

УДК 311.1:37.07:005.6

JEL A22,23 C44

**STATISTICAL BACKGROUND OF ESTIMATION OF THE HIGHER
EDUCATION QUALITY IN UKRAINE**

S. S. Gerasyenko,

DSc, Professor,

Acting Head of the Department of Statistics,

National Academy of Statistics, Accounting and Audit;

V. S. Gerasyenko,

PhD (Statistics),

lecturer of the Department of Accounting, Audit and Statistics,

National Academy of Management;

O. A. Chupryna,

PhD, Associated Professor,

Associated Professor of the Department of Statistics, Accounting and Audit,

V. N. Karazin Kharkiv National University

Abstract. The article deals with the problem of statistical estimation of the quality of teaching in the higher educational establishment and the quality of grounding graduating seniors, because of the necessity to realize practically the clauses of the new law of Ukraine “About the higher education”. The necessity to estimate the quality of the higher education in Ukraine using the basic statistical approaches and methods which are used in the management of the quality of goods and services is substantiated. Conventional statistical methods used in quality management of commodities and services need to be applied in evaluating quality of higher education in Ukraine.. Higher education quality evaluation needs to be started with approaching the higher education system theoretically as a market economy sector, from the perspective of the market conjuncture analysis, with due account for the peculiarities of higher education establishments as entities engaged in “production” of a peculiar “commodity”, specialists with higher education, by way of rendering education services,

However, statistical methods used to quality evaluation of commodities and services cannot apply in a direct way to evaluate quality of professional education, due to several reasons: varied view of employers (labor market) on the range of

competencies and skills required for specific jobs; varied labor conditions at similar jobs in various organizations and enterprises; dynamically changing criteria of professional competencies and skills, due to the advancement of science, technologies and organization of work.

Tasks to be solved in building information database for quality management in Ukraine with use of statistics on higher education quality are highlighted.

Анотація. Розглянуто проблему статистичного оцінювання якості освітньої діяльності вищих навчальних закладів та якості підготовки їх випускників у зв'язку з необхідністю впровадження в практику положень нового Закону України "Про вищу освіту". Обґрунтовано необхідність оцінювання якості вищої освіти в Україні із застосуванням базових статистичних підходів та методів, використовуваних в управлінні якістю товарів і послуг.

Анотация. Рассмотрена проблема статистического оценивания качества образовательной деятельности высших учебных заведений и качества подготовки их студентов, в связи с необходимостью внедрения в практику положений нового Закона Украины "О высшем образовании". Обоснована необходимость оценивания качества высшего образования в Украине с применением базовых статистических подходов и методов, используемых в управлении качеством товаров и услуг.

Setting up the problem. The notion "quality" is a very complicated philosophical category. The quality is the essential peculiarity of the object due to which it is just this object and not the other, and that distinguishes it from other objects. Quality can't be turned into quantity. Every object is a unity of a certain quality and quantity. These characteristics are changeable and variable. But their changeability is limited by certain limits, when infringe them the quantity changes lead to the quality changes. In its turn the change of the quality of the object leads to the changes of its quantity characteristics and limits [1].

Analysis of the publication works. Nowadays a lot of attention is paid to the quality of education definition and its definition by scientists, government and non-government organizations [3–7]. But the authors in their published works consider only theoretical aspects of the quality of education. Their suggestions are turned into "it would be quite well to do so", but without appropriate basis of possibilities to realize these suggestions in the modern conditions of functioning of the system of education in Ukraine. There are no publications as of analytic contents so those

which consider the ways of solving the problems of working out the statistic of quality of education without which it is impossible to introduce and to watch over the realization of measures of guaranteeing the quality of higher education itself.

Aim of the article. Summarizing the above stated we can come to the questions of the conclusion that for a grounding estimation of quality of the higher education it is very reasonably to apply basic statistical approaches and methods, which are used in the management of the quality of goods and services. The necessity to solve the questions connected with this caused the urgency of the research, the main results of which are given in this article.

The main material. As it is known management of any kind of activity is grounded on the appropriate statistical provision. Higher education management requires the definition of the notion and estimation, of the level of the quality of higher education, formation of the system of indices which will characterize the factors causing this level, definition of the sources of information for calculating the above mentioned indices, choosing the methods of analysis of regularities of formation of the level and tendencies of the higher education quality. The statistic information received as a result of the analysis will be the basis for making the decisions for making appropriate changes in the process of grounding the specialists in the higher educational establishments with the aim to bring the quality of their education to the level defined by the criterions. In its turn the acquaintance with this information will help the consumers-employers to form the grounded points of view on the demands to the knowledge, skills and acquired habits of the futures workers. Taking into account the fact that in Ukraine there are no fundamental works and groundworks about the estimation of the higher education quality, the guaranteeing of which is one of the main tasks in realizing the regulations of the law of Ukraine "About the higher education" and also the fact that it is very difficult to solve the questions connected with the development of the methodology of the statistics of the higher education quality the description of only the main methodological propositions of this new trend of statistics are given in the article.

The initial point in estimating the quality of the higher education is to regard the system of higher education as the component of market economy. The above mentioned estimation, in this case, will be based on the statistics of the state of market (labor, graduating students, services of the special education) taking into account the peculiarities of the higher educational establishments in "producing" the specific "goods" – the specialists with the higher education. Such approach causes the necessity to use while estimating the quality of the higher education, the regulation of

the notion “quality”, which is used in statistical provision of quality of goods and services. In particular, such regulation as “quality – it is the possibility to use” [8]. This requires the guaranteeing as the quality of the process of producing the product itself so correspondence of the finished goods to the demands of the specifications approved beforehand.

At the same time the direct use of the statistical methods of guaranteeing the quality of products and services in guaranteeing the quality of higher education is impossible in connection with the following: 1) variations of the demands of the employers to the knowledge and skills which the specialists must have in order to work at a corresponding positions; 2) variations of the conditions of work on the similar positions at different employers; 3) changes of the time demands as to knowledge and skills of specialists, caused by the development of science, engineering, technique and organization of work.

The mentioned above must be taken into account as by the “producers” of the specialists in the process of their teaching and so by the users-employers. The letters while hiring the graduating seniors first should take in to consideration that the higher educational establishment can’t train such specialist for a certain position that they need, because the activity of the higher educational establishment – is the mass and not the individual production, and second – they must take into consideration the ability of the candidate for a position for a further education with the aim of taking into account in future the changes and demands to his work. Moreover the employer should understand this and create for the worker the conditions for such education (raising the level of his skill). In the modern economy which now is called “knowledge economy” just the knowledge (and not any other factors of production) changes the modern world very quickly. The term “knowledge economy” (or “economy which the use of knowledge”) was suggested by Fritz Machlup in 1962, understanding by it just the section of economics. Now this term is used for defining the type of economy, in which knowledge plays the leading role and the production of knowledge is the main source of its growth.

For estimating the preparedness of the country for transition to the knowledge economy the World Bank suggested the calculation of the Index of the knowledge economy for calculation of which the indices of economical stimulation and institutional regime, education and human capital, innovation systems, information and telecommunication technology are used [9].

Traditionally the system of education was regarded as the necessary condition of requiring systematic knowledge and skills, for preparing a person for life and

work. Nowadays the development of world economy is defined by the knowledge in the form of ideas and technology. In most countries it made the organizations of education and the bodies of education management reconsider the policy in favor of creating the conditions for qualitative continuous education. Education is an important part of the unitary system of knowledge reproduction, which embraces all levels and spheres of person's activities. Educational complex, government bodies, which regulate its activity, different international organizations – World Bank, International Monetary Fund, UNESCO, which develop the main trends of modernization of education and finance it, coordinate the activities of organizations of education on the worldwide level – are the institutional structures of economics based on knowledge [10].

In connection with this the estimation of the quality of higher education must be based on the following two principles:

1) harmonization of the national educational system of Ukraine and the educational systems of European countries with the aim of creating the conditions for entry of Ukraine into the European educational space;

2) spreading the information about the curriculums and trends of grounding in the higher educational establishment in connection with the supply on the labour market, that must ensure the grounded formation of demand on the education of corresponding level and trend from the side of schools-leavers and on graduating seniors from the side of employers.

It should be noted that understandable to everybody differences in the function of certain segments of the labour market of specialists with higher education cause the differences of separate components of the statistics of higher education quality. In connection with this the ways of solving the questions connected with the building of the statistics of the higher education quality concerning only the processes and results of the educational activities of training the specialist of the orientation “Economy and entrepreneurship” are considered in the research.

Summarizing the definition of quality as the “ability of the product or service for use”, regarding the specialist with the higher education as the product on the labour market and taking into consideration the above mentioned remarks concerning the specificity of the state of the market of the mentioned product the notion “the quality of specialists production” and “the quality of their correspondence to the demands of the market” should be regarded in interconnection. At the same time, taking into account much longer experience of functioning of the systems of higher education of the leading economically-developed countries, in comparison with

Ukraine, in market conditions the criterion for estimating the above mentioned qualities can be the structure of educational systems and the contents of knowledge which the students acquire in the higher educational establishments of these countries. The following fact indicates the reasons of choosing such criterion: in Ukraine according to the estimation of the Institute of strategically researches, the part of the people with the higher education is lower then in such countries as USA, Canada, Australia, Japan, New Zealand, but the level of unemployment among them has the opposite tendency – in Ukraine their part in the structure of unemployed is 4-5 times higher then in the above mentioned countries. It means that: in these countries there is the quality of the higher education, and in Ukraine – there is no.

The main difference between the systems of the higher education in Ukraine and in other countries, that demands the fast liquidation, is that in western universities during the studies the student is “taught to study”: to study on his own all his life for obtaining new special knowledge. The employers know that quite well hiring first of all graduating seniors who in future will continue to study and will share the new knowledge with the firm or the institution where they work, creating the conditions for development of the subject of entrepreneurship. The possibility for such approach to education exists in the higher educational establishments of other countries, because their aim is not the all-round development of a student. When choosing the institute of higher education university entrant tries to choose such, where he will acquire the best knowledge and skills for the speciality which will help him in future to adapt himself to the conditions of work which constantly change. And as a result the entrant can to form his life style as he wants.

The higher educational establishments draw up their curricula according to this main demand of future students. Though the relevant ministries give certain recommendations as to the structure and contents of curricula the higher educational establishments have the right not take them into account as the students don't get the state recognized diplomas, but the diploma of a corresponding university. University the graduating seniors of which depending on which university they graduated from enjoy or don't enjoy the employer's confidence and respect. Another thing, that the set of basic subjects has been developed for centuries, and proceeding from the acquired experience, the higher educational establishments in XXI century as well are based on this set updating it according to the new reality.

But this set differs very much from the list of the normative special subjects which must be taught in all the institutes of higher education of Ukraine. That is the main factor why Ukraine, which more them 20 years ago experience proclaimed the

transition to the market economy, doesn't train till now the specialists for working in the conditions of market economy. And not only because the considerable part of class hours is given for studying "Business Ukrainian", "Sociology", Philosophy", "History of Ukraine", and "Higher mathematics for economists" which no one of mathematic lecturers can teach, because such lecturers-specialists are not trained in the Universities of Ukraine. The drawbacks of curricula to a greater degree are seen in teaching the basic special economical subjects, mastering of which must prepare a student as for writing the master degree scientific thesis and so for using them in practice.

The aim of the management of economic activities is to get by better financial results the subject of entrepreneurship in future than now. Elaboration of the measures necessary for this requires the formation of appropriate information the source of which are usually the results of the analysis of the activities of the subjects of the entrepreneurship. For this the future specialists are taught "Analysis of economic activity", "Financial analysis", "Strategic analysis" and "Accounting in management of the subject entrepreneurship" and also "Managerial accounting". But if to compare the curricula of these five subjects than it is seen that to a considerable degree they duplicate each other. The authors of curricula suggest using for analysis the same methods of analysis known in the whole world as the methods of statistical analysis. While training the specialist of economic area in western universities the teaching of the mentioned statistic methods is generalized in one subject – "Applied statistics". Such approach teaches the future managers the competent and correct usage in management the standard, approved long ago, methods of analysis for efficient management of entrepreneurship.

As it is known, the quality is defined by the object itself and its difference from the other objects. The use of the given definition in practice requires to solve the following two theoretical problems: 1) choosing the standard with which the other objects will be compared in order to establish their correspondence to the required notions; 2) working out the system of limits of deviation from the standard in relation to certain parameters of object, the exceeding of which will allow to assert that it doesn't correspond to the standard. Such approach corresponds to the definition of the notion "quality" given in the Standards of ISO 9000 [11].

In order to have the possibility to implement in the existing system of higher education in Ukraine the necessary changes with the minimal demolition of this system several standards can be chosen. It will allow fixing the real terms for performing necessary actions, and at the end of each period of reorganization to estimate the quality of the achieved result concerning the educational activity. But

here it should be taken into account that for receiving really qualitative education the quality of the following should be ensured:

- demands for education;
- resource for performing educational activity (including the contingent of university entrants);
- the results of the educational activity (estimating, first of all, the promotion of graduating seniors).

While talking about the quality of the higher education very often just the quality of educational activity is meant and all the rest is regarded as necessary conditions for ensuring this quality. To our mind, all elements of the quality of higher education are important and must be considered in complex. Moreover, depending on who is the end user of the results of educational activity, the following can be considered as these results:

- for a certain person (a student) – educational services, which the higher educational establishment provides;
- for employers – grounding of the graduating seniors for performing official functions.

Estimation of compliance with the standard (or the extent of deviation from the standard) is not less difficult task. Such estimation should be done on many parameters. But, in multidimensional comparisons the problem with defining the criterion for characterizing the achieved result occurs. Deviation of what scale can allow us to make a conclusion about the discrepancy to the standard? With the goods and real services it is quite easy to do it. But concerning the educational activity the acceptable interval should be defined as for each parameter so for multidimensional mean of all deviations in whole. Also the great problem is the necessity to choose the balance in building such mean. Summarizing the above said we can enumerate the main tasks which must be solved in the process of forming the informational provision of the management of the higher education quality in Ukraine [12]:

1. Characteristics of the modern phase of grounding the specialists with the higher education in Ukraine.
2. Analysis of the quantity and structure of the specialists with the higher education, working in Ukraine.
3. Statistical characteristics of the main trends of changes of the level and structure of education of the population in Ukraine.

4. Statistical characteristics of corresponding of the use of the specialists with the higher education to the speciality and to the level of the obtained in the higher educational establishment education.

5. Prognostication of the demand for the specialists with the higher education in Ukraine.

6. Formation of the system of the informational provision of the management of the higher education quality.

7. Estimation of the resource possibilities of the country and the higher educational establishments for implementing the changes with the aim to ensure the quality of higher education in Ukraine.

Very often the usage of different ratings is suggested for estimating the quality of education. Just the great quantity of them indicates “the impartiality” of such estimation. Anybody can calculate these ratings and that’s why they differ greatly from each other. The reason for such differences is caused, first of all, by the differences of the set of indices, which are used here. Moreover the great amounts of parameters are defined by expert way without using the corresponding criteria. As it is known, the most impartial characteristics of the phenomena and processes is given by the indices calculated either according to definite standard rules (indices of the accounting and statistical reporting forms), or received by the way of comparison with the criterion, the level of which is defined by calculation. Taking into account the above mentioned remarks the rating can also be used as subsidiary tool in estimating the quality of the higher education.

Conclusion. Solution of the tasks of ensuring the quality of the higher education in Ukraine, which are stipulated by the law of Ukraine “About the higher education”, requires to work out the theoretical and methodological principles of the new trend in applied statistics. To make the grounded managerial decisions in relation to the quality of the higher education and to work out the corresponding measures for ensuring their fulfillment is possible only in the case if there is the impartial exhaustive information about the state of existing system of higher education in Ukraine, and while realizing these measures – information about the changes which take place in the system of higher education and the correspondence of these changes to the specified criteria. The statistics of the higher education quality is called to form such information.

Discussion. Such long quotation is given in the beginning because the concepts “the quality of the higher education” and “quality of teaching”, given the new law of Ukraine “About the higher education” [2], don’t take into account the

demands to the notion “quality” as it is meant by philosophy. The main ideas in these concepts are “level” and “standard” of the higher education, that presupposes the necessity of working out the criterions for defining the quality of the higher education. At the same time the subjectivity of any criterion, as well as interconnection between the development of science, practice and education, must be taken into consideration. The mentioned above much more complicates the conditions of applying the criterions for defining the level of the quality of the higher education because of the fact that the mentioned development requires their permanent renewal. And it is very difficult to identify when the moment for making such renewals comes.

References

1. *Philosophskii slovar* (Philosophical dictionary) / Red. I. T. Frolova. – [5-th ed.]. – M. : Izdatelstvo politicheskoi literatury, 1986. – 589 p. (rus.)
2. Pro Vyshchu Osvitu (About the higher education : Law of Ukraine) // *Vidomosti Verkhovnoi Rady*. – 2014. – № 37–38. – ar. 2004. (ukr.)
3. *Velichko O. G.* Yakist osvity – problemy ta perspektivnyy (Quality of education – problems and perspectives) / *O. G. Velichko, S. J. Pinchuk, S. T. Pliskanovski* // *Problemy osvity*. – K. : Naukovo-metodychnyi centr vyshchoji osvity, 2003. – Ed. 34. – 341 p. (ukr.)
4. *Vyshcha osvita v Ukraini ta Bolonskii protses* (The Higher Education in Ukraine and Bologna process) / Red. V. G. Kremin. – Ternopil : Navchalna knyha – Bohdan, 2004. – 171 p. (ukr.)
5. *Subetto A. I.* Problemy kachestva vyssheho obrazovanyia v kontekste hlobal'nykh y natsional'nykh problem obschestvennoho rozvytyia (The problems of the Higher Education quality in contest of the global and national problems of social development) / A. I. Subetto. – SPb., Kostroma, 2000. (rus.)
6. *Litvin V. K.* Naukovo-osvitnij potentsial natsii: pohliad u XXI stolittia (Scientific-educational potential of the nation: the view into XXI century) / V. K. Litvin, V. V. Andruschenko, S. P. Dovdij. – K. : Navchalna knyha, 2003. – P. 352–354. (ukr.)
7. *Liashenko O. I.* Yakist' osvity iak osnova funkcionuvannia j rozvytku suchasnykh system osvity (The quality of education as the basis for functioning and development of the modern systems of education) / Liashenko O. I. // *Pedagogika i psykholohiia*. – 2005. – № 1 (46). – P. 5–12. (ukr.)
8. *Vardeman S. B.* Statystychni metody zabezpechennia yakosti (Statistical methods of the provision of quality) / S. B. Vardeman, D. M. Dzoub. – K. : KNUET, 2003. – 254 p. (ukr.)
9. *Svitovi indeksy ta reityngy* (The world indices and ratings) // *Dzerkalo tyzhnia* (Mirror of the week). – 2007. – № 42–43. – 10 nov.

10. *Dugov O. O.* Institutional factors of rising the competitiveness of economy in Ukraine / *O. O. Dugov* // *Ekonomika promyslovosti*. – 2008. – №2 (41). – P. 3–9. (ukr.)

11. ISO 9000:2005 Systemy menedzhmenta kachestva Osnovnye polozheniya y slovar' [Electronic resource]. – Access mode :

<http://www.klubok.net/Downloads-index-req-viewdownloaddetails-lid-219.html>

12. *Gerasymenko S.S.* Statistical provision of grounding curricula and using the specialists. – K. : Vyscha shkola, 1991. – 134 p. (rus).