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The model of evaluating the efficiency of educational services market based on the balanced scorecard

Abstract

There has been considered in the article the issue of evaluating the efficiency of functioning of the educational services market under the conditions of national economy formation. There has been analyzed the educational services markets of Ukraine and China. There has been suggested the model of evaluating the effectiveness of functioning of educational services market based on the tools of the balanced scorecard.

Key words: educational services market, balanced scorecard, financial and non-financial indicators, the efficiency of educational services market.

STATEMENT OF A PROBLEM

Raising the **efficiency** of educational services market as well as functioning of higher education institutions (HEIs) and its evaluation is one of the most significant problems of modernizing the higher education in Ukraine. Therefore, the problem of developing the quantitative assessment of the efficiency of educational services market becomes a very topical one. Under the conditions of mass activity aside this problem the very important fact is that well-known indicators which are used in business as well as in non-commercial organizations are usually not interrelated (or correlation is not essential). For instance, these are the income from rendered services, the size of expenses, profitability, proceeds, consumers' contentment etc. Each of them reflects different information about the efficiency of organization. Therefore, such a scorecard is needed which will feature the efficiency of organization more comprehensively.

LITERATURE OVERVIEW

A lot of famous scientists-economists such as R. Lanch, K. Cross, K. Adams, P. Roberts, L. Meisel, M. Meyer, R. Kaplan, D. Norton dedicated their works to investigating the problems of measuring and evaluating functioning of enterprises and organizations.

Under new market conditions of providing the consuming market with goods and services the innovative tool for Ukrainian economy is the modern concept of evaluating the business efficiency called **the balanced scorecard (BSC)**. It was designed in 1992 by Robert Kaplan and David Norton, the professors of Harvard school of economics (Kaplan, Norton, 2004). The BSC is founded on the usage of financial and non-financial indicators of activity. **Its gist** is in organization management by means of achieving the quantitatively determined strategic aims for each separate subsection. BSC is the modern tool of quantitative evaluation of enterprise performance that also can be used for higher education institutions (HEIs).

The system provides **balanced scorecard of financial and non-financial efficiency indicators** that deal with additional information about economic performance. The search of necessary indicators and their combinations for determining the performance of specific organization is a complicated issue, especially calculating different formulae for paying salaries to the workers according to the results of their work.

Recent years witnessed many scientific papers and examples of using the balanced scorecard. The disputes about the problems of evaluating the efficiency are to be continued (Meyer, Marshall, 2004). Most of researchers consider that the modern **assessment of efficiency consists in evaluating income received by a company that exceeds its costs** (Kalenyuk, Kuklin, 2012; Kremen, 2005; Meyer, Marshall, 2004). In our opinion, for comprehensive understanding the efficiency of educational services market, both financial and non-financial measures are to be analyzed.

During the time of its existence the concept of BSC has been constantly improved, but has not been changed dramatically. For instance, the system of analyzing HEI development management comes from the fact that the balance of indicators means evaluating in 4 areas of efficiency: finances; employers/students; education process and potential; infrastructure/ employees (Bakharev, Burgonov, 2012; Gedro, Kosova, 2007). It allows raising the efficiency of training future professionals.

The main results of research. One of the BSC peculiarities is that it is based on the systemic approach as the indicators have to be interrelated with HEI strategy. Each indicator should be the part of the cause-effect relations that provide information about the implementation of the strategy. Besides, all the indicators should be consistent with financial aims of education market as the systemic approach permits to discover the essence of the educational services market as a socio-economic system and to give a comprehensive assessment of economic phenomena and processes that occur at the market. Therefore, the adaptation of BSC for evaluating the efficiency of educational services market is topical.

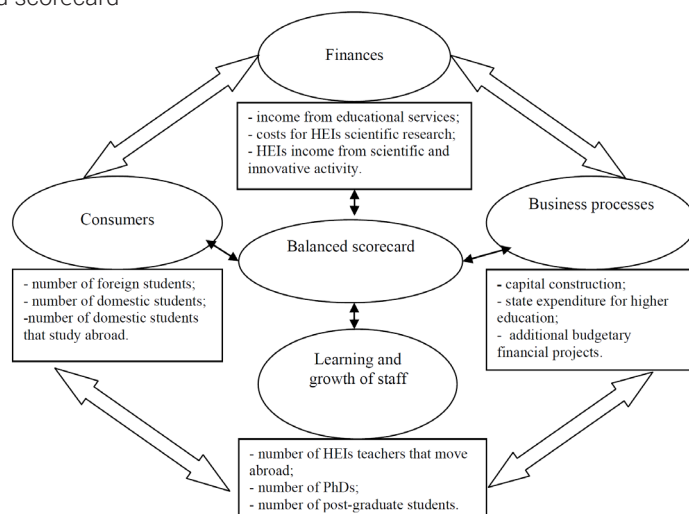
We have developed the model of evaluating the efficiency of educational services market of Ukraine and China based on 4 main components of indicators:

- financial component of HEI activities indicators;
- scorecard that deals with consumers;
- indicators that deal with learning and growth of staff;
- indicators that deal with business processes.

In methodology suggested by us 4 key perspectives are taken: finances, consumers,

business processes and learning and growth of staff. Each perspective is defined by corresponding indicators (Fig. 1).

FIGURE 1. The model of evaluating the educational services market based on the balanced scorecard



We suggest including 3 indicators to financial perspective:

- income from rendered services at the educational services market;
- costs for scientific research of HEIs;
- HEIs income from scientific and innovative activity.

Income from educational services means HEI income obtained from providing paid services at the educational services market. Paid educational services include fees for pre-university training, basic training programs (tuition contracts with individuals or entities, fees for obtaining the second higher education), additional programs of vocational education (improving qualification) and programs of post-graduate vocational education (getting the second higher education, postgraduate tuition contracts with individuals, etc.) (Gryshchenko, 2014). Data on the income from educational services are presented at Table 1.

TABLE 1: Income from rendered services at the educational services markets of Ukraine and China

Year	Income from rendered services at the educational services market in Ukraine (million US dollars)	Income from rendered services at the educational services market in China (billion US dollars)
2004	347,17	16,28
2005	384,24	18,78
2006	398,91	19,90
2007	539,76	29,19
2008	413,49	34,55
2009	393,54	36,99
2010	423,76	39,89
2011	435,06	42,97
2012	418,29	44,51

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

It is worth mentioning that the peculiarity of higher education in China is the low part of centralized budget financing. By economists' estimations, 53% of HEIs costs are covered by budget, the other 47% by implementing educational services (China Statistical Yearbook 2012, 2013). From the one side, that makes higher education institutions aim at the real needs of the market and take into consideration the requests of employees. From the other side, that makes HEIs strive for income maximization as well as save capital costs.

According to statistical data, in Ukraine 55% of higher education financing are covered by providing paid educational services, the other 45% - by state financing (Ukraine Statistical Yearbook 2012, 2013). Costs for HEIs scientific research are state expenditures for scientific and research activity at higher education institutions. In China universities are centers of national science. Each university must support high level of scientific and innovative activity; otherwise its status will be questioned. Chinese universities have founded about 230 technology parks and techno polis, where extensive research and innovative projects are carried out with real budget or private financing (Education in China, Internet resource). Data on the state costs for scientific research in Ukraine and China are presented at Table 2.

TABLE 2: State costs for scientific research in Ukraine and China

Year	State costs for scientific research in Ukraine (million US dollars)	State costs for scientific research in China (billion US dollars)
2004	273,49	22,29
2005	338,85	29,63
2006	399,49	38,50
2007	557,50	50,82
2008	553,01	67,88
2009	426,42	85,32
2010	465,36	107,01
2011	483,07	137,89
2012	589,37	162,54

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

TABLE 3: Income from scientific and innovative activity

Year	Ukraine HEIs income from scientific and innovative activity (100 million US dollars)	China HEIs income from scientific and innovative activity (100 billion US dollars)
2004	5,38	9,66
2005	5,64	5,64
2006	7,28	7,28
2007	10,11	10,11
2008	8,56	8,56
2009	5,32	5,32
2010	5,80	5,80
2011	7,43	7,43
2012	6,43	6,43

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

The indicator of income from scientific and innovative activity features income of HEIs from carrying out scientific and innovative activity. Data on the income from scientific and innovative activity at the educational services markets of Ukraine and China are presented at Table 3. Basing on the compiled statistical data we are able to build the dynamics of indicators “Finances” at the educational services markets of Ukraine and China (Fig. 2, 3).

FIGURE 2: Dynamics of the main indicators of perspective “Finance” at the educational services market of Ukraine

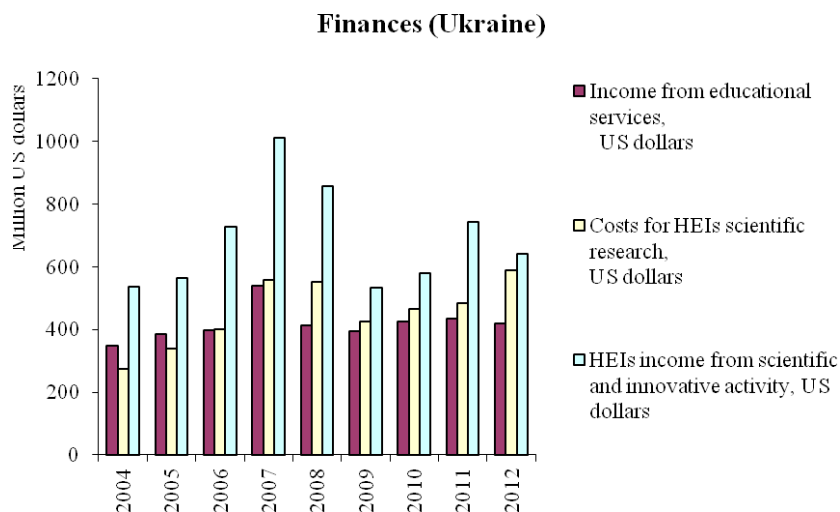
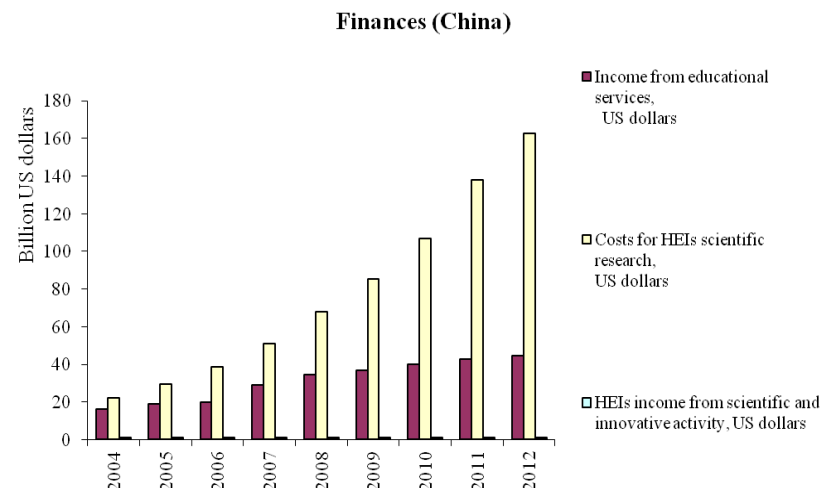


FIGURE 3: Dynamics of the main indicators of perspective “Finance” at the educational services market of China



It is expedient to refer the following indicators to perspective “Consumers”:

- number of foreign students;
- number of domestic students;
- number of domestic students that study abroad.

These indicators evaluate the part of a higher education institution at the educational services market; show its level of popularity among domestic and foreign consumers.

The separate direction of Chinese higher education development is admission of foreign students. About 450 higher education institutions in China have a right to admit foreign citizens. Today citizens of more than 180 countries of the world (including the USA, Canada, Great Britain, Australia, Russia, EU countries) study in China. Chinese authorities carry out very active policy of involving foreign students. In 2012 more than 160 thousand students from 180 countries studied at Chinese higher education institutions. It is expected that in 2020 number of foreign students in China will reach 500 thousand people (China Statistical Yearbook, 2012, 2013; Education in China, Internet resource). Data on the number of foreign students at HEIs of Ukraine and China are presented in Table 4.

TABLE 4: Number of foreign students at HEIs of Ukraine and China

Year	Number of foreign student in Ukraine (thousand people)	Number of foreign students in China (thousand people)
2004	32,12	131,00
2005	35,78	132,49
2006	37,40	133,24
2007	39,68	135,16
2008	42,78	138,98
2009	44,08	140,58
2010	38,2	145,50
2011	43,00	147,55
2012	49,00	160,29

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

TABLE 5: Number of domestic students in HEIs of Ukraine and China

Year	Number of domestic students in Ukraine (million people)	Number of domestic students in China (million people)
2004	1,99	13,36
2005	2,17	15,62
2006	2,28	17,39
2007	2,33	18,85
2008	2,32	20,21
2009	2,20	21,45
2010	2,09	22,32
2011	1,91	23,09
2012	1,78	23,91

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Not taking into consideration the growth of absolute indicators regarding number of domestic students, the contingent of students in China regarding its population is relatively not high. That supports the prestige of higher education, promotes the

high contest (for some specialties – 200 people for a place) (Educational Statistics Yearbook of China 2012, 2013), enables to choose the best applicants. Data on the number of domestic students at HEIs of Ukraine and China are presented at Table 5.

In their turn, Chinese students study at higher education institutions of 100 countries of the world. For many years China has been the world leader for number of students who study abroad. Annually the number of foreign students studying in China is increasing (Educational Statistics Yearbook of China 2012, 2013). Data on the number of Ukrainians and Chinese that study abroad are presented at Table 6.

TABLE 6: Number of Ukrainians and Chinese that study abroad

Year	Number of Ukrainians that study abroad (thousand people)	Number of Chinese that study abroad (thousand people)
2004	18,378	114,68
2005	20,939	118,52
2006	22,100	134
2007	24,600	144
2008	26,036	179,8
2009	28,081	229,3
2010	31,249	284,7
2011	33,500	315,6
2012	37,102	378,92

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Basing on the compiled statistical data we are able to build the dynamics of indicators “Consumers” at the educational services markets of Ukraine and China (Fig. 4, 5).

FIGURE 4. Dynamics of the main indicators of perspective “Consumers” at the educational services market of Ukraine

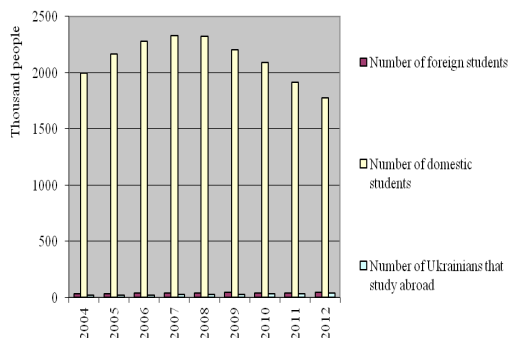
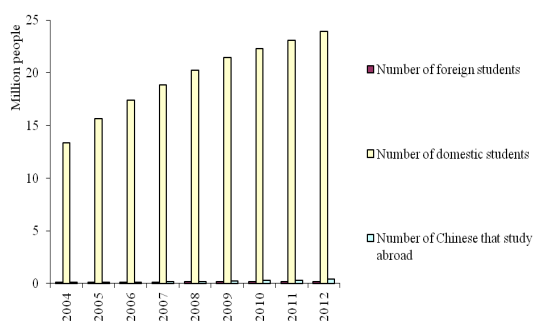


FIGURE 5. Dynamics of the main indicators of perspective “Consumers” at the educational services market of China



One of the state policy priorities at the educational services market is improving the quality of staff. For this reason, the important perspective of balanced scorecard is “Learning and Growth of Staff”. We suggest referring 3 indicators to the perspective “Learning and Growth of Staff”:

- number of HEIs teachers that move abroad;
- number of PhDs;
- number of post-graduate students.

To our opinion, the indicators feature the state of HEI staff, its qualification and development perspectives.

Number of HEIs teachers that move abroad means candidates or doctors of sciences that temporarily move abroad in the framework of teachers exchange or internship in order to raise their qualification and acquire foreign experience. Data on the number of HEIs teachers from Ukraine and China that move abroad are presented at Table 7.

TABLE 7: Number of HEIs teachers that move abroad

Year	Number of HEIs teachers from Ukraine that move abroad (person)	Number of HEIs teachers from China that move abroad (person)
2004	60	800
2005	53	890
2006	58	805
2007	42	817
2008	30	860
2009	31	865
2010	35	892
2011	50	901
2012	56	905

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Data on the number of PhDs in Ukraine and China are presented at table 8.

TABLE 8: Number of PhDs in Ukraine and China

Year	Number of PhDs in Ukraine (10 000 people)	Number of PhDs in China (10 000 people)
2004	7,74	85,80
2005	8,03	96,60
2006	8,44	107,60
2007	8,70	116,80
2008	9,12	123,70
2009	9,50	129,50
2010	9,84	134,30
2011	9,99	134,40
2012	10,36	134,42

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Data on the number of post-graduate students in Ukraine and China are presented at table 9. Basing on the compiled statistical data we are able to build the dynamics of indicators of perspective “Learning and growth of staff” at the educational services markets of Ukraine and China (Fig. 6, 7).

TABLE 9: Number of post-graduate students in Ukraine and China

Year	Number of post-graduate students in Ukraine (thousand people)	Number of post-graduate students in China (thousand people)
2004	29,68	326,29
2005	31,18	364,83
2006	32,67	397,93
2007	33,92	418,61
2008	34,82	446,42
2009	35,58	510,95
2010	36,21	561,01
2011	35,82	661,22
2012	35,45	684,94

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

FIGURE 6. Dynamics of the main indicators of perspective “Learning and growth of staff” at the educational services market of Ukraine

Learning and growth of staff (Ukraine)

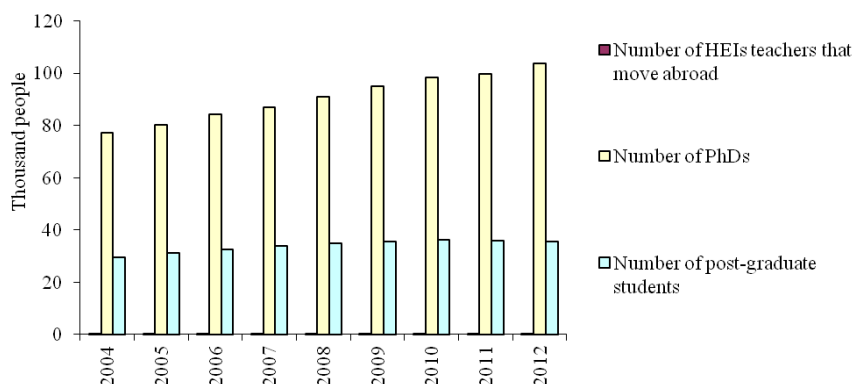
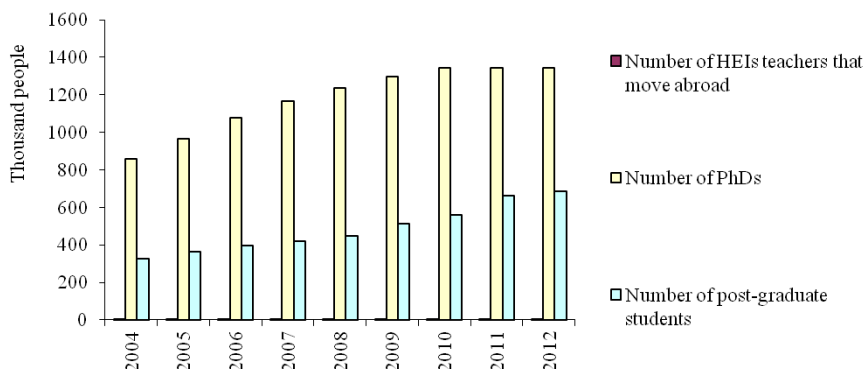


FIGURE 7. Dynamics of the main indicators of perspective “Learning and growth of staff” at the educational services market of China

Learning and growth of staff (China)



Business processes of HEIs may include:

- capital construction;
- state expenditure for higher education;
- additional budgetary financial projects.

Capital construction at the educational services market includes financial investments allocated for construction and repair of HEIs buildings, purchase of equipment for tuition, scientific and research activity. Data on the capital construction at the educational services markets in Ukraine and China are presented at Table 10.

TABLE 10: Capital construction at the educational services markets in Ukraine and China

Year	Education capital construction in Ukraine (million US dollars)	Education capital construction in China (billion US dollars)
2004	179,81	7,52
2005	172,28	7,61
2006	230,5	8,19
2007	326,93	8,70
2008	328,43	9,62
2009	186,20	9,92
2010	241,21	10,66
2011	273,47	11,89
2012	186,73	12,79

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Additional budgetary financial projects mean state financial resources given for special development programs in order to raise competitiveness at the national and international levels.

In 1993 the national aim program was approved in China which stipulated modernizing the higher education system and reaching the international standards. There has been chosen 100 leading universities which should join the list of 500 best world universities (according to ARWU ranking). The program budget is 20 billion US dollars. During the first phase of the program there has been chosen 10 universities of so-called “elite group” which began the transformations (the main mechanism – financial grants for implementing specific projects). In 1994 the list was added with 36 higher education institutions. Later some universities left the program having implemented the projects. At the beginning of 2013 the program included 23 Chinese universities.

The leading universities include Peking University, Tsinghua University, Fudan University. Other well-known in the world universities include Shanghai Jiao Tong University, University of Science and Technology of China, Nanjing University, Zhejiang University, Beijing Normal University and others (Jianmin Gu, Xueping Li, Lihua Wang, 2009). State expenditures for higher education are financial resources allocated by state in order to cover some HEIs operating costs: salary, scholarship and partially utilities.

TABLE 11: Additional budgetary financial projects for HEIs of Ukraine and China

Year	Additional budgetary financial projects for HEIs in Ukraine (million US dollars)	Additional budgetary financial projects for HEIs in China (billion US dollars)
2004	1,42	2,20
2005	1,49	2,20
2006	1,58	2,20
2007	1,58	5,80
2008	1,98	5,80
2009	1,25	5,80
2010	1,51	6,30
2011	1,75	6,30
2012	1,81	6,30

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

In the framework of state policy implementation there is financing of higher education activities as well as some programs and projects (both state and private HEIs).

In China the GDP part of state expenditure for education is rather low – 3% (in Ukraine – 7%, in EU countries – 4,5-7%) and the GDP part of state expenditure for higher education - 0,7% (China Statistical Yearbook, 2012). But the amount of higher education financial resources is annually growing. The higher education budget consists of 2 parts: operating costs and capital construction. Appropriations for “capital construction” reach 50% of the total costs and are allocated for construction and repair of institutions, equipment purchase and implementing new education technologies.

The important problem of higher education development is financing limit. From the one side, the significant funds from centralized budget are allocated to education. From the other side, these funds are not enough taking into consideration the ambitions of Chinese authorities to make Chinese universities the world leading higher education institutions. The most of Chinese technological HEIs do not possess modern scientific equipment which is expensive. Data on the state expenditure for higher education in Ukraine and China are presented at table 12.

TABLE 12: State expenditure for higher education in Ukraine and China

Year	State expenditure for higher education in Ukraine (billion US dollars)	State expenditure for higher education in China (billion US dollars)
2004	1,22	32,95
2005	1,57	33,87
2006	2,04	36,32
2007	3,13	39,17
2008	2,62	42,42
2009	2,63	42,74
2010	3,14	44,77
2011	3,33	47,07
2012	3,67	47,72

SOURCE: Compiled by the author on the basis of statistical data of Ukraine and China

Compiled by the author on the basis of statistical data of Ukraine and China Basing on the compiled statistical data we are able to build the dynamics of indicators of the perspective “Business processes” at the educational services markets of Ukraine and China (Fig. 8, 9). Basing on the compiled statistical data we are able to build the dynamics of the main indicators at the educational services markets of Ukraine (Fig. 10).

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FIGURE 8. Dynamics of the main indicators of perspective “Business processes” at the educational services market of Ukraine

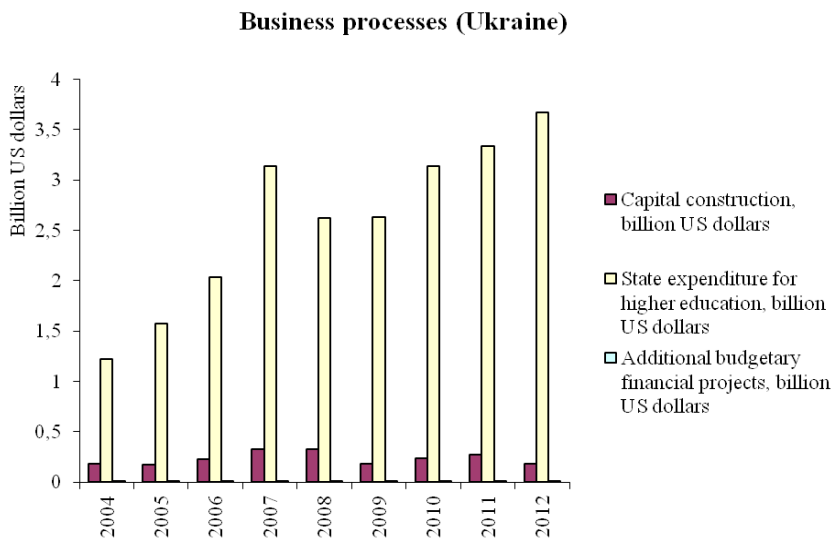


FIGURE 9. Dynamics of the main indicators of perspective “Learning and growth of staff” at the educational services market of China

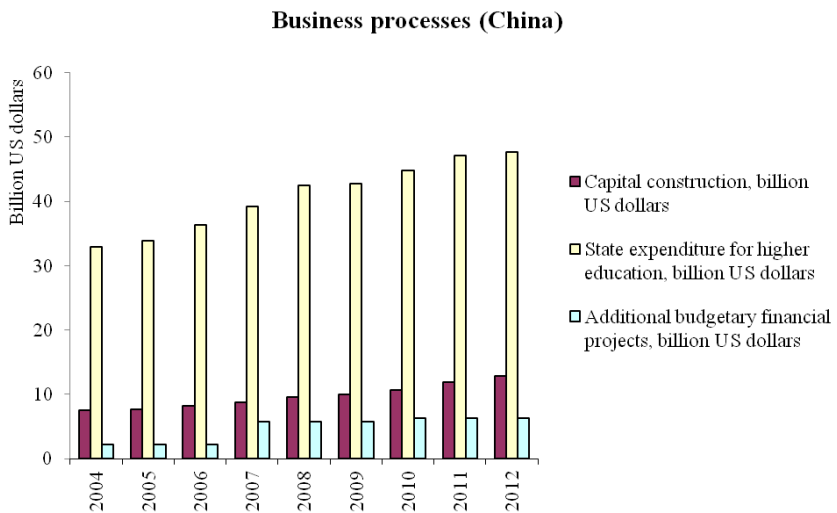


FIGURE 10. Dynamics of the main indicators at the educational services market of Ukraine

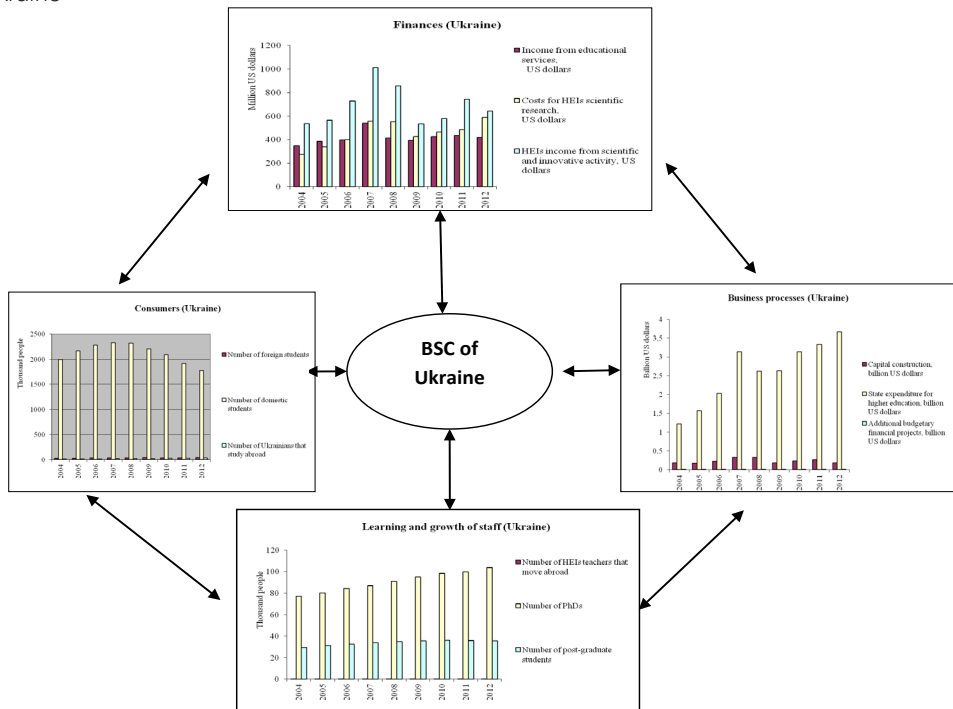
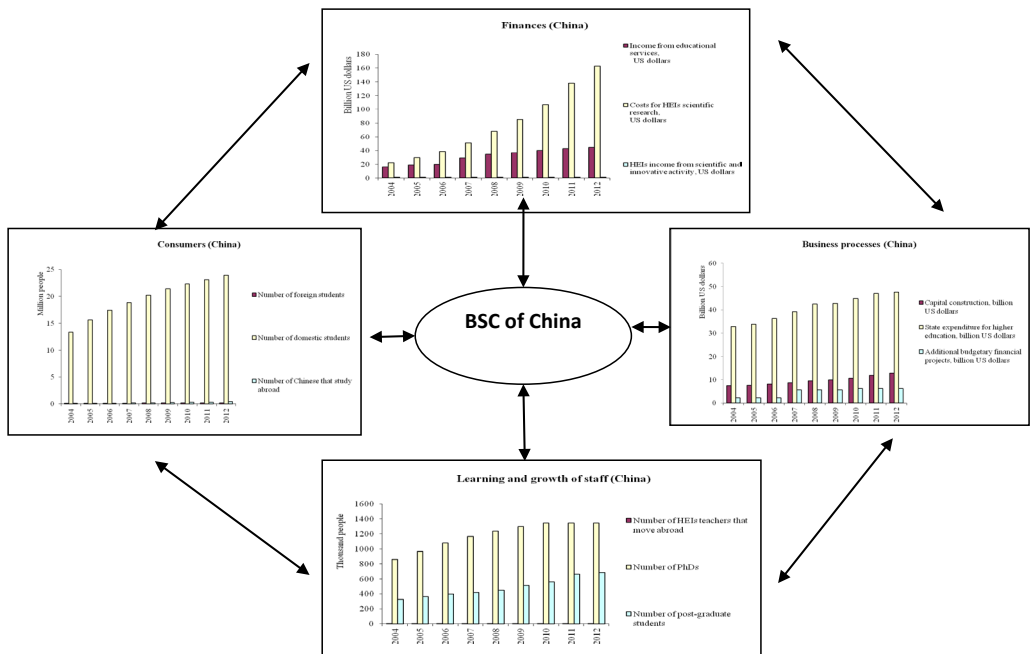


FIGURE 11. Dynamics of the main indicators at the educational services market of Ukraine



CONCLUSIONS

Used indicators are not considered to be the only indicators of the activity of educational services market which define all essential aspects of activity. But they permit to build the comparative dynamics of development of the education markets in different countries and form the mechanism of implementing the strategic aims.

Applying development indicators does not provide the background of raising the quality of educational services. The priorities of “efficiency of educational services market” should be correlated under the parity conditions with “educational services quality” monitoring all the processes, evaluating the function of each higher education institution (subsection or worker).

Under the conditions of market economy there are new opportunities for higher education institutions that promote quick reacting to the changes at the educational services market. The developed model of evaluating efficiency of educational services market based on the balanced scorecard promotes raising the competitiveness of educational services market of Ukraine at the global educational services market.

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