University Competencies Quality Management: from Self-Assessment to International Comparison

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ABSTRACT. The article represents a methodological summary of the main levels, tools, approaches and subjects of the use of assessment in educational activity with an emphasis on the university-based dimension. It has been revealed that the use of assessment as one of the tools for quality management has both internal (self-assessment) and external dimensions (variety of tools), which is widespread in universities in the field of implementation of educational programs that have a competency-based dimension. The deep integration of assessment components into a competency-based model for the US labour force development system, as well as the disposition of assessment in the system of competencies in the national qualifications framework in higher education, which are characteristic for the European countries, have been identified. It has been demonstrated that the educational trajectory of personality training throughout life and career development is encountered at various stages with a variety of assessment tools. The comparative characteristics of pre-university assessment, certification programs of global assessment, external assessment of applicants and graduates, and persons aged 30+, functioning of accreditation agencies and agencies of professional accreditation, international rating, international comparisons of education quality, are given.

It is proved that the necessity to bear costs for conducting international comparisons, national and international ratings is conditioned not only by the impact of the internationalization of educational activities and the globalization of the world economy, but primarily by the desire to ensure the highest quality of educational services, provided by leaders, and their high average level within the national educational systems. The results are broadly illustrated by evidence and examples from the developed countries (mainly the United States) and Ukraine. Based on the research of the attitude of students and practitioners to different competencies conducted in Ukraine, differences in the perception of competencies of bachelors in the economics and management specialities are revealed. It has been discovered that, in the practitioners' opinion, ability to self-assessment and ability to independent identification of problems are the most significant among the competencies.

KEYWORDS. Assessment, model, quality, test, competency, international comparison, rating, certification, accreditation, United States, Ukraine.

Introduction

The issues of development of the quality of goods and services, in particular, in higher education, have been considered in the world and Ukraine for a long time. It is known that the Code of Hammurabi provided for strict responsibility for the quality of goods in the 17th century BC, and a significant contribution was made by F. Taylor, H.

Fayol, M. Weber, W. Shewhart, H. Dodge, H. Romig, A. Feigenbaum and others in our time[2]. Therefore, the evolution of the concept of the quality management as a whole is well-studied[3]. In the 1990s, the relationship between the commercial success of universities and the quality of the institutions themselves, as well as the quality of the results of their activities was proved4. Later studies have shown, in general, the positive reciprocal impact of cooperation between universities and companies on the academic quality[5].

Ukraine's participation in the Programme for International Student Assessment (PISA) expected in 2018, which has been implemented since 1997 under the auspices of the Organization for Economic Cooperation and Development, stipulates consideration of the issue of its maximum use for the benefit of our state. On the one hand, the purpose of the PISA is to identify trends in the results of educational programs in different countries and factors affecting the level of educational achievements of students in the world. On the other hand, it becomes a globalization tool, which leads to the homogenization of approaches to school education. In such circumstances, educational institutions and regulators should deliberately take into account its results, when developing tactical documents and strategic decisions.

The aspect that the developed countries consider educational spending as an investment in future development increases the relevance of issues related to higher education assessment. The effectiveness of educational investments requires constant assessment of the quality of inputs and factors, processes, intermediate and output results. The relevance of assessment is exacerbated by challenges of the internationalization of scientific and educational activities, and the global competition in the scientific and educational system.

Despite the fact that the quality management in higher education has a certain sectoral specificity, it is, moreover, an integral part both of overall policies for ensuring the quality of social and economic development, and one of the determining factors in forming the culture of the quality assurance. Therefore, the lack of a developed national quality management model in higher education leads to the fact that the relevant models remain underdeveloped in other sectors of the economy, and state investments in higher education and science are not used

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[2] Zapryagaev, S.A., Karavaeva, E.V., Karelyna, Y.G. and Saleczkyj A.M. *Globalyzacyya i systemu obespechenyya kachestva vysshego obrazovanyya*. M.: MGU, 2007. 292 p. [In Russian]

[3] Shevchenko, S. *Problemy ta perspektyvy derzhavno-gromadskogo upravlinnya yakistyu vyshhoyi osvity v Ukrayini*. Derzhavne upravlinnya ta misceve samovryaduvannya. Zbirnyk naukovyx pracz DRIDU NADU pry Prezydentovi Ukrayiny. 2010. Vyp. №3 (6). Availiable at: http://www.dbuapa.dp.ua/vidavnictvo/2010/2010_03(6)/10ssovou.pdf. [In Ukrainian].

[4] Tornquist, K.M. and Kallsen, L.A. *Out of the ivory tower: characteristics of institutions meeting the research needs of industry*. Journal of Higher Education. 1994, № 65. Pp. 523-539.

[5] Thursby, J. and Kemp, S. *Growth and productive efficiency of university intellectual property licensing*. Research Policy. 2002, №31. pp. 109–124.

efficiently. In our opinion, one of the key places in the process of the quality management in higher education is taken by the assessment tool, which will facilitate the information and analytical support of managerial decisions.

The purpose of the research is to summarize scientific and practical views on the issues related to assessment as a tool for the quality assurance of university competencies.

Main part

A model of complete quality management in higher education suggests that the quality of educational services in higher education is the foundation of each university's development[6]. Steps to ensure the quality of the university activities, the quality of the university's policies and the quality of cooperation (internal and external) are based thereon. These two levels are the basis for the quality at the market, which, unlike other commodity and services markets, has a specific important feature. It is a variety of indicators for determining the market leadership of universities that makes them different[7] from other participants of market relations. Each of the indicators needs to be properly assessed and further analysed, including benchmarking, in order to ensure the quality at all the levels of the model of complete quality management in higher education. The variety of so-called "stakeholders" is also a factor in the diversification of areas of assessment and the use of their results.

It is believed that the main approaches to measuring of competencies include assessment at the end of the training (State Examination Commission, diploma project), assessment at the beginning and during the learning process (only this approach allows managing the process of competencies formation, taking corrective action) and assessment at the workplace — competency may be analysed only after adaptation of the worker at the workplace (for example, six months later). We will demonstrate In our article that using of a wide variety of assessment tools[8] allows taking measures for improvement of the quality of resources, results and processes of educational activities.

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[6] Todorut, A. V. *The need of total quality management in higher education*. Procedia-Social and Behavioral Sciences. 2013, №83. pp. 1105-1110

[7] This is exacerbated by the fact that scientific and educational institutions can differently define the purpose of their own activities.

[8] They can acquire a variety of forms, including certification, accreditation, certification, ranking, analysis, impressions, etc. For example, forms of assessment of language knowledge that are clearly defined by the Council of Europe and are used to assess linguistic competences [*Common European Framework of reference for Languages: learning, teaching, assessment*. Language Policy Division. Council of Europe, Strasbourg. Accessed 20-05-2017. Availiable at: https://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf.]. These recommendations share the general linguistic competence for knowledge, skills and existential skills that include linguistic, sociolinguistic and pragmatic competency components.

We recall that development of a competency-based approach is based to a large extent on Bloom's cognitive process dimension (1956) and Webb's depth-of-knowledge levels, development dynamics of which are described by his words "to describe, explain, interpret". Assessment, analysis and synthesis (as the highest-level objectives) in Bloom's taxonomy of educational objectives are based on the application, comprehension and knowledge[9]. Thus, the knowledge economy is based on the fundamental components, which include, among others, assessment.

Organizations, which try to manage processes of ensuring and improving the quality of products, often rely on the cyclical nature of their actions in practical activities. This is known as the Shewhart-Deming cycle, which consists in the continuous sequential execution of processes — Plan-Do-Check-Act[10]. Juran's spiral of progress in quality, is a wider version of this cycle used in the industry[11]. The cycles of the quality assurance processes are also associated in higher education with strategic planning cycles in the context of taking into account the environmental impact of all the levels (regional, national and global)[12]. Therefore, the use of assessment tools to ensure the quality of learning should take into account the cyclical sequence of such key stages[13]:

1. defining the purpose and objectives of assessment (for example, according to D. McGregor[14], objectives of assessment can be informative, motivational one or administrative purpose);

2. choice of the form of assessment (internal, external or self-assessment);

3. selection of tasks of assessment (for example, identification of needs, assessment of potential abilities, development and justification of decisions, analysis of activities, setting of objectives and tasks of activity);

4. establishment of criteria for assessment of tasks;

5. assessment process management;

6. determining the results, for example, performance of tasks, solving cases or tests;

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[9] Ilnytskyy, D. O. and Vasylkova, N. V. *Cyklichnist u kompetentnisnomu pidhodu: cuchasnyj svitovyj dosvid.* Aktualni problemy mizhnarodnyx vidnosyn. 2014, Vyp. 119(2). S. 73-83. [In Ukrainian].

[10] Repyn, V.V. and Elyferov, V.G. *Processnyj podxod k upravlenyyu. Modelyrovanye byznes-processov.* M.: RYA Standarty y kachestvo, 2008. 408 s. [In Russian].

[11] Dzhuran, Dzh. *Kachestvo v ystoryy cyvylyzacyy. Evolyucyya, tendencyy y perspektyvy upravlenyya kachestvom.* T. 3 : Per. s angl. M. : RYA Standarty i kachestvo, 2004. 208 s. [In Russian].

12 Kettunen J. *Strategy and Quality Maps in Higher Education.* US-China Education Review. February 2011, Vol. 8, No. 2. Pp.149-156.

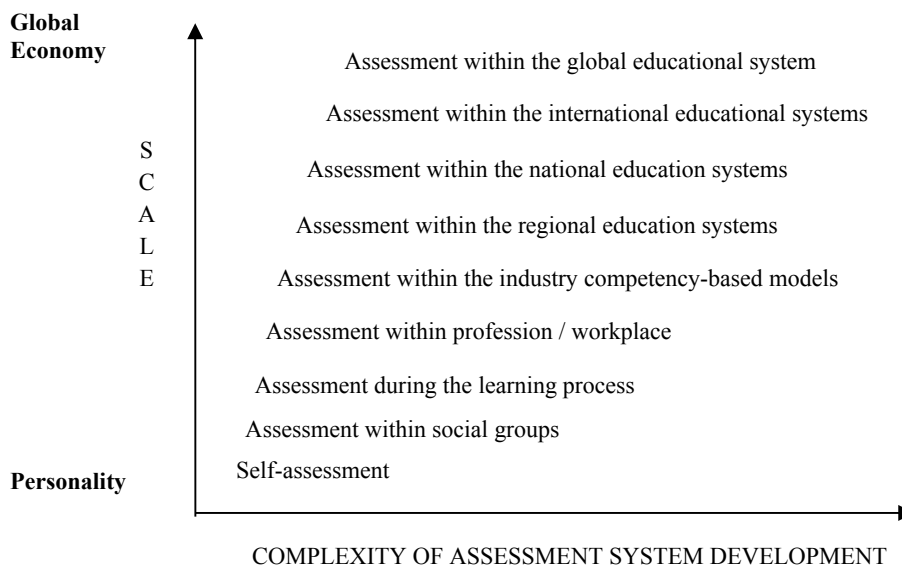[13] Tillema, H., Leenknecht, M., and Segers, M. *Assessing assessment quality: Criteria for quality assurance in design of (peer) assessment for learning–a review of research studies.* Studies in Educational Evaluation. 2011, №37(1). pp. 25-34.

[14] Danyuk, V. M., Petyuh, V. M. and Tsymbalyuk S. O. *Menedzhment personalu*: Navch. posib. Za zag. red. V. M. Danyuka, V. M. Petyuha. K.:KNEU, 2004. 398 s. [In Ukrainian].

7. assessment of the results (quantitative (by points or monetary one), or descriptive);

8. feedback and follow-up, or training.

The conceptualization of levels of assessment makes it possible to outline a model of the hierarchy of these levels, which will be characterized by a variety of assessment tools (Fig. 1). Accordingly, not only tools and levels, but also the scale of tasks, which will be related to the specific objectives and activities of the institutions, differ. Relationships between levels require further identification and research. We will further analyse examples of application of assessment tools in the educational sphere with emphasis on the central place, taken by the higher education system.

Global Economy

S
C
A
L
E

Assessment within the global educational system

Assessment within the international educational systems

Assessment within the national education systems

Assessment within the regional education systems

Assessment within the industry competency-based models

Assessment within profession / workplace

Assessment during the learning process

Assessment within social groups

Personality   Self-assessment

COMPLEXITY OF ASSESSMENT SYSTEM DEVELOPMENT

Fig.1. Conceptual Model of the Competencies Assessment Levels Hierarchy

Domestic workers in higher education and regulatory bodies are not always able to adhere to all the stages, which ultimately affects the quality of educational investment. Practically, it is expedient to involve students who need to develop assessment competency, especially self-assessment to all the stages of assessment. An example of applying self-assessment is the use of resources and projects that are implemented to achieve specific narrow tasks[15], which can then be scaled to global objectives.

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[15] A good example is the self-rating project of the personality type on the site https://www.16personalities.com, Which has already been used by 80 million people from 180 countries of the world. The generalization of its results makes it possible to identify global, regional and national peculiarities and their impact on socio-economic development.

Self-assessment[16] is an important initial stage in the aspiration of universities and other economic entities to business excellence. The easiest, but effective tool is offered within the American Quality Management Model[17], which involves the independent assessment of each of the criteria, which are grouped into 8 key groups (organizational profile, leadership, strategic planning, customer focus, measurement, analysis, and knowledge management, workforce focus, operations focus and results) (Table 1). It is known that there 30 universities and colleges in the US, which use the Baldrige Award model as an organizational model for self-assessment of units[18].

Table 1 **Self-Assessment Matrix of Assessment Criteria under Baldrige Award[19]**

Criteria category	Importance (high, medium, low)		for areas of high importance			
			elasticity of strengths or opportunities for criteria improvement	what actions are planned?	till what time?	who is responsible?
Category _____						
strengths	1					
	2					
improvement opportunities	1					
	2					

The Commission on Higher Education of the Middle States Association of Colleges and Schools practically does not apply the definition of competency in their documents, using mainly references to individual knowledge, skills, experience, etc. It should be recognized that the main references refer exclusively to the general competencies, and in order to assess the practice of their implementation in the educational process, the matrix of competencies and their characteristics are used (Table 2). The following general competencies are distinguished in the Middle States: written communication, oral communication, scientific reasoning, quantitative reasoning, technological competency, critical analysis and

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[16] Here it should be further understood that the evaluation can be applied at different levels and with different purposes, which will determine the peculiarities of its application. Obviously, self-esteem, which is conducted by the student, will be different from self-evaluation, which is conducted by the university or the ministry.

17 It also applies to educational institutions.

[18] Kalinina, O. H. *Higher Education Quality Assurance in Ukraine and the USA: Comparative Aspect.* European Researcher. 2013, Vol.(64), № 12-1. Pp. 2834-2840.

[19] Compiled by author Baldrige Application Self-Analysis Worksheet. NIST. Accessed 21-07-2015. Availiable at: http://www.nist.gov/baldrige/publications/upload/2013_2014_Self-Analysis_Worksheet.docx.

reasoning, information literacy. It is obvious that it can be used for any other competencies, especially when there is a clear competency-based model of education.

Table 2 **University Assessment Form for Implementation of Competencies in Educational Programs[20]**

Competencies	Formulate the competency or purpose as an assessed educational result	What general educational requirements (if any) are aimed at developing this competency? How?	Is it expected to develop this competency for all the graduates? How?	What other requirements (if any) are aimed at developing this competency? How?	Is there necessity to improve opportunities for students to develop this competency?	How is this competency assessed?	Possible new / improved tools / assessment methods
A	B	C	D	E	F	G	H
written communication							
oral communication							
scientific reasoning							
quantitative reasoning							
technological competency							
critical analysis and reasoning							
information literacy							

A similar approach is used by the Southern Association of Colleges and Schools, which, among the complex standards, clearly identifies the general education competencies (integrated standard 3.5.1.) and the competency of scientific and pedagogical workers (integrated standard 3.7.1) (Table 3)[21]. At the same time, as the Commission of Colleges determines, there is no compulsory list of competencies that institutions must independently determine for themselves, based on their mission, objectives of educational programs, and in accordance with the practice in the chosen field[22]. The educational institution is responsible for determination of a tool for measuring the depth of student's mastering of defined competencies during a training period. It is worth to note

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[20] Compiled by author General Education Competency Grid. / Middle States Commission on Higher Education Middle States Association of Colleges and Schools. – [Електронний ресурс]. Режим доступу: http://www.msche.org/publications/Gen-Ed-Competency-Grid.xls.

[21] *The Principles of Accreditation: Foundations for Quality Enhancement*. Southern Association of Colleges and Schools Commission on College. 2012. Availiable at: http://www.sacscoc.org/pdf/2012PrinciplesOfAcreditation.pdf.

[22] *Resource Manual for the Principles of Accreditation: Foundations for Quality Enhancement.* Southern Association of Colleges and Schools. Commission on Colleges. 2012. Availiable at: http://www.sacscoc.org/pdf/Resource%20Manual.pdf.

that there is no requirement for specific courses to apply to specific competencies.

Individual competencies are important for a personal career trajectory (Fig. 2). The totality of competencies, used by members of a particular group of people, is used to call a group or organizational competency. However, one should proceed from the assumption that modern enterprises (in this case, universities can also be identified as enterprises) are complex institutions, development of which is also based on a model of competencies. The division of functional responsibilities between director, accountant, HR department and manager is the simplest example thereof, although the larger the institution is, more complicated the set of competencies to be applied is. For example, the regularly updated NASA competency dictionary currently covers at least 420 different competencies[23]. The Harvard University Competency Dictionary identifies the assessment as part of one of the competencies (performance review) that can be obtained by undergraduates[24].

Frequent cooperation between universities and activities of participants in market relations in the mode of competitive cooperation necessitates creation of project teams, which also have a certain set of competencies.

Table 3 **Assessment Form of Competencies by the Commission on Colleges of the Southern Association of Colleges and Schools[25]**

competency	courses or components	assessment	evidence
The university identifies each university-level competency	Courses or components of the curriculum which provide students with opportunities to gain competencies of the appropriate level, are given.	Description of tools, used to assess the degree of student's mastering the competency of the corresponding level, is given.	Evidence collected on the basis of assessment of the competency of the corresponding level is provided

In addition, there is a trend towards increasing the value of work in a group or team with the appropriate competency, which is conditioned by the need for cooperation of entities of the social division of labour, regardless of its scale — in-group or international one. Therefore, the

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[23] *Workforce Competency Dictionary*. Office of Human Capital Management. National Aeronautics and Space Administration. 10-08-2009. Revision: 7A. Washington, DC. — 123 p.

[24] *Harvard University. Competency Dictionary*. Availiable at: http://campusservices.harvard.edu/system/files/documents/1865/harvard_competency_dictionary_complete.pdf.

[25] Compiled by author *Template. Comprehensive Standard 3.5.1 College-Level General Education Competencies*. Southern Association of Colleges and Schools Commission on College. 2012. Availiable at: http://www.sacscoc.org/forms/templates/Comprehensive%20Standard%203%205%201%20Template.doc.

group (social or professional one) should assess the available set of its competencies and identify the possible lack of certain ones.

The uniqueness of the intellectual capital, the diversity of types of competencies and activities of enterprises condition not only the expediency of assessing the level of their development[26], but, so to say, outsourcing of this activity (in full or partly). Even a university assessment can be defined to some extent as an activity to assess the level of student's mastery of certain competencies. The complexity of obtaining objective assessments, considerable time expenditures, and the need for qualitative methodological support for the assessment of individual competencies are factors that have lead to the fact that universities have a competitive advantage in the implementation of this function, required by the market and society. This determines the central place of universities in the assessment, which affects the educational trajectory of personality training (Fig. 2).
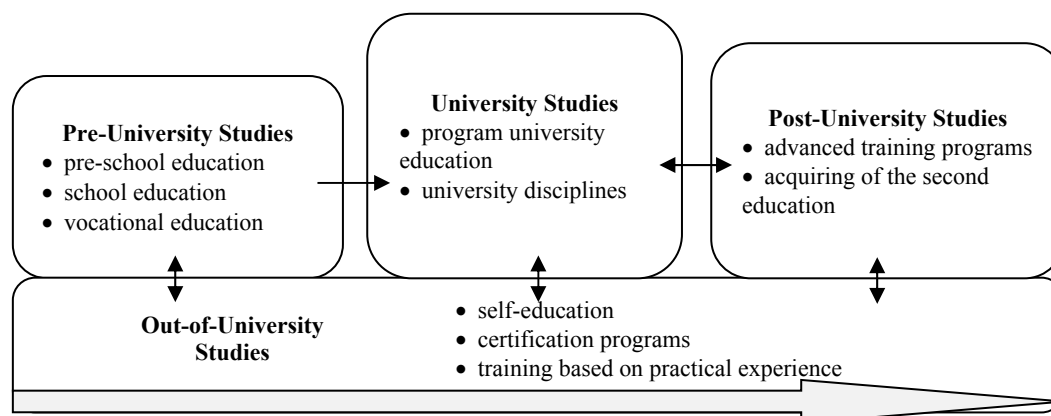
Fig. 2. Educational Trajectory of Personality Training Throughout Life

Insufficient provision of educational services, low self-assessment, poor quality assessment of individual competencies, lack of time for assessment or failure to conduct assessment, lead to the fact that enterprises and organizations, as users of competencies, work their way by trial and error. This way, more often, is more durable and expensive than one that goes through territories, where developed diversified assessment systems are in use.

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[26] What should also be done with a certain periodicity, since over time a person is able to acquire new competencies, but at the same time lose others. Such urgency is inherent not only in personal competencies, but also in organizational terms.

Another aspect of the competency-based approach in education is the relationship with institutions of pre-university education. In the United States, there are four main aspects of developing a competency-based model in the relationship between pre-university and higher education, in particular:

1. access to higher education — students must have access to higher education after they demonstrate excellence of skills, necessary to continue their education at a higher educational institution;

2. admission to universities — the policy and practice of admitting students to universities should be reviewed, adapted, in order to be comparable to documents, based on a competency-based approach;

3. training of teachers and pedagogical workers — training of teachers in the format of a competency-based approach is necessary, including assessment of *lifelong learning competencies*[27];

4. out-of-university competency courses[28] – higher education institutions can also benefit from teaching on a competency-based approach. Development education should also be based on a competency-based approach so that students could quickly fill in the gaps and improve the material to implement it in courses that provide credits. Higher education institutions should be involved in the regulation process (so-called "tuning"), which specifies the specific competencies that a student must possess, when he or she specializes in a particular field.

Pre-university assessment, which is associated with access to higher education and university entrance, often involves the external independent testing (EIT), such as the assessment of learning outcomes, gained at a certain educational level, carried out by a special government agency. The EIT of learning results, gained on the basis of a complete general secondary education, is used for admission to universities on a competitive basis. It is used in the developed countries, for example, the USA — **ACT** (American College Testing), **SAT** Reasoning Test (Scholastic Assessment Test), and less developed ones — **Gaokoa** — the all-China state exam for admission to universities, as well as known examples of its conduct in the Southern Africa, Belarus, Indonesia, the Netherlands, the Russian Federation, Finland and Ukraine. In Ukraine, the introduction of the EIT is primarily associated with the fight against corruption, although its main function is to

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[27] That is conditioned by their dialectics, accelerated transformations as a result of the influence of EIT.

[28] Possibility of obtaining certain competences on the basis of platforms of mass open online courses, which for the most part develop with considerable resource, first of all, intellectual support of universities, not only complements university studies, diversifying it. It is fundamentally not important for employers and the labor market where the employee gained competence, provided that they are properly assessed for their quality. However, universities are able to do this better and pain systematically. Indeed, it has traditionally been that employers more trust in the ratings of certain institutions (issued in the form of a diploma of education) than self-assessing all competencies.

consider the information and analytical support for the quality management of school education and assessment of the level of knowledge of applicants as one of the input resources for the formation of the intellectual capital by universities.

One of the international examples of tools for improving the efficiency of providing educational services at the pre-university level is **the Global Assessment Certificate Program**, which is used to prepare foreign entrants to study at universities in highly developed countries. Adapting foreigners to learning environments in host countries is relevant to those of them, where the number of such students is significant. Of particular relevance, this tool acquires not only the improvement of the quality of educational services, but also the deliberate pursuit of the policy of educational diplomacy.

The place of assessment in the hierarchy of learning outcomes after secondary school is a unique and cross-cutting one (Fig. 3). Such an understanding, according to the report of the National Postsecondary Education Cooperative Working Group on Competency-Based Initiatives in Postsecondary Education [29], is incorporated into the policy implemented by the U.S. Department of Education regarding postsecondary education. As we see, competencies are not the only learning outcomes, but all of them need to be assessed in order to provide an employer and an employee with information about their level and quality.
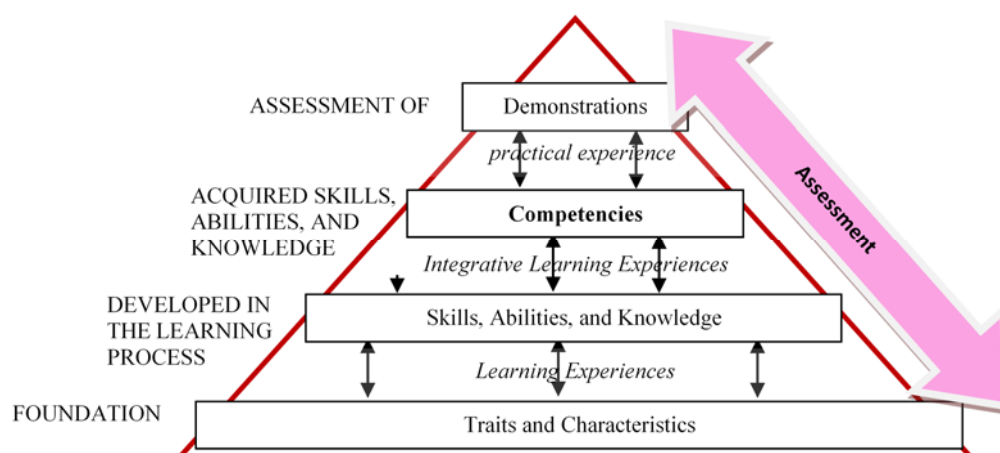
Fig. 3. Place of Competencies in the Hierarchy of Postsecondary Outcomes[30]

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[29] Jones, E. A., Voorhees, R. A. and Paulson, K. *Defining and Assessing Learning: Exploring Competency-Based Initiatives*. Report of the National Postsecondary Education Cooperative Working Group on Competency-Based Initiatives in Postsecondary Education. 2002. p.23. Availiable at: nces.ed.gov/pubs2002/2002159.pdf.

[30] Jones, E. A., Voorhees, R. A. and Paulson, K. *Defining and Assessing Learning: Exploring Competency-Based Initiatives*. Report of the National Postsecondary Education Cooperative Working Group on Competency-Based Initiatives in Postsecondary Education. 2002. p.23. Availiable at: nces.ed.gov/pubs2002/2002159.pdf..

Competencies are often the basis for introduction of professional standards that determine the level of knowledge, skills and experience that are necessary for the success on the workplace (professions, industries), as well as possible measurement criteria for assessing the competency of individual achievements. Thus, with the support of the US Department of Labour and the Employment & Training Administration, methodological assistance have been provided to develop and use a competency-based model for the human resources development system[31]. Nine levels of the pyramidal model are divided into blocks, representing professional skills, knowledge and experience, necessary for successful work in a particular industry or profession, and grouped into the following blocks: fundamental competencies (competencies of personal efficiency, academic competencies and work (workplace) competencies); industry-related competencies (system-wide technical competencies, industrial and technical competencies); profession- and workplace-related competencies (competency of specific knowledge, specific official technical competency, specific job requirements, managerial competencies) (Fig. 4). Examples of integration of assessment competencies therein are found at practically all the levels from the second to the ninth. Such models have been developed for about 900 professions[32], which creates a significant potential for the United States to improve the international competitiveness of enterprises and the economy.

On the other hand, the Western Association of Schools and Colleges (WASC), which includes the Accrediting Commission for Senior Colleges and Universities, emphasizes in the policy of significant university changes that any first degree competency-based program, will be considered as a significant structural change at the university, and therefore will require prior approval from this accreditation body [33]. One can see in the same document that the term "competency-based programs" is equal to the term "direct assessment program".

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[31] Ilnytskyy, D. O. and Vasylkova, N. V. *Cyklichnist u kompetentnisnomu pidhodu: cuchasnyj svitovyj dosvid*. Aktualni problemy mizhnarodnyx vidnosyn. 2014, Vyp. 119(2). S. 73-83. [In Ukrainian].

[32] Especially when you consider that professional organizations, members of which often have representatives from many countries, are involved in their development.

[33] *Substantive Change Policy: A Guide to Substantive Change Policies and Procedures*. 10.15.2013. Availiable at: http://www.wascsenior.org/content/substantive-change-policy.

COMPETENCIES AND THEIR GROUPS										TIER
Management competencies										9
• Staffing, including **qualification assessment;** • Informing • Delegating; • Networking • **Monitoring Work** • Entrepreneurship			• Supporting Others • Motivating & Inspiring • Developing & Mentoring, including **self-assessment** • Strategic Planning / Action • Preparing and Evaluating Budgets				• Clarifying Roles & Objectives • Managing Conflict & Team Building • Developing an Organizational Vision • Monitoring and Controlling Resources			
Occupation-Specific Requirements										8
Occupation-Specific Technical Competencies										7
Occupation-Specific Knowledge Competencies										6
Industry-Specific Technical Competencies										5
Industrial and technical competencies must be determined by industry sector representatives										
Industry-Wide Technical Competencies										4
Industrial and technical competencies should be determined by industry representatives										
Workplace competencies										3
team work	adaptability / flexibility	Customer focus	Planning & Organizating	Creative Thinking	**Problem Solving & Decision Making**	Working with Tools & Technology	Workplace Computer Applications	Scheduling & Coordinating	Checking, Examining & Recording	Business Fundamentals
Academic competencies										2
Reading	Writing	Mathematics	Science & Technology	Communication – Listening & Speaking		**Critical & Analytical Thinking**		Active Learning		Basic Computer Skills
Personal Effectiveness										1
Interpersonal Skills			Integrity		Professionalism		Initiative		Dependability & Reliability	Willingness to Learn

Fig. 4. Model of competencies of the Employment and Training Administration[34]

The WASC provides a true understanding of the term ***competency*** — in assessment of student knowledge, specific skills, a set of knowledge or predisposition; can also relate to the student's ability to demonstrate this training. "competency" is sometimes used with the same terms as "learning outcomes", "purpose" and "ability". Relative openness of these models is conditioned by the fact that their development, implementation, assessment of efficiency is a long process,

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[34] Compiled by author *Technical assistance guide for developing and using competency models – one solution for the workforce development system.* January, 2012. Availiable at: http://www.careeronestop.org/CompetencyModel/pyramid_definition.aspx№tier1

the reproduction of which in other universities or educational systems will require significant time expenditures, as well as relevant resources, quality at all the stages. Therefore, the resulting temporal advantage will be sufficient for its maintenance and development.

Programs, based on competency, or direct assessment programs do not consider training of students in terms of credit hours or astronomical hours. Instead, they use the assessment of student achievement as the sole means of determining whether a student is worthy a diploma. Institutions can now use competency elements to obtain educational credits, when some components of the program are achieved through competency assessment. In cases, where a competency assessment serves as the sole basis for awarding a degree, this corresponds to the definition, established by the US Department of Education as a **direct assessment program**. In any case, as stated by the WASC, institutions themselves should: 1) identify key competencies for themselves; 2) define standards to be demonstrated by the graduate; and 3) collect evidence using assessment methods of their choice [35, p. 26]. Institutions need to analyse these evidences according to their own judgements, report on the level of demonstration by means that is understandable to the institution (for example, a single assessment, within a certain range or in qualitative categories), conceptualize their results according to their mission, and formulate their improvement plans.

Another example, but outside of the United States, is to draw up a national qualifications framework that is practised in the UK and in a number of other countries. Assessment in the system of Competencies of the national framework of qualifications in higher education is found among the professional functional and activity competencies (Table 4). The national qualifications frameworks are known as a credit transfer system, and since 2010, as the Qualifications and Credit Framework. The framework for qualifications in higher education is used in the United Kingdom for accreditation of courses that can be taught at the expense of the state budget, and given that some courses at universities in the UK are provided to foreign students, not all of them have passed or generally want to undergo such accreditation.

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[35] *Handbook of Accreditation Draft 2013.* Accrediting Commission for Senior Colleges and Universities at Western Association of Schools and Colleges. Availiable at: http://hilo.hawaii.edu/uhh/congress/documents/12WASCDraft2013HandbookofAccreditation.pdf.

Table 4 **Assessment of the National Qualifications Framework in Higher Education in the System of Competencies[36]**

Generic (general) characteristics (descriptors)	characteristics (descriptors) of the level		
			doctoral
		master	
	bachelor		
Critical and constructive reflection	Adequate use of standard assessment criteria and methods for assessing the quality, benefits and limitations of processes, programs, projects, terms, methods and theories	Appropriate and proper use of assessment criteria and methods for the formation of judgements and fundamental constructive decisions.	Critical and constructive assessment of projects and results of scientific research, assessment of the stage of theoretical and methodological knowledge; identification of knowledge and application of priorities within the sphere

The instrument of conducting state examinations is used in countries with a high level of state centralization of the educational sector. A student who has passed a state examination in accordance with the decision of the State Examination Commission is assigned with an educational level (qualification) accordingly, and a state document on education (qualification) is issued. At the same time, the state examination is also a means of state control over the work of higher educational institutions. Professional certification, which in practice, however, can be applied only to professions, where there are well-developed competency-based models, is an alternative to conducting state examinations. In particular, there are international organizations promoting competency-based models such as CIMA, CFA, ACCA, ICAEW, ICAI, ICAS, CIPFA, IFRS, CPA, CFA, FRM in the field of accounting and auditing, financial analytics. At the same time, it should be understood that world-class universities consider education as something more important than certification, which is only one of the niches in the educational market. Moreover, there are also formally independent university certification programs, which often assign certain or all the disciplines that have been mastered at the university to their clients.

Universities often use the results of external assessment of university applicants and graduates in countries with a high degree of decentralization. **Graduate Management Admission Test (GMAT)**, a standardized assessment to determine the ability to successfully study in business schools, is one example thereof. GMAT is used when considering applications by business schools around the world as one of

[36] Compiled on materials Dan, P. *Doctoral studies and research competencies*. Procedia – Socal and behavioral sciences. 2013, №76. pp.935-946.

the selection criteria, most often for admission to MBA programs. It is administered by the Graduate Management Admission Council with offices in the United States, UK, Hong Kong and India. The standardized test for assessing mathematical, linguistic and analytical skills, results of which are often one of the requirements for admission to the magistracy in the US, other English-speaking countries, and to courses taught in English (mainly business schools), called **Graduate Record Examinations (GRE)**, is another example. The test was created in 1949 by the Educational Testing Service, which also holds the TOEFL.

Testing of people aged 30+ to assess their knowledge of subjects, taught at universities at the bachelor's level (DSST), is actively used in the United States. It is used in conjunction with the College Level Examination Program (CLEP) — an assessment of students who acquire higher education in non-traditional formats. These assessments give students the opportunity to include credits that they have mastered on their own. It is interesting to note that Prometric administers DSST at the request of the U.S. Department of Defence (free of charge for military personnel and for civilian fees).

An independent assessment of language proficiency is one of the most commercialized fields of international mass assessment of competencies level. English is the most popular in this regard. The most famous tests[37] for assessment are:

• Test of English as a Foreign Language **(TOEFL)** is a standardized test to measure the English language ability of non-native speakers wishing to enroll in the US and Canadian universities.

• The International English Language Testing System **(IELTS)**, co-directed by the Cambridge University, the British Council and IDP Education Australia, was founded in 1989 and has two versions of the test:

• academic training version is intended for those who seek to enter universities, as well as for those who want to study or practice in an English-speaking country.

• general training version is intended for those planning to undertake non-academic training or to gain work experience, or for immigration purposes.

The depth of development of the language competencies assessment led to the recommendations related to the European language education in the context of its learning, teaching and assessment in the beginning

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[37] Testing is the most common tool used either alone or in combination with others for mass evaluation and for the implementation of which widely used information and communication technologies

of the century[38]. They outline the specificity of the content and tests, and exams, define the criteria for achieving educational objectives and describe the levels of proficiency in language competencies. In particular, use of such criteria in the world and, subsequently, in Ukraine has led to the emergence of a state requirement for proficiency of domestic associate professors and professors in one of the European languages at B2 level.

Functioning of accreditation agencies, as institutions that carry out assessments, has clear national characteristics. Functioning of accreditation agencies in developed countries is based primarily on the principle of collegiality, when university representatives evaluate colleges, adopt and share experiences. For example, accreditation of the Council for Higher Education Accreditation in the United States is based on a number of principles, in particular[39]:

- improvement of academic quality;
- demonstration of accountability;
- encouraging, when appropriate, self-monitoring and planning of changes and the need for improvement;
- use of appropriate and fair decision-making procedures;
- demonstration of permanent review of accreditation practice;
- possession of sufficient resources.

American universities undergo accreditation every 10 years, with preparations for the next accreditation long beforehand, often in 5 years. The presence and functioning of the internal structure of assessment and quality management at the higher educational institutions is important for the successful accreditation, and the assessment is carried out by teachers themselves and by interdisciplinary teams. Procedures for assessment of individual disciplines, programs, teachers and students are developed. In general, the main stages of accreditation of institutions and programs are as follows:

- preparation and self-assessment;
- independent review of submitted materials;
- visits and assessment by an expert team;
- decision-making by the accreditation body and publication of the results;
- periodic review of accreditation.

Universities are required to submit self-assessment materials when applying for accreditation or confirmation of accreditation, which may

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[38] *Common European Framework of reference for Languages: learning, teaching, assessment.* Language Policy Division. Council of Europe, Strasbourg. Accessed 20-05-2017. Availiable at: https://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf.

[39] Eaton, J.S. *An Overview of U.S. Accreditation. Council for Higher Education Accreditation.* August 2012. Availiable at: www.chea.org/pdf/Overview%20of%20US%20Accreditation%202012.pdf.

include descriptions of action plans, aimed at improving the quality of aspects, being key in the applicant's opinion, if necessary. Description of such plans should include such components as identification of the long-term relevance of the project, expected objectives and results, implementation stages, time-frame and responsible persons, resources, and assessment of the results and effectiveness of the project[40].

In general, the accreditation process in the United States is a field of educational analysis, assessment and consultation[41]. Considering the accreditation process as an external assessment of a particular institution or program, it is necessary to take into account groups of criteria that can help to ensure the quality of assessment and the learning process in general. These include: criteria of reliability (representativeness, significance, cognitive complexity and content coverage); transparency; justice; possibility of generalization (comparability, reproducibility, possibility of transfer, are the result of learning)[42]. Universities receive recommendations from specialists on possibilities of improving components of educational activity in the process of accreditation.

Professional Accreditation Agencies. Accreditation of professional educational programs has even more features, which are conditioned precisely by the requirements for certain professions. In the United States, the Council for Higher Education Accreditation recognizes four national faith-based accrediting bodies, only two national accrediting bodies of professions and about 50 organizations accrediting educational programs. Such a large number of programs for accrediting educational programs are explained by the large number of educational programs, offered at the US higher education market, at all the levels of post-school education, and by a variety of forms of education, approaches to achieving expected results, different perspectives, educational content, university missions and their ownership forms. There are professional accreditation agencies that provide the closest connection between professional communities and universities.
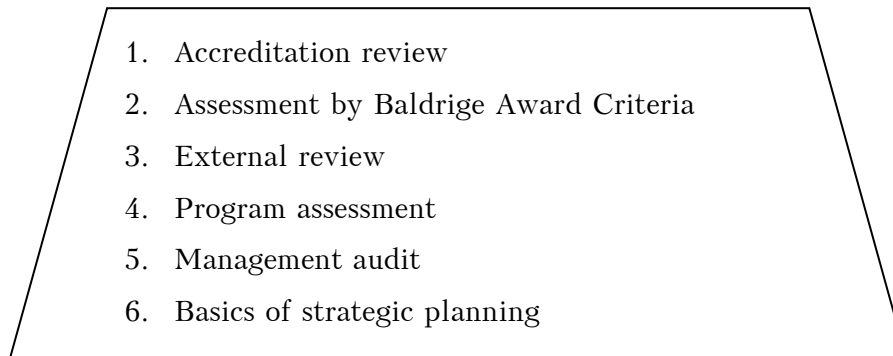
Quality assurance approaches have a different value for the US universities, depending on the market niche, but stakeholders may influence their ranking (Fig. 5). It is priority for most educational institutions to confirm accreditation, and the Baldrige award criteria are considered as promoting accreditation, as well as an instrument of development in the context of increased competition in the educational services market.

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[40] *Guide to evaluating & improving institutions.* Accrediting Commission for Community and Junior Colleges. Western Association of Schools and Colleges. July 2015. Availiable at: http://www.accjc.org/wp-content/uploads/2015/07/Guide_to_Evaluating_and_Improving_Institutions_July_2015.pdf.

[41] Panych, O. *Akredytaciya i perspektyvy universytetskogo rozvytku: zauvazhennya do reformy vyshhoyi osvity v Ukrayini.* 19 veresnya 2014. Availiable at: http://www.fulbright.org.ua/uk/news/187/Panych.html. [In Ukrainian].

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1. Accreditation review
2. Assessment by Baldrige Award Criteria
3. External review
4. Program assessment
5. Management audit
6. Basics of strategic planning

Fig. 5. Hierarchy of Approaches to Quality Assurance in Higher Education[43]

Didactic patterns and peculiarities of the use of assessment in the educational process have international differences as well. The main assessment tools, used in higher education, include check of reproduction of knowledge, testing, questioning (communication and sociology), case studies, business simulation, reporting, counselling, rating, attestation, state examination, independent assessment, including external independent testing, professional certification and international comparisons, responses from employers and graduates. Their diversity requires a series of professional publications. Therefore, we propose just stay on what has been found following the analysis of curricula in economic disciplines. It consists in the fact that the share of different assessment tools (classroom work; intermediate exams; modules, final exam) tends to balance or to the level of 30-40% (each) in the U.S. universities[44]. Thus, a culture of continuous work on the mastery of discipline, as well as constant assessment before the final result, is formed. They differ from the Ukrainian ones, where, for example, there has been a tendency for 50-60% of students to be assessed following the final exam, while others tend to balance in the Kyiv National Economic University named after Vadym Hetman in recent years.

The use of business simulations is one of the trend areas for assessment, which involves the practical application of acquired competencies. Their diversity shows that it is expedient to regulate the very need for assessment, rather than the use of a particular kind of instrument, which should be based on specific conditions and objectives. Thus, the classification of business simulations by M. Gredler

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[43] Fooladvand, M., Yarmohammadian, M., Abari, F.A., Najafi, P., Shahtalebi, B. and Shahtalebi, S. *Designing and application of quality model in Iranian non-governmental university (A project in progress).* Procedia — Social and Behavioral Sciences. 2012, №46. Pp. 2862-2868.

[44] It should be recognized that American university professors enjoy autonomy in making decisions on the use of evaluation tools.

distinguishes data management simulations, diagnostic simulations, crisis management simulations, social-process simulations[45]. Bigg's taxonomy of business simulations includes: functional and total enterprise, competitive or non-competitive, interactive and non-interactive, industry specific and generic, played by individuals or by teams, deterministic and stochastic, degree of complexity, time period simulated[46]. It is appropriate to combine interests of universities and private developers due to the complexity of development of high-quality business simulations. For example, the assessment using business simulations in KNEU is conducted on the basis of software complex ViAL+ in cooperation with the Company of Intellectual Technologies (KINT).

The **international rating** of systems of higher education and universities is one of the tools for external assessment of entities and their results. The most famous ratings, which are a few dozen, include world rankings from Reuters, Times, QS, and Shanghai rankings. The European Commission deliberately supports the operation of the non-profit ranking U-Multirank, which does not represent the rating list, but is an instrument for all the stakeholders. At the University of Melbourne, the world's top 50 higher education systems are ranked worldwide, with Ukraine represented. Unfortunately, the 35th place taken by Ukraine in 2017 does not explain the lack of domestic universities among the first hundreds of international leading universities. Since practically all the ratings have been created for a certain purpose, when applying their results it is required to take into account their significant subjective character, as the results of the assessment.

International Comparisons of Education Quality. When determining a set of indicators of the research of the national intellectual capital, researchers have found that the data on the quality of education, the penetration of education at the urban and rural levels of education in terms of its quality are insufficient for conducting thorough international researches[47]. Therefore, it is believed that the use of the international quality assessment programs in the future will help to overcome these obstacles.

International comparisons are also aimed at the assessment of the quality of education in the country. The standard tests, analysis of the number of graduates of the university or consumer satisfaction survey

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[45] Gredler, M. E.. *Games and simulations and their relationships to learning*. Handbook of research on educational communications and technology. 2004, № 2. pp. 571-581.
[46] Biggs, W D. *Functional business games*. Simulation & Games. 1987, №18 (2). Pp. 242-267.
[47] Bontis, N. *National Intellectual Capital Index: A United Nations initiative for the Arab region*. Journal of Intellectual Capital. 2004, Vol. 5 No. 1. Pp. 13-39

are traditionally used for the education quality control[48]. In addition to the collection of statistical data, which are mainly quantitative, international comparative studies of school education quality are introduced, in particular:

- Trends in International Mathematics and Science Study (TIMSS),
- Program for International Student Assessment (PISA),
- Progress in International Reading Literacy Study (PIRLS),
- International Computer and Information Literacy Study (ICILS),
- Teaching and Learning International Survey (TALIS),
- Programme for the International Assessment of Adult Competencies (PIAAC).

Although the number of participating countries is small, it is steadily increasing, along with awareness of the importance of education for social and economic development. For example, the number of countries, participating in TIMSS, has increased from 25 in 1995 to 52 in 2011 [49]. Unfortunately, in 2015, their number has decreased by 3 countries, and Ukraine did not take part again. PISA has involved 65 countries, PIRLS — 45 countries, ICILS — 21 countries, TALIS — 34 countries. PIAAC is a periodic monitoring survey of professional skills and competencies of the adult population of working age in countries of the world. OECD has been developed and implemented in a consortium with leading international scientific organizations. More than 157,000 people from 24 OECD member countries and partner countries participated in the study in 2011-2012, which was joined by 9 more countries in 2014-2015. So, as we can see, the number of countries, participating in such comparisons, is rather small, and is limited mainly to developed countries, which carry out a conscious policy to improve the quality of conditions and performance of educational systems and their institutions.

The analysis of the results of international comparisons of the quality of education makes it possible to identify a paradoxical situation that requires in-depth study. It turned out that the US position in international studies on the quality of school education varies greatly and shows that the average quality of school education in the country does not correspond to the leadership positions of American universities in most international ratings (Table 5). Therefore, if we consider universities as a factory that consumes incoming resources, with the help of internal processes, creates new products, then the quality of incoming human capital is high, but not overcast or unattainable to others. All

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[48] Christinidis, G. and Ellis, E. *Knowledge, Education, and Citizenship in a Pre- and Post-National Age.* Journal of Knowledge Economy. 2013, №4. Pp.63-82.

49 *TIMSS 2011 International Results in Mathematics.* TIMSS & PIRLS International Study Center. pp. 34-42. Accessed on 20-07-2015. Availiable at: http://timss.bc.edu/timss2011/downloads/T11_IR_Mathematics_FullBook.pdf.

explanations should therefore be within limits of universities, their policies and strategies, the intellectual capital and institutional missions.

Table 5 **US Positions in the International School Education Quality Research, Place in Rating**[50]

year, grade		TIMSS		PISA			PIRLS
		mathematics	science	reading	mathematics.	science	
1995	**4th grade**	15	5	–	–	–	–
1999	**8th grade**	19	18	–	–	–	–
2000		–	–	16	20	15	–
2001		–	–	–	–	–	9
2003		–	–	18	28	22	–
4th grade		12	6	–	–	–	–
8th grade		15	9	–	–	–	–
2006		–	–	–	35	29	18
2007	**4th grade**	11	8	–	–	–	–
	8th grade	9	11	–	–	–	–
2009		–	–	17	31	23	
2011		–	–	–	–	–	6
4th grade		11	7	–	–	–	–
8th grade		9	10	–	–	–	–
2012		–	–	24	36	28	–
2015		10	10	20	31	19	

The competency-based approach has been implemented in Ukraine at a rather restrained pace due to the limited resources, allocated to these objectives, as well as the low priority of this vector of development. At the same time, there are examples of the progress in certain spheres. For example, the team of employees of the Institute of Higher Education of the Kyiv National Economic University named after Vadym Hetman explores the requirements of employers regarding competencies of graduates-bachelors in economic and management specialities within the framework of the fundamental study "Global Competitive Imperatives of the National Higher Education System". A survey was conducted among students and individuals who received practical experience after acquiring higher education[51] (Table 6). Based on answers to questions in the questionnaire (from 1 to 5, where 5 — very important, 1 — not

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[50] Compiled by the author on materials relevant international comparisons
[51] The survey was conducted among the participants of the European Business Association and CIDZEN club in Ukraine.

important), average estimates were obtained for competencies for bachelors in economics and management specialities.

Table 6 **Comparison of Results of the Questionnaire Survey Regarding Assessment of Competencies of Bachelors in Economics and Management, scores**

Competencies	Average (107 persons)	Practitioners (64 persons)	Students (41 persons)
Ability to make reasonable decisions	4.48	*4.41*	4.59
Ability to take initiative and entrepreneurial attitude	4.45	*4.40*	4.54
Ability to work in a team	4.36	*4.33*	4.41
Ability to identify problems independently	4.26	**4.32**	*4.17*
Skills of using modern information and communication technologies	4.26	*4.22*	4.32
Ability to creative and critical thinking	4.28	*4.18*	4.44
Ability to act consciously and responsibly towards a society, based on ethical considerations	4.19	*4.17*	4.22
Skills of search, processing and use of information	4.16	*4.16*	4.17
Ability to self-assess	4.13	**4.14**	*4.12*
Skills of tactical and operational planning	4.02	**4.09**	*3.90*
Ability to adapt and act in an unusual situation	4.17	*4.05*	4.37
Skills of resource management	4.10	*4.00*	4.24
Skills of strategic planning	4.03	*3.98*	4.10
Ability to analyse the external and internal environment of the enterprise	3.97	*3.94*	4.02
Skills of financial and economic analysis	3.83	**3.84**	*3.80*
Ability to communicate professionally in a foreign language	3.94	*3.83*	4.12
Ability to analyse and predict economic processes	3.83	*3.80*	3.88
Skills of use of marketing tools	3.90	*3.80*	4.05
Ability to use economic and mathematical methods	3.32	**3.41**	*3.20*

The analysis of the given data revealed the discrepancy in the estimation of the value of all the components of the key competencies by those with practical experience and students. At the same time, we recognize that the first three competencies of prioritization coincide with practitioners and students.

Note that practitioners give more importance to only some of the components — the ability to identify problems independently, the ability to self-assess, skills of tactical and operational planning, the ability to use economic and mathematical methods. Therefore, such competencies as (self) assessment are also prioritized by business practitioners.

Development and adoption of the guidelines of typical professional qualification characteristics of public servants by the National Agency of Ukraine on Civil Service in 2011 is another example of the introduction of a competency-based approach in Ukraine. Unfortunately, regarding the use of the assessment as one of the tools or characteristics, we observe its limited identification in activities of public servants, which are mainly limited to assessing the situation in the relevant area of work.

Conclusions

Thus, we can observe a variety of tools that are used to assess competencies both in and beyond higher education. Developed countries are more characterized by the use of diversified approaches to the external assessment of the results of functioning of the educational system and educational activities of its entities. The necessity to bear costs for conducting international comparisons, national and international ratings is conditioned not only by the impact of the internationalization of educational activities and the globalization of the world economy, but primarily by the desire to ensure the highest quality of educational services, provided by leaders, and their high average level within the national educational systems. The effectiveness of these costs, the relationship with macroeconomic indicators and the competitiveness of individual enterprises may be the subject of further research on competency assessment and their management issues.

The interest of society, especially of those countries, developing under the conditions of realization of the knowledge economy, leads to the development of cooperation between universities, other educational institutions, but also other economic agents who are interested in gaining competitive advantages in the form of the high-quality intellectual capital, creative personalities. The competency-based approach has been implemented in less developed countries, in particular, Ukraine, but its interrelation with the quality of educational activities needs the infrastructure support from the state and other actors that influence the quality of social and economic development at this stage. Recognizing different prioritization and the inability to gain all the competencies at the same time and in one place, national economies need to diversify their acquisition and assessment capabilities, which is possible, based on assessment as one of the tools for managing the quality of university competencies.

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