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CAPACITY BUILDING OF INSTITUTIONS OF HIGHER EDUCATION AS THE BASIS FOR FUTURE SPECIALIST PROFESSIONAL COMPETENCES DEVELOPMENT

Abstract. There have been considered the essence and content of professional competence of future financiers. There have been analyzed scientists' different approaches to determine the essence of the professional competence concept and its components. The measures have been proposed to update the national system of pedagogical education with the purpose to correspond financiers' professional competence with the growing requirements of the international market environment. The process of professional competence formation of the future specialist in finance has been considered and the stages of professional competence formation and development of future specialists have been highlighted. It has been established that the process of professional competence formation is carried out on the basis of the technology of activity and personality oriented learning, which is implemented through practical activity and the European credit transfer system, which allows to implement a systematic approach to learning and to form a flexible dynamic structure of hierarchical relationships between training levels. The article has identified the main components that form the corresponding potential level of institutions of higher education in the form of an integral indicator. There has been made the forecast of this indicator with the help of modern methods of forecasting on the example of Kyiv National University of Technologies and Design. There have been systematized the indicators that form the corresponding level of higher educational institutions potential and predicted the integral indicator of potential on the example of KNUTD. All these will create the basis for preventive and operational management of institutions of higher education in the process of working out higher education development strategy as the basis for the formation, development and improvement of professional competence of modern specialists.

Introduction.

The modern stage of the society development, Ukraine's integration into the European Union sets new qualitative tasks in education. Education Development National Doctrine of Ukraine in the XXI century defines the main goal of education to create conditions for the development and self-realization of each individual as a citizen of Ukraine. In times of rapid economic transformation on the way to market relations of full value, the state needs highly skilled specialists, able to work both in the domestic and international economies.

The integration processes lead to changes in the requirements for the qualification characteristics of modern professionals who can quickly solve non-traditional tasks, make sound management decisions, qualify for business contacts with foreign partners, and competently conduct professional activities in a foreign environment. Under these conditions, a graduate of an education institution needs the following qualities as professionalism, initiative, mobility, entrepreneurship, responsibility, ability to analyze the situation on the domestic and international markets, the ability to continuous self-education. This leads to increased requirements for the preparation of specialists at a competitive labor market.

The influence of educational system development level becomes indisputable on the state of economic, social, political and other processes taking place in the state. The important role of institutions of higher education (IHEs), which become market economic operators with the characteristic features of competitive struggle, is growing. The winners in this struggle are universities with high rating indicators of educational, scientific, social and other kinds of activity, capable to ensure the formation of professional competencies of high-level specialists. The analysis of scientific and pedagogical literature implemented by us allows us to conclude that scientists and educators constantly pay attention to the problems of vocational training of specialists in economics and finance. L. Dibkova and R. Geyserskaya devoted IHE publications to the studies of competence successful formation of future economists based on the principles of an individual approach. In particular, R. Geyserska considered the issue of supporting masters of economics' professionally significant qualities as a result of vocational training in institutions of higher education. I. Demura's works are related to the professional competence formation of students of economic specialties. Y. Derkach takes care of the issues of economists' preparation in the conditions of application of new learning technologies.

Unfortunately, domestic teachers-researchers do not disclose the essence and principles of the implementation of training specialists, particularly in the financial profile. Some nuances of this problem are only mentioned in separate publications by G. Astapova, S. Piletska, D. Babasheva, O. Voronkova, A. Epifanova. In addition, the scientific research of these authors is, mainly, aimed at identifying problems concerning the quality assurance of financial education and determining the prospects for its development.

Organizational and methodical aspects of the preparation of financiers taking into account the labor market needs are highlighted in the publications of G. Starostenko, R. Kvasnitskaya. L. Dmytrychenko has been investigating the application of the structural and functional approach to the formation of curricula and programs and the training of specialists as a determining condition for ensuring the ability of the national education system to compete. He argues that it is increasingly difficult to predict the demand structure in the labor market for highly skilled workers and to develop appropriate recommendations for adjusting curricula.

He also notes that the basic functions of higher education management are not being implemented properly, the existing structure of specialties does not "cover" professional needs. He expresses the opinion on the need for its updating, with an increase in the curricula content quality, and for IHE "tying up" to the priority directions of the domestic economy development.

1. Results and Discussion

The importance of professional competence development for future finance specialists in the field of management and administration is determined by the specifics of IHE professional responsibilities, the intensively growing requirements of the international market environment towards the financiers' professional competence and the formation of IHE professional personal qualities and solid knowledge.

The successful entry of Ukraine into the European education space requires a fundamental upgrade of the national system of pedagogical education, which includes:

1. Exit to a new integration level of science and pedagogical education. The current education state requires a teacher to constantly update knowledge, the ability to study throughout life, to be a scientist and researcher, to form adequate skills and qualities in IHE professional development.

2. Radical modernization of the pedagogical education content: the elimination of ideology, outdated forms and methods, the approach to socio-cultural realities and modernization of the future.

3. Democratization of education policy: decentralization of the education system, increasing the autonomy of universities, mobility of teachers and students, the introduction of public management of an education institution.

4. Organization of early vocational guidance for graduates of secondary schools: definition of vocations, psychological and professionally significant qualities.

5. Educational work implementation on a multicultural basis: the formation of tolerance, ability to live together, respecting ethnic and cultural diversity.

6. Increased mobility of teachers and students, student autonomy, IHE self-organization level: exchange between teachers and students of institutions of higher education, training students in foreign universities, conducting joint pedagogical experiments, etc.

7. Implementation of the credit-module training system.

However, despite a significant number of attempts to solve a wide range of scientific problems in the mentioned topic, the issue of potential management of IHE as a foundation for the professional competencies development has not been sufficiently studied, which has led to the choice of the topic and its relevance. The formation of students' professional competence as a goal of vocational training was previously regulated by the relevant state documents: educational qualification characteristic and education and professional program of training specialists in a certain field of training and specialty.

Nowadays, institutions of higher education independently develop education programs in accordance with the requirements of the Ministry of Education and Science of Ukraine, which prescribes program competencies and program learning outcomes.

The formation of students' professional competence is carried out through the content of vocational education, in the process of mastering disciplines, distributed between different training cycles. The special cycle of professionally oriented disciplines corresponds to the future specialists' professional needs and allows graduates quickly to adapt to practical activities. The disciplines of the general scientific cycle (social and natural sciences) provide knowledge, skills and abilities in the field of fundamental sciences. The content and volume of education credits in social sciences are well defined, but natural sciences vary depending on the specialty. These sciences play an important role in the theoretical basis of modern higher education, consistently introduce students into the content of the chosen specialty, and provide further qualitative assimilation of professionally oriented (profile) disciplines of general-professional and special cycles.

During life, any person has to solve three types of problems: 1) professional – directed to the tasks set before a specialist as a professional; 2) social and productive – associated with activities in the field of work relations in the team; 3) social and everyday life problems which arise in everyday life and associated with leisure, family communication, physical and cultural development, etc., and may affect the quality of specialist's performance in social, production and professional tasks. According to the complexity level, there are three task classes of future specialists' professional activity: stereotyped, diagnostic and heuristic, which meet the different levels of formation of knowledge, skills and abilities of students [1].

The formation of professional competence is possible provided that students develop a reflexive attitude, analyze IHE own professional competence. In this regard, the process of professional training of future specialists in finance should be aimed not only at changing the intellectual sphere of students (professional knowledge, skills, abilities), but also at developing IHE motivational sphere (the formation of motives for professional self-improvement, the need for success), valuable and reflective sphere (professional self-awareness, adequate self-esteem and level of aspirations), emotional and volitional sphere (readiness for self-education, development of independence and responsibility).

It should be emphasized that the formation of separate components of the professional competence of future specialists in the finance is carried out by means of all educational disciplines, which are assigned to different training cycles. The specifics of IHE content and goals ensures the fact that students can enter the real space of professional activity, form a range of professionally relevant qualities. We anticipate that strengthening the interdisciplinary integration in the system of professional training of future specialists in the finance will achieve a higher level of professional competence.

We consider the process of the professional competence formation of a future specialist in the finance as a transformation of its functional states, the transition from one state to another. The analysis of the existing psychological concepts of professional development of a specialist in the system of higher professional education allows us to identify the stages of professional competence formation and development of future specialists.

The first stage is preparatory (I-II courses). It focuses on the development of general and general economic competences in the context of future professional activities. At this stage, students master the methods of mental activity (analysis, synthesis, generalization, comparison, classification, etc.). They possess the main methods of educational and cognitive activity; master the information technology tools at the user level, learn to plan IHE time, set goals and choose ways to achieve them, solve problems that arise during the learning process. One of the important issues is to acquire basic knowledge of disciplines of the social and humanitarian cycle and object mathematical and general economic training. The students have to gain experience in solving educational tasks, search for the necessary teaching materials using a variety of tools of modern ICT; analyze the results of IHE own educational and cognitive activity, create a positive motivation for learning, etc.

The second stage is basic (II-III courses). A student "immerses" in professional tasks, learns ways to solve them, uses interpersonal connections, and develops the ability to use mathematical apparatus and information technology to solve professional economic problems. At this stage, development deepening of general and general economic competencies takes place and the professional competencies formation takes place. At this stage, there is an expansion and deepening of the knowledge system gained by students at the first stage of the professional competence formation, integration of previously acquired experience in solving educational problems with the experience of solving tasks of professional orientation. The main tasks of the training at this stage are students' mastering of the main methods of educational and professional activities; formation of students' skills to generalize and systematize IHE experience in order to use it independently in situations of future professional activity; formation of students' skills to do the reflection of educational and professional activities, etc.

The third stage is integrative (IV course). This stage is the development of professionally oriented competencies based on the development of general and general professional ones. In the third stage, students acquire experience in solving tasks of future professional activity, forming professionally significant personal qualities of the future specialist of finance, professional readiness, and valuable attitude to professional activity

After this, the stage of special competencies development comes. This stage coincides with the period of study in the magistracy [2]. The process of developing the professional competence of students has three stages: formation, active development and the stage of self-development. At the stage of formation, students learn to acquire knowledge,

develop abilities at the reproductive level, formulate motivation for learning, and have a positive attitude towards educational and cognitive activity. At the stage of active development, students deliberately use skills and knowledge, need personal self-realization in the educational environment, have such developed qualities as reflectivity, creativity, critical thinking, have the developed skills of self-regulation of educational and cognitive activity. The main goal of the stage of self-development is the development of autonomy, creative activity, self-organization and self-management of IHE activities, updating the need for self-development.

At each of the three stages, individual components of professional competence are getting greatest development. At the preparatory stage, such a component is motivational and emotional and volitional, in the second stage, the basic component is cognitive and active, the third, integrative stage, there is an integration of all the components based on reflexive activity.

The mechanism of motivation activities lies at the heart of the development process of professional competence. Therefore, the process of professional competence formation from the pedagogical point of view is to create external conditions for the emergence, awareness and further self-development of student's internal aspirations (motives, goals, will, emotions) regarding the successful implementation of educational activities, mastering this activity.

The professional competence development of students is carried out through professionally directed educational and cognitive activity, which involves encouraging students towards the process of independent search and "discovery" of new knowledge; mastering new ways of activity; through methods of using various forms of work. A means of developing professional competence is the content of the educational material of disciplines, which is characterized by professional significance for the student.

The result of the professional competence formation and development is graduates' readiness for any socially necessary economic activity; the ability to master the knowledge that is the basis of any professional activity independently; the formation of personal professional qualities [3].

The readiness as the final and logical result of the educational process is the personal formation of interrelated components: motivational and valuable (personal) cognitive and procedural (active). These components include theoretical readiness, practical readiness, psychophysiological readiness, psychological readiness.

The theoretical readiness is characterized by a sufficient amount of social and humanitarian, mathematical, fundamental economic and applied professional knowledge necessary for professional activity. The formed knowledge should be manifested in analytical, predictive, projective and reflexive skills.

The practical readiness is characterized by the formation of the necessary level of professional skills and abilities that will ensure the performance of professional tasks.

The psychophysiological readiness reveals the availability of appropriate prerequisites for mastering professional activity, forming professionally significant personal qualities: organizational (business activity, responsibility, demanding, initiative, ability to work, ability to organize themselves); communicative (sociability, justice, affability, benevolence, modesty, responsiveness, tact); perceptive (observation, understanding of other people, creative attitude to the cause, etc.); expressive (emotional susceptibility and responsiveness, optimism, sense of humor, endurance, ability to persuade, etc.).

The psychological readiness reveals the motivational and valuable graduate's attitude to work, which is the basis of selective focus on the value of professional activity. Such readiness implies the presence of emotional and volitional qualities that allow the individual to deploy and maintain activity, despite barriers and obstacles that may arise (and they do) along the way (conscious mobilization of volitional efforts, work orientation, ability to self-management and self-organization, managing IHE behavior). In the end, the psychological readiness determines the current focus on professional activity.

The formation of the indicated competences of future specialists in institutions of higher education is possible only with the corresponding conditions, components that form the potential of an education institution. It includes the staffing potential of the education institution, the material and technical base, the ability to innovate , etc.

The relevancy to study the issue of potential management of the institution of higher education is dictated olso by a significant reduction in budget funding, which the state directs to train specialists of various education and qualification levels [1, 2].

In such conditions, universities receive the status of an economic operator of full value and the opportunity to engage in entrepreneurial activities providing various types of services (educational, research, design, etc.), to determine the types of this activity independently, and, ultimately, to make profit [2, 3, 4]. There will be investigated the potential of Kyiv National University of Technologies and Design in order to identify its main trends. In recent years, various ways of presenting information graphically are widely used. This is due to the information perception effectiveness obtained through visual channels, and the computer graphics development, as well as the expansion of its application. Graphic representations are usually an aid to decision making.

So, to solve the problem there will be used the multicriteria method of estimating "Spider - CIP" [5], the algorithm of which can be represented as the following steps:

1. Setting up alternatives for comparison.
2. Evaluation criteria selection.
3. Circle image, drawing radiuses for each criterion.
4. Range selection of the criteria desired values placement: a circle edge or its center.
5. Radii grading: in relative units or in quantitative, conditional qualitative or others.
6. Applying the criteria of the evaluated alternatives.
7. Comparable alternatives connect radii points, closed line - polygon (web).

8. An irregular polygon (n-angle, where n is the number of criteria) is formed on the polar diagram. The evaluation rule is based on the diagram: the best alternative corresponds to the smallest or largest area of the polygon, depending on the desired values of the criteria ("good", "bad"). If the best values are applied closer to the circle edge, the best alternative is chosen by the largest polygon area.

Within the research framework, there has been offered the following structure of the university potential: material, technical, personnel, functional, marketing, innovative, infrastructural, financial and institutional.

Let us determine the indicators to evaluate each component of the university potential.

1. The personnel component and its contribution to the potential may be reflected by such indicator factors as:

a) level of scientific and pedagogical qualifications of the staff. Among the indicators there are:

– the proportion of people with a scientific degree of a doctor and a candidate of sciences (X_1);

– the number of people who hold the title of Academician and Corresponding Member of the National Academy of Sciences of Ukraine, Honored Worker of Science and Technology of Ukraine, Honored Worker of Higher School, other state awards, Honorary titles of foreign higher educational institutions, international organizations (X_2);

– a consolidated index of university staff citation in international and refereed Ukrainian editions, a number of heads of scientific and educational grants, executed on orders of ministries and departments of Ukraine, administrations, international and Ukrainian funds and organizations, etc. (X_3);

– international experience and international mobility of university staff (the share of interns who conducted teaching, scientific research in foreign scientific and educational centers) (X_4);

b) labor activity results. Among the indicators there are:

– a number of monographs, textbooks, manuals published abroad and in Ukraine (X_5);

– a number of author courses taught in foreign educational institutions, revenues obtained from joint contracts with industry and the commercial sector for the implementation of the scholarly endeavor (X_6);

– percentage of foreign students from the total number of students (X_7);

– a number of working languages in which teaching is conducted (X_8);

– a number of master's programs, etc. (X_9).

2. The material and technical component. Its contribution to the potential may be reflected by the following indicator factors:

– educational and scientific areas per one hire (X_{10});

– educational and scientific areas per a student and a postgraduate (X_{11});

    – a share of modern scientific equipment in its total cost (X_{12});

    – a number of computers per ten students (X_{13});

    – a number of scientific laboratories created with the participation of the National Academy of Sciences of Ukraine (X_{14});

    – a number of departments established in organizations where the results of university scholarly endeavor are used (X_{15});

    – a number of storage units in the scientific library (X_{16}).

3. The innovative component and level of its use. The most significant indicator factors include:

    – a number of scientific schools recognized by the national and world community (X_{17});

    – a number of monographs, textbooks, manuals published abroad and in Ukraine (X_{18});

    – a number of patents and certificates of authorship received by university staff (X_{19});

    – a proportion of scholarly endeavor with confirmed economic effect from the implementation of IHE results (X_{20});

    – costs for libraries and resource centers of study (X_{21});

    – a number of post-graduate students, including from foreign countries (X_{22}).

4. The marketing component of the university potential. Its contribution to the cumulative potential may be reflected by the following indicator factors:

    – amount of advertising funding for universities (Internet, personal communications, etc.) (X_{23});

    – amount of financing for exhibition activity and vocational guidance work (X_{24});

    – amount of financing for the university's image: corporate image, advertising slogan, corporate colours, corporate font set, corporate values, legend, etc. (X_{25});

    – amount of financing of international cooperation programs (X_{26}).

5. The infrastructural component of IHE potential. Its contribution to the potential can be reflected by the presence of indicator factors such as:

    – modern communication tools (X_{27});

    – a transfer agency of the staff intellectual work results of an institution of higher education (X_{28});

    – branches and representative offices of the university abroad (X_{29});

    – university participation in clusters, technology parks, economic zones (X_{30}).

6. The financial component of university potential. The most significant indicator factors include:

    – income amount from educational and scientific activities per one hire (X_{31});

    – income amount obtained from the export of educational services (X_{32});

    – income amount derived from the sale of intellectual property products in the national and world service markets (scientific, consulting, marketing, etc.) (X_{33});

    – amount of financing from the state, regional and local budgets (X_{34});

– amount of financing by international funds and organizations (X_{35});

– cost value for developing personnel, production, innovation and infrastructural capacities (X_{36}).

7. The functional component of IHE potential. Its most significant indicator factors include:

– variety and efficiency of applying forms and tools for attracting foreign investment, stimulating the staff innovation activity (X_{37});

– conformity of the university organizational structure management, form and complexity of the tasks to be solved (X_{38});

– level of action coordination of university management different levels (X_{39});

– availability of strategy and target programs of higher education development (X_{40}).

8. The institutional component of university potential. Its main indicator factors are:

– existence of a developed legal framework regulating the organization of staff academic and scientific activities, production and financial relations with customers of educational and scientific services (X_{41});

– staff loyalty towards the actions of the university authorities (X_{42}).

In order to determine the most significant indicators of university potential assessment, IHE expert evaluation has been carried out. There have been involved 25 experts from Kyiv National University of Technologies and Design.

According to the existing methods, the experts conducted a ranking of the proposed factors. In this case, the minimum rank value was assigned to the most important indicator.

To confirm the consistency of expert opinions, the coefficient of concordance has been calculated:

$$w = \frac{\sum_{i=1}^{n}(S_i - \bar{S})^2}{\frac{1}{12} \cdot m^2 \cdot (n^3 - n) - m \cdot \sum_{j=1}^{u} T_j}, \tag{1}$$

Where S_i is the sum of expert rank evaluations for each indicator factors;

$\bar{S}$ – average amount of ranks for all indicator factors;

m, n – number of experts and indicator factors respectively;

T_j – value that takes into account the same estimates of various indicator factors by individual experts.

At the same time, $\bar{S}$ та T_j are calculated according to the formulas:

$$\bar{S} = 0,5 \cdot m \cdot (n+1) \tag{2}$$

$$T_j = \frac{1}{12} \cdot \sum_{j=1}^{u} (t_j^3 - t_j), \tag{3}$$

where u is a number of ranks with the same estimates of j-th expert;

t_j is a number of estimates with the same rank of the j-th expert.

It is believed that the closer the concordation coefficient to the unit is, the more concurred the opinions of experts are.

One of the methods for confirming the significance of the concordance coefficient is its assessment by Pearson criterion χ^2. If $\chi^2_{cat} > \chi^2_{tabl}$, then the concordation coefficient is significant at freedom degrees $f = n\text{-}1$ at a given level of significance $\alpha = 0,01$.

The estimated value of χ^2 was determined by the formula:

$$\chi^2 cat = w \cdot m \cdot (n-1) \qquad (4)$$

The results of the expert evaluation have allowed to substantiate the final list of indicator factors for assessing the level of university potential.

To obtain a single indicator for assessing the university potential, it is necessary to convince all indicator factors into a single integral indicator. This indicator is the area of the obtained polygon (S_{IHE}), which is calculated by the formula:

$$Shei = \left(\sum_{i=1}^{i=n-1} \frac{X_i \times X_{i+1} \times \sin \frac{2\pi}{n}}{2} \right) + \frac{X_n \times X_1 \times \sin \frac{2\pi}{n}}{2}, \qquad (5)$$

where i – a serial number of indicator factor;

n – a number of indicator factors used;

X_i – value of the indicator factor calculated by the formula:

$$X_i = \frac{R \times (I_i - I_i^{min})}{I_i^{max} - I_i^{min}}, \qquad (6)$$

where I_i — actual value of the factor in the current year;

$I_i^{min}; I_i^{max}$ – respectively, the minimum and maximum value of I_i at the higher educational institution for the period considered;

R – the radius of the area diagram, taken equal to 1.

The calculation results of the integral index of S_{IHE} for KNUTD in 2012-2016 are presented in Table. 1

To obtain the coefficient of achieving the reference value of the potential (I_{IHE}), which characterizes the situation of a separate university in the considered population, the next formula was used:

$$I_{IHE} = \frac{Shei}{Sref}, \qquad (7)$$

where I_{IHE} – a coefficient of achieving the reference value of the potential of the institution of higher education;

S_{IHE} – an integral indicator of potential assessment of a separate university;

S_{ref} – an indicator of the potential of a reference university.

Table 1

Integral indicator of KNUTD potential *(S_{IHE})* (S_{IHE})

in 2012-2016

Components of the university potential	Factor indicators	2012	2013	2014	2015	2016
Personnel	X_1	0,040	0,044	0,045	0,049	0,056
	X_2	0,012	0,015	0,018	0,024	0,035
	X_3	0,010	0,012	0,015	0,023	0,032
	X_5	0,040	0,041	0,045	0,053	0,057
Material and technical	X_{11}	0,081	0,090	0,094	0,094	0,102
	X_{12}	0,052	0,063	0,070	0,070	0,080
	X_{13}	0,018	0,019	0,024	0,025	0,037
Innovative	X_{17}	0,018	0,020	0,024	0,027	0,039
	X_{19}	0,035	0,048	0,047	0,061	0,072
	X_{22}	0,024	0,034	0,038	0,042	0,059
Marketing	X_{23}	0,024	0,036	0,042	0,045	0,071
	X_{26}	0,050	0,064	0,081	0,091	0,115
Infrastructural	X_{27}	0,094	0,106	0,147	0,147	0,147
	X_{28}	0,081	0,099	0,108	0,115	0,111
Financial	X_{31}	0,050	0,063	0,073	0,068	0,080
	X_{32}	0,025	0,034	0,039	0,038	0,047
	X_{33}	0,026	0,029	0,032	0,040	0,042
	X_{34}	0,045	0,042	0,050	0,058	0,072
Functional	X_{37}	0,088	0,088	0,091	0,096	0,111
	X_{40}	0,118	0,118	0,147	0,147	0,147
Institutional	X_{41}	0,118	0,118	0,147	0,147	0,147
	X_{42}	0,105	0,108	0,111	0,115	0,121
Integral indicator of KNUTD potential assessment	S_{IHE}	**1,154**	**1,293**	**1,488**	**1,575**	**1,778**

Source: own elaboration.

The integral indicator of the potential assessment of the reference university will be calculated as the area of the right polygon with the side 1:

$$Sref = \frac{n}{2} R^2 \sin \frac{2\pi}{n} \tag{8}$$

where n − the number of factor indicators used;

R − the radius made around a polygon circle, in our case $R = 1$.

Table 2

**Achievement coefficient of the reference value
of KNUTD potential in 2012-2016**

Indicator name	2012	2013	2014	2015	2016
Assessment integral indicator of KNUTD potential (S_{IHE})	1,154	1,293	1,488	1,575	1,778
Achievement coefficient of the reference value of KNUTD potential (I_{IHE})	0,37	0,41	0,47	0,50	0,57

Source: own elaboration.

The substantiation of perspective directions of institutions of higher education development is impossible without the use of methods of economic and mathematical modeling and statistical analysis. The forecasting purpose is to determine the level of institutions of higher education potential and to substantiate measures for its improvement in the short and medium term. Proceeding from the prediction that the development pace of the institutions of higher education potential remains stable for several successive years, it is expedient to use the method of analytical equalization for the definition of the trend and perspective forecasting. The purpose of the analytical alignment method lies in the mathematical description of the trend dynamics of the actual values of the institutions of higher education potential depending on the conditional value of time *t*.

There are applied functions for the analytical alignment of the dynamics series, among which the most used are: linear, parabolic, exponent and exponential. The expediency of using one or another function (a straight line or a curve) to describe the trend of the indicators dynamics is determined by the determination coefficient. The closer this indicator approaches 1, the more objectively the selected function describes the dynamics of the analyzed criterion.

The interval width for each *i*-[th] observation is determined by the formula:

$$\Delta_i = Ttabl \cdot \sqrt{MSE \cdot (1+s)}$$

$$MSE = \frac{SSE}{m-k} = \frac{(y_t - \hat{y}_t)^2}{m-k} = \frac{0,00249}{5-2} = 0,00083.$$

(9)

To determine *MSE*, we will perform additional calculations in Table 3.

Table 3

Intermediate calculations to determine the ultimate time boundaries

t_i	y_t	$\hat{y}_t$	$y_t - \hat{y}_t$	$(y_t - \hat{y}_t)^2$
1	1,154	1,151	0,003	0,00001
2	1,293	1,304	-0,012	0,00013
3	1,488	1,457	0,030	0,00093
4	1,575	1,611	-0,035	0,00121
5	1,778	1,764	0,014	0,00021
As a whole				*0,00249*

Source: own elaboration.

With a probability of 90% $t_{tabl\ 5\text{-}2;\ 0,05} = 2,353$ width values of the interval for each i-th observation are summarized in Table 4.

Table 4

Retrospective and predictive values of the integral indicator assessment of KNUTD potential

Years	Interval width	The integral indicator value for assessing KNUTD potential		
		pessimistic	most reliable	optimistic
Retrospective period				
2012	0,086	1,066	1,151	1,237
2013	0,077	1,227	1,304	1,382
2014	0,074	1,383	1,457	1,532
2015	0,077	1,533	1,611	1,688
2016	0,086	1,678	1,764	1,849
Predictive period				
2017	0,098	1,819	1,917	2,015
2018	0,113	1,956	2,070	2,183
2019	0,130	2,093	2,223	2,353
2020	0,148	2,228	2,376	2,524
2021	0,167	2,362	2,529	2,696

Source: own elaboration.

The graphic interpretation of the forecast of the assessment integral indicator of KNUTD potential is presented in Fig. 3.
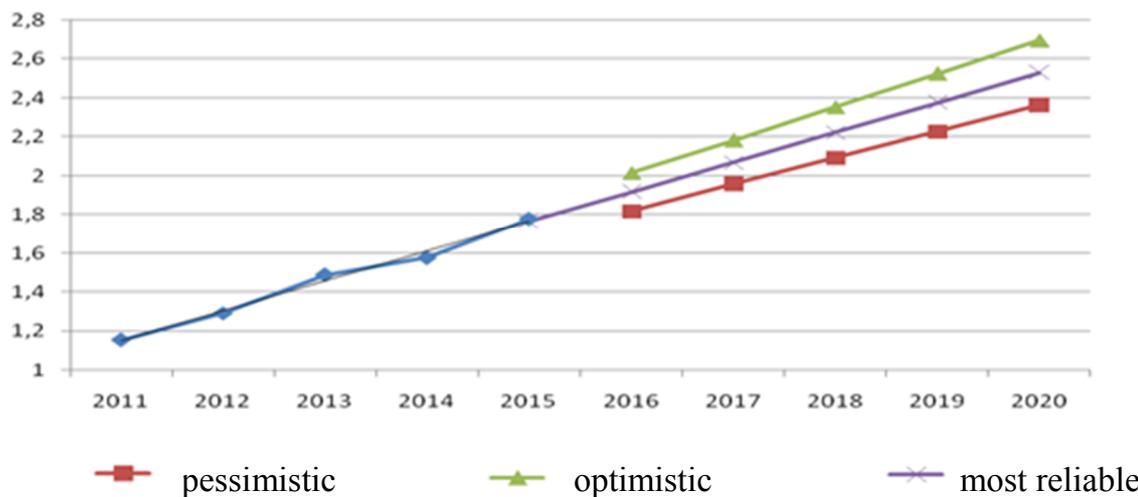
Fig. 3. Predictive values of assessment integral indicator of KNUTD potential
Source: own elaboration.

Consequently, the dynamic series of forecast indicators in 2016-2020, obtained as a result of the study, show an increase in the assessment integral indicator of KNUTD potential. Since the predictive values are constructed taking into account the retrospective dynamics, achievement of the indicated level of assessment integral indicator of KNUTD potential is possible provided that the existing policy of KNUTD development is preserved. In the case of KNUTD intensification, the growth rate of the assessment integral indicator of the education institution potential will be higher.

Conclusions.

The structural components of the professional competence of future specialists are formed simultaneously, but each stage of the development process is oriented to a certain level of the investigated personality education. The development of the personality and student' professional competence are mutually determined and mutually supplemented processes, for the implementation of which there is a need for a pedagogical technology, which is oriented on self-education, self-development, self-realization of the individual. The process of professional competence formation was carried out on the basis of the technology of active and person-oriented learning, which is implemented through practical activities and the European credit transfer system, which allows to implement a systematic approach to learning and form a flexible dynamic structure of hierarchical relationships between levels of training.

Increasing the level of institutions of higher education attractiveness is possible through the coordination and analysis of internal factors-components that form its corresponding level. This will enable institutions of higher education in Ukraine to carry out IHE educational and economic activities to the utmost, to act as an equal partner in the international market of educational services.

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