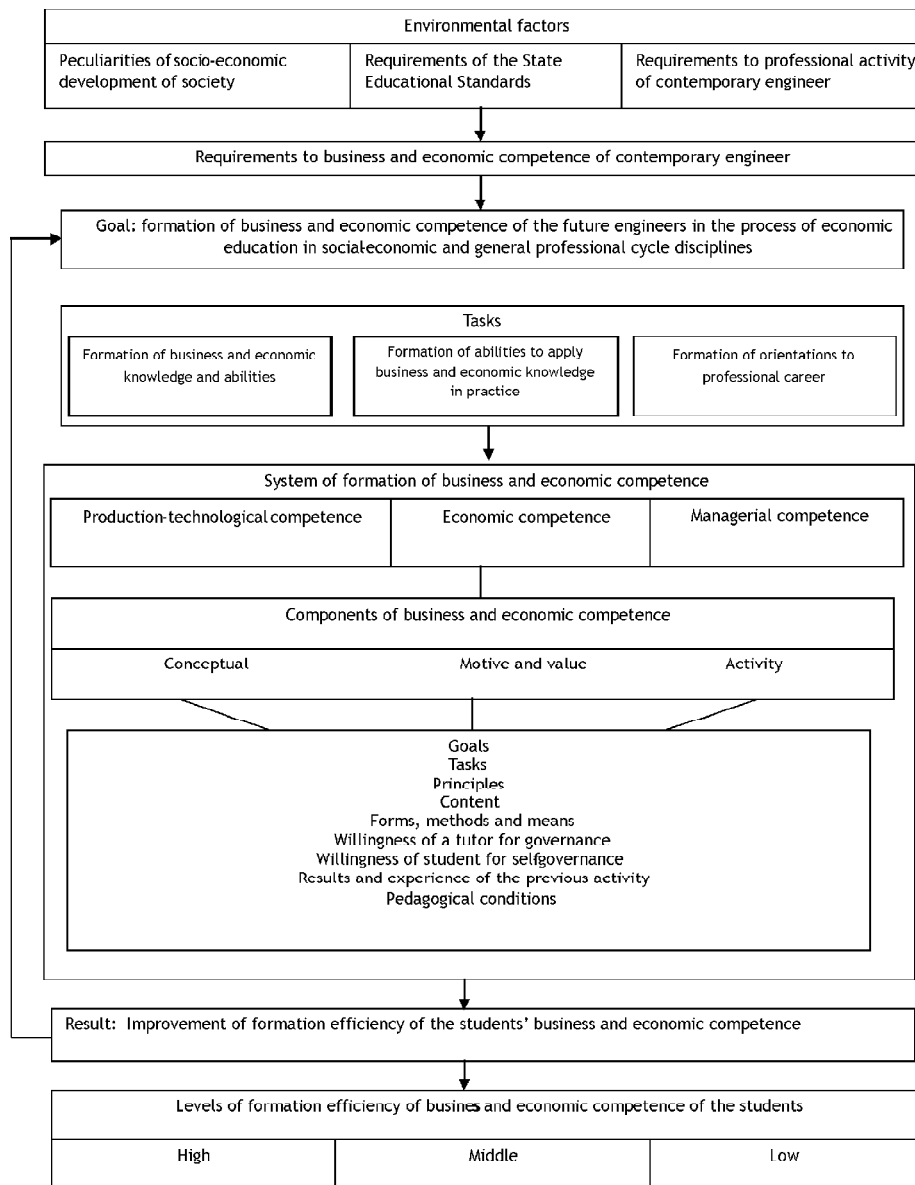


Figure 3: Model of the future bachelors' business and economic competence formation

production workshops), managers of low level laboratories and creative teams (Braun, and Brachem, 2016).

The nature of the manager's main decisions depends on the field of the activity of this manager and on subject functions attached for a manager at the enterprise.

Strategic decisions dominate in the activity of top managers, current decisions dominate in the activity of the managers of middle management level and immediate decisions and executive works dominate in the activity of the managers of low level management.

When it comes to subject functions which require formedness of conceptual component of professional competence of a manager, it should be mentioned that two management functions dominate in case with a manager of low management level: production and personnel management ones, two–three functions dominate in case with managers of middle management level and functions of production, finance, marketing and personnel management dominate in case with top managers.

To what nature of the managerial decisions and to the fulfillment of what subject function(s) are higher education institutions preparing the students now? Does economic education provide ability to make decisions by the managers of any management level at the private production enterprise?

To answer these questions, the authors analyzed conceptual components of professional competence based on the qualification requirements to the graduates of the engineering of higher education institutions and on the content of educational subjects. Analysis was made based on the State Educational Standards of Higher Education and Managers, Specialists and Office Employees Qualification Reference Book Guide (Valkov and Valkova, 2015).

According to the State Educational Standards, the assessment of the necessity to consider interrelations between the content of the activity of production support units, financial and marketing services and personnel management services at the fulfillment of professional tasks provided for by the standard, was made.

Analysis of the research results associated with availability of interrelations between the conceptual components of competence and correspondence of task solution to the content of professional activity and particular management level of a manager showed, that obligatory types of tasks outlined in the educational standards are the part of office powers of the managers of different management levels (Ivashova *et al.*, 2016). There are four main types of professional activity in the structure of the managers' office powers: production-technological, organizational-managerial and economic. Domination of one or another type of professional activity in the content of office powers of a manager depends on the management level of a manager. The main activities of a manager of low management level are production-technological and organizational-managerial ones. As for top managers, all the types of professional activity are represented in powers of office of these managers provided for by the State Standard. When it comes to the managers of middle management level, powers of office of these managers provide for the fulfillment of all the tasks stipulated by educational standard in all the types of professional activity. Quantitative values of standardized type of tasks within professional activity of the managers of different management levels are as follows:

- Managers of low management level– 25.0%;
- Managers of middle management level– 100%;
- Top managers – 67.9%.

All these factors point to the fact that modern content of education at higher education institutions in Russia in a greater degree is oriented to education of managers of middle management level.

The requirements of the State Educational Standards are aimed at preparation of managers for solution of such professional tasks which provide for a competence in all management functions, formedness of the abilities of managers to make managerial decisions taking into consideration interrelations between the tasks in production, financial, marketing and resource fields. Especially, it is relevant for education of managers of high-tech and innovation enterprises aka innovation managers, which possess engineering and economic knowledge and are capable of being a powerhouse for innovation development of a country (Rakhlis *et al.*, 2016).

Analysis of conceptual component of “professional competence” (Sadler, 2016) made by us with respect to the content of economic disciplines in nine fields of education of higher education institutions evidences, that the content of none of three economic disciplines in the State Educational Standards provides for revealing to the full extent the interrelations between the activities of the enterprise in production, financial, marketing and resource fields and provides the necessity of interrelated implementation of conceptual components of structural elements of professional competence (Ref. to Table 1).

It means that an obvious discrepancy takes place between the requirements of the State Educational Standards to the education of the future bachelors, which are capable of making managerial decisions taking into consideration interrelation between the content of the activities of the enterprise in production, financial, marketing and resource fields, in one word which possess professional competence, and absence of an arsenal of pedagogical measures for economic education of the students.

In this regard, the first condition which characterizes a combination of pedagogical measures and requirements facilitating the elimination of the above discrepancy is the study of economic disciplines in the context of the activity content of production, financial and marketing departments of production enterprises. Just this contextuality enables to depart from summarized economic declarations to solution of particular business and economic teaching objectives aimed at formation of professional competence of the students. At the same time, the implementation of only one of these conditions for effective formation of professional competence of the students is definitely not (Ricaurte, 2016).

It should be mentioned, that under contextual implementation of pedagogical condition we understand such implementation of this condition which using didactic

TABLE 1: ANALYSIS OF CONCEPTUAL COMPONENT OF PROFESSIONAL COMPETENCE
BASED ON THE CONTENT OF ECONOMIC DISCIPLINES OF THE ENGINEERING

<i>Name of education discipline and its content</i>	<i>Availability of interrelation between conceptual components</i>
Introduction to economic theory. Goods. Needs and resources. Economic choice. Economic relations. Economic systems.	-
Key development stage of economic theory. Methods of economic theory. Microeconomics. Market. Supply and demand. Consumers' preference and marginal utility. Determinant of demand. Market and individual demand. Income and substitution effect. Elasticity. Supply factor. Law of diminishing marginal returns. Economies of scale. Cost types. Company. Income and profit. Profit maximization principle. Supply of perfectly competitive company and field.	+
Efficiency of competitive markets. Market power. Monopoly. Monopolistic competition. Oligopoly. Antimonopoly regulation. Factor demands. Labor market. Normalization of uncertainty level and, as a consequence, improvement of environment for running business. Supply and demand in labor market. Wages and employment. Level of employment and problem of unemployment.	+
Capital market. Interest rate and investments. Market for land. Rent. General equilibrium and welfare. Income distribution. Inequality. Externalities and public goods. State participation in economic process. Global investment funds. Macroeconomics. National economy as a whole. Circulation of income and goods. GDP. Ways of GDP measuring. Net national product. Disposable personal income. Price index numbers. Unemployment. Forms of unemployment. Inflation. Forms of inflation. Economic cycles. Macroeconomic equilibrium. Aggregated demand. Aggregate supply. Price level and inflation problem. Stabilization policy. Equilibrium in goods' market. Consumption and savings. Investments. Government expenditures and taxes. Government fiscal position, financing of fiscal deficit and problem of national debt; implementation of strategy of long-term fiscal consolidation. Multiplier effect. Fiscal policy. Money and money functions. Equilibrium in monetary market. Monetary multiplier. Banking system. Monetary policy. Economic growth and development. International economic relations. Foreign trade and trade policy. Balance of payments. Currency rate. Oil prices and geopolitics.	-
Special features of transition economy in Russia. Forms of incorporation. Entrepreneurship. Secondary economy. Labor market. Income distribution. Social changes. Structural changes in economy. Formation of open economy.	+

means enables in the process of economic education to simulate professional activity of managers considering all functional connections of this activity.

What knowledge and abilities determine a conceptual component of the future bachelors - managers of the private industrial enterprises? The acquisition of what knowledge and abilities will facilitate formation of professional competence of the students?

Foundation for pointing out the abilities and knowledge of conceptual component of professional competence in our research is:

- The results of revealing and justifying pedagogical conditions aimed at efficiency improvement of professional competence formation;
- Analysis of the State Educational Standards in the engineering at higher education institutions as well the analysis of education programs on economic disciplines and education programs on special disciplines.

As a result of the study, we determined the content of knowledge and abilities of the bachelors doing their course of study in the technical fields of higher education institutions, which determines conceptual component of professional competence and its elements: production-technological, economic and managerial types of competence. The list of knowledge and abilities of professional competence is determined by synthesis of conceptual components of structural elements of this competence.

The next pedagogical condition is aimed at activation of motive and process functions of formation of professional competence of bachelors in the process of economic education.

Three groups of measures (Bravenboer and Lester, 2016) are included in the above condition, which determine the peculiarities of selection of the teaching methods for improvement of formation efficiency of professional competence of bachelors in the course of economic education. The first of them implies presenting the bachelors as the subjects of business and economic activity, the second group orients to equal target-focused representation in the teaching techniques of the subjects of business and economic activity (not just managers but managers of middle and low management levels) and the third group implies the use of the measures in economic education teaching techniques which facilitate formation of the orientations of the students to professional career of a manager of the private industrial enterprise.

The main differential feature between the managers of the private industrial enterprises and the managers of the enterprises with different forms of incorporation is the necessity to implement the entrepreneurial function in the activity of the managers of the private industrial enterprises. Implementation of this function is not possible without formation of the relevant mindsets of the students, value orientations and motives of the activity and abilities for successful professional career of a manager of the private industrial enterprise.

Interrelation between the outlined pedagogical conditions and components of professional competence in a model of formation of this competence should be arranged according to a model shown in Figure 4.

It should be noted that when pointing out and justifying pedagogical conditions which facilitate the improvement of formation efficiency of bachelors' professional competence in the process of education, we used not only theoretical but also experimental research methods. The method of expert assessment was used as an experimental method for determination of significance of pedagogical conditions.

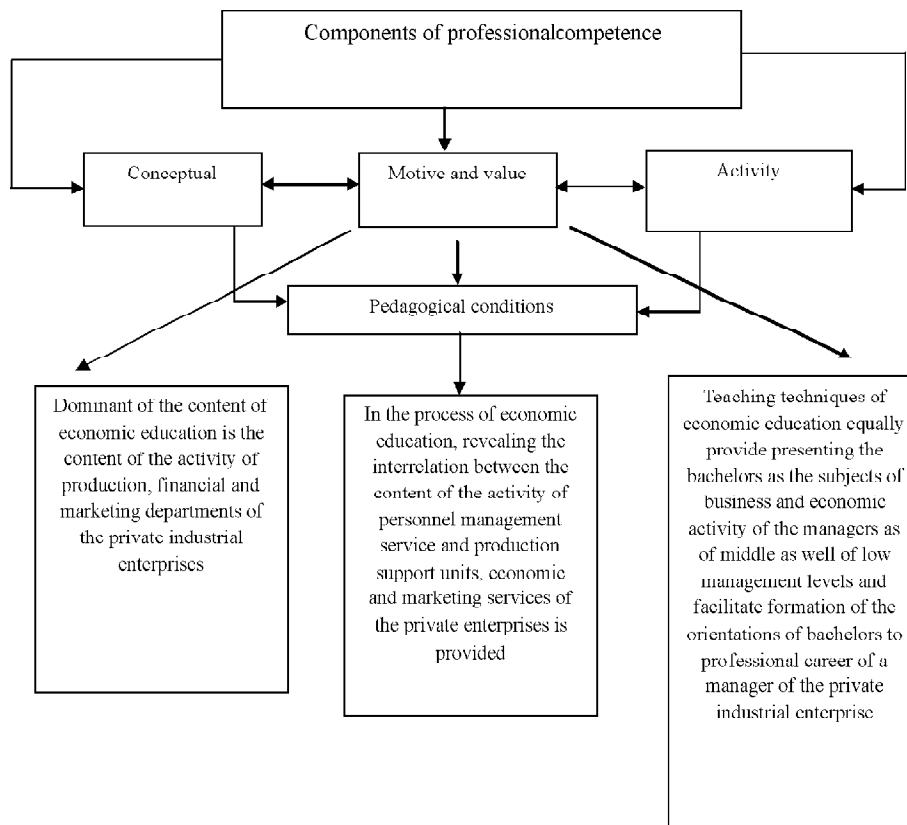


Figure 4: Interrelation between pedagogical conditions and components of professional competence

126 graduate students who had already completed their course of study in economy and 18 tutors of Nosov Magnitogorsk State Technical University participated in the expert assessment. They all were offered to make assessment of significance of one and the same pedagogical conditions. Ten-point assessment scale was used in the experimental work. Assessment results are given in Table 2.

TABLE 2: SIGNIFICANCE OF PEDAGOGICAL CONDITIONS FOR THE FORMATION OF PROFESSIONAL COMPETENCE OF BACHELORS IN THE PROCESS ECONOMIC EDUCATION

<i>Item no.</i>	<i>Content of condition</i>	<i>Significance</i>	
		<i>Tutors</i> 3	<i>Students</i> 4
1	Activation of motivation to professional development	0.79	0.80
2	Introduction of conceptual and organizational components of professional activity into education process	0.78	0.82
3	Adaptability of professional education to changing circumstances of production environment	0.80	0.82
4	Simulating the situation of business success in the process of economic development	0.45	0.52
5	Acquisition by the students of the content of professional education which underlies the formation of business and economic competence	0.85	0.88
6	Organization of the students' activity associated with continuous consolidation of the theoretical experience gathered during industrial work placement	0.58	0.62
7	Stimulation of self-control during formation of business and economic competence of the students	0.41	0.38
8	Activation of students' independent work in the process of formation of business and economic competence	0.71	0.68
9	Organization of students' independent work relying on the individualization of the content of this work	0.69	0.65
10	Correcting the learning activity of the students considering the level of self-analysis, reflection and information awareness of the students	0.58	0.46
11	Economic education provides a continuous formation of business and economic competence of the students	0.75	0.68
12	Provision of productive and contextual nature of the types of learning activity	0.76	0.72
13	Economic education has interdisciplinary nature and is based on solution of professionally oriented tasks	0.81	0.89
14	The State Educational Standard is the basis for the formation of the main elements of business and economic competence	0.31	0.28
15	The development of the priorities of formedness of business and economic competence facilitates the increase of formedness level of this competence	0.28	0.15
16	Awareness of the students of business and economic values	0.53	0.69
17	Diagnostic approach to formation of business and economic competence was used	0.38	0.26
18	Mindset of the students to the active professional and cognitive activity was formed	0.71	0.81
19	Modular form of the content of educational subject which considers the nature of changing needs of the students	0.38	0.17

70	MAN IN INDIA		
20	The real opportunity for implementation of the announced initiatives was created for the participants of education process	0.41	0.37
21	Dialogical interaction of the subjects of education process was provided	0.35	0.26
22	Economic education is aimed at professional development taking into consideration permanent development of production relations	0.78	0.81
23	Orientation of the content of economic education to revealing the content of the functional services of production enterprises	0.84	0.88
24	Creating emotional atmosphere at desk and practical studies	0.32	0.44
25	Revealing the interrelation between the content of the activity of functional services and units of industrial enterprise	0.86	0.88
26	Presenting the students as the subjects of business and economic activity of the managers of services and units of production enterprise	0.91	0.88
27	Orientation of economic education to formation of the qualities of a manager of the private industrial enterprise	0.82	0.85
28	Use of state-of-the art information technologies at the studies	0.53	0.48
29	Provision of interpersonal communications among students as well as subject-subject interaction of the students with tutor at the studies	0.55	0.58

Analysis of the results of expert assessment show, that pedagogical conditions represented in the lists under the numbers 1,2,3,5,13,23,24, 25, 26 and 27 are of paramount importance for the formation of professional competence in the process of economic education according to the opinion of as of the bachelors and as well as of the tutors. All these conditions directly affect formation of conceptual, motive and value and active components of professional competence of bachelors, which confirms correctness of our choice of pedagogical conditions additionally to theoretical conclusions.

Teaching techniques of economic education facilitating formation of professional competence of bachelors

In our research, teaching techniques are understood as a combination of methods and means of economic education facilitating formation of business and economic competence of the students.

Analysis of the content of professional tasks of the managers of middle and low management levels showed that for solution of the majority of these tasks, the use of not only one method but a combination of business and economic methods is normally required. When determining the content of these methods, we considered it possible to distinguish these methods according to the following groups: methods of solution of production management tasks; methods of solution of the tasks of financial and economic activity; methods of solution of marketing activity tasks.

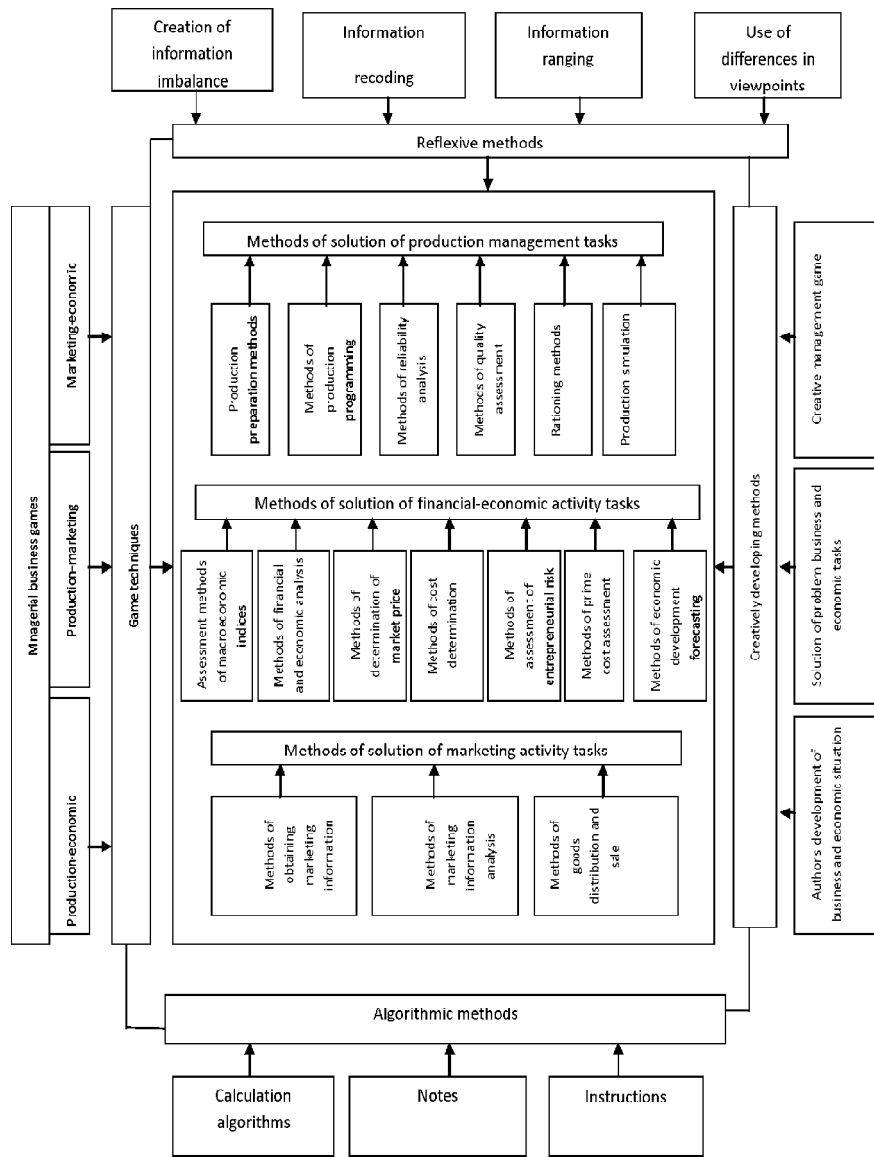


Figure 5: Integral complex of didactic methods and methods of solution of business and economic task

At presenting the students as the subjects of business and economic activity of the managers of middle and low management levels and at forming the orientations to professional career of the managers of the private industrial enterprises, didactic methods and methods of solution of business and economic tasks form the integral complex. Didactic methods form the basis for teaching the students the use of the methods of solution of business and economic tasks.

Graphical interpretation of integral complex of these methods is shown in Figure 5.

When developing the methods of economic education which facilitate formation of business and economic competence of the students, it is necessary to consider the level of formedness of the relevant orientations of the students to professional career.

It is considered that the methods of economic education developed in the course of research are effective and available for practical use at teaching any economic disciplines.

CONCLUSION

Based on the research given herein, the authors obtained and justified the following results:

- 1) Discrepancy between theoretical base of education of the students of the technical fields based on the State Educational Standards and requirements of an employer to the potential employees has been revealed and justified. This discrepancy is expressed by the absence of economic component of education;
- 2) Based on the discrepancy revealed, a new decomposition of the system of formation of professional competence has been created, which includes business and economic competence the structure of which consists of production-technological, organizational and managerial, economic and scientific-research types of competence;
- 3) Pedagogical conditions have been identified and their interrelation with components of professional competence has been substantiated which facilitates the improvement of the efficiency of professional competence formation of bachelors in the process of economic education;

The teaching techniques of economic education were offered, which include a combination of didactic methods and methods of solution of business and economic tasks and provide presenting the students as the subject of business and economic activity as well as facilitate formation of the students' orientations to professional career.

References

Abilova, M.G., Ageyeva, I.A., Aslanov, S.A., Akhmedzhanova, T.A., Vasilyeva, A.G., Vasilyeva, N.F., Vikulina, V.V., Votchel, L.M., Zarubin V.L., Zarubina, E.M., Ivashina, N.S., Ivlev,

- A.V., Kostina, N.N., Kuznetsova, M.V., Kuchmiy, V.P., Kuchmiy, T.I., Rakhlis, T.P., Skvortsova, N.V. (2015). *Modern Aspects of Economy Development: Theory and Practice*. Multi-Authored Monograph. Saint-Petersburg, Info-Da Publisher. 256p.
- Belikov, V.A., & Safronov, M.A. (2014). Pedagogical Technologies of Competitive Development of the Future Specialists. *South-Ural Pedagogical Journal*, 1, 85-92.
- Belova, N.A., & Kashkareva, E.A. (2016). Methodical Ways of Improvement of Personal Communicative Competence as a Social Constant at the Innovative University. *Asian Social Science*, 11 (8), 19-25. DOI: 10.5539/ass.v11n8p19
- Braun, E.M.P., & Brachem, J.C. (2016). Requirements Higher Education Graduates Meet on the Labor Market. *Peabody Journal of Education*, 90 (4), 574-595. DOI: 10.1080/0161956X.2015.1068086
- Bravenboer, D., & Lester, S. (2016). Towards an Integrated Approach to the Recognition of Professional Competence and Academic Learning. *Education and Training*, 58 (4), 409-421. DOI: DOI: 10.1108/ET-10-2015-0091.
- Burganova, R.I., Abdugalina, S.E., & Shaiheslyamova, K.O. (2016). Professional Competence Formation in the Education Process at Higher Education Institutions. *International Journal of Environmental and Science Education*, 11 (10), 3629-3639.
- Duranov, I.M., & M.E. (2001). *Pedagogics of Education and Development of a Student*. Magnitogorsk, Nosov Magnitogorsk State Technical University Press, 356p.
- Green, F., & Henseke, G. (2016). The Changing Graduate Labor Market: Analysis Using a New Indicator of Graduate Jobs. *IZA Journal of Labor Policy*, 5 (1), 14. DOI: 10.1186/s40173-016-0070-0.
- Gromov, P.M. (2015). Concept, Function and Forms of Credit. *Young Scientist*, 22, 377-379.
- Ivashova, V.A., Dub, G.V., Kenina, D.S., Kosintseva, Y.F., & Migatcheva, M.V. (2016). Actualization of Competencies of Graduates-Engineers in Russia. *International Journal of Environmental and Science Education*, 11 (12), 5311-5319.
- Kondrukh, A.A. Kondrukh, V.I & Nazarova, O.L., (2012). Educational Technologies of Social -Economic Competence Formation of the Students of Higher Education Institutions. *Bulletin of South Ural State University*. Series: Education. Pedagogical Sciences, 14 (273), 36-39.
- Kostina, N.N. (2004). *Formation of Students' Professional Competence in the Process of Economic Education at Higher Education Institutions*. PhD Thesis in Pedagogical Sciences: Magnitogorsk, Nosov Magnitogorsk State Technical University Press. 186 p.
- Puchkov, N.P. (2000). Economists Training in a Technical University. *Transactions of Tambov State Technical University*, 8(4): 673-679.
- Raitsky, K.A. (2011). *Enterprise Economics*. Moscow: Marketing, 693p.
- Rakhlis T.P., Skvortsova N.V., Koptyakova S.V., & Balynskaya N.R. (2016). Development of Microelectronics in the Circumstances of the Innovative and Technological Growth of the Russian Economy. *International Business Management*, 10 (4), 401-407. DOI: 10.3923/ibm.2016.401.407
- Rakhlis, T.P. (2007). *Pedagogical Conditions for Efficiency Improvement of the Students' Economic Education in the Process of Professional Education at Higher Education Institutions*. Ph.D. Thesis in Pedagogical Sciences: Magnitogorsk, Nosov Magnitogorsk State Technical University Press. 166 p.

- Ricaurte, P. (2016). Pedagogies for the Open Knowledge Society. *International Journal of Educational Technology in Higher Education*, 13 (1), 32-42. DOI: 10.1186/s41239-016-0033-y
- Sadler, D.R. (2016). Three In-Course Assessment Reforms to Improve Higher Education Learning Outcomes. *Assessment and Evaluation in Higher Education*. 41 (7), 1081-1099. DOI: 10.1080/02602938.2015.1064858
- Severov, V.G. (2002). *Formation of Workers' Professional Competence in the Process of Elementary Professional Education*. Abstract of Ph.D. Thesis in Pedagogical Sciences: Magnitogorsk, Nosov Magnitogorsk State Technical University Press, 24p.
- Shaidullina, R.M., Bakhtigareyeva, L.T., & Stepanova, R.R. (2015). Economic Education as a Mean of Technical University Students' Economic Socialization. *Current Problems of Science and Education*, 2(2). <http://cyberleninka.ru/article/n/ekonomicheskaya-podgotovka-kak-sredstvo-ekonomicheskoy-sotsializatsii-studentov-tehnicheskogo-vuza>
- Shubat, O., Bagirova, A., Abilova, M., & Ivlev, A. (2016). The Use of Cluster Analysis for Demographic Policy Development: Evidence from Russia. *Proceedings of 30th European Conference on Modeling and Simulation*. 31 May - 03 June, Regensburg, Germany. ECMS-2016, 159-165. DOI: 10.7148/2016-0159.
- Spilman T.M, & Babin M.G. (2012). Problem of Implementation of Students' Economic Education at Drafting the Curricula on Bachelors' Education in the Engineering. *Current Problems of Science and Education*, 2(2): 1800-1802. <http://elib.osu.ru/handle/123456789/774>.
- Valkov, V., & Valkova, S. (2015). Transition of the Higher Education to the Practically Oriented Education Programs. *Asian Social Science*, 11 (12), 32-37. DOI:10.5539/ass.v11n12p32.
- Volkov, O.I. (2012). *Enterprise Economics*. Moscow: INFA, 520p.
- Vrublevskaya, E.S. (2002). *Individualization of the Content of Students' Individual Work as a Factor of Development of Students' Professional Competence*. Author's abstract of PhD Thesis in Pedagogical Sciences: Magnitogorsk, Nosov Magnitogorsk State Technical University Press, 19p.