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***ON THE INTEGRATION MANAGEMENT OF COMPANIES
AND THE INSTITUTIONS OF HIGHER EDUCATION***

**Spivakovskiy O.V.
Kherson State University**

This article examines the necessity of business and universities integration under the conditions of uncertainty of entrepreneurial environment in Ukraine. There are certain contradictions between the needs of real business and competences produced by universities. In order to overcome these drawbacks the research was done focused on the ways and mechanisms of changing this situation to more adequate reaction to the labor market requirements.

Keywords: *integration, university, company, governance model, decision making, cooperation.*

Future specialists, who are trained within the system of higher education, are not only a source of labour but the most important capitalization element of state institutions, social organizations, enterprises or business-corporations. The recognition of this thesis makes the author consider the question of integration management of companies and institutions of higher education in this article. This question becomes the question of present interest for the researchers in the sphere of didactics and for business representatives. Works of such scientists as L.O. Plakhotnikova [1], A.J. Sokolov [2], V.B. Moiseev [3] deal with these researches.

In our opinion, besides the solution of social, educational and scientific questions, the system of higher education plays an important role of buffer between the needs of real business, labour-market and products and services provided by universities. For the first time in the history of human progress we face the following contradictions:

- on the one hand – incommensurably high speed of knowledge and technological update, on the other – the lag of higher education system, which is determined first of all by the limited physiological possibilities of the faculty;
- traditional system of academic activity organization against a background of the loss of knowledge monopoly by the majority the faculty;
- on the one hand – new and almost unlimited possibilities of access to the information resources accumulated by human civilization and on the other hand – the limits of physiological abilities of students;
- increasing aggressiveness of informational environment (here and further not only the sources of information, data, knowledge and the ways of their presentation are meant but also local and global networks in which they are located) and the absence of real filters with the regard for age-related, mental, psychological and other factors in the process of access to the necessary knowledge;
- real business interests of certain corporations and inadequate low updating rate of the appropriate curriculums;
- incompatibility of constantly growing range of technological disciplines with the requirement of universality for professional competences of graduating students;
- creation problem of the optimal correlation between faculty providing students adaptation while passing from school into the university; forming of harmonic correlation of faculty providing fundamental part of the curriculum and faculty guaranteeing to the maximum the applied part of professional students' competences; their correspondence to the real possibilities (first of all organizational, financial and mental) of the majority of universities;
- transition from the pipeline production system to re-engineering system against a background of conservative traditions developed in the system of specialists training and retraining.

The existence of these, in our opinion, basic contradictions forces to carry out the appropriate reforms of the educational system both in separate countries and in the worldwide

context, today these oppositions really determine the efforts of the higher education sphere to react adequately on the demands of labour market. First of all, these system transformations are supported by the attempts to create mobility conditions for students and professors with the help of grant programs, involvement of students into the research activity and widening of the international activity of each university.

Unfortunately, the mechanisms promoting real, not proclaimed, integration of companies and universities are almost absent. Almost every institution of higher education tries to find one or the other form of integration independently and under the existing conditions of the absence of appropriate legalization, undergoes the “envy syndrome” both from the colleagues and from some state institutions. This can certainly lead to the destruction of the corresponding integration processes. In view of the aforesaid, this research is dedicated to the search and formation of potential model of business and universities integration. As the basis for this research serves the author’s twenty-year experience in cooperation of education and economics, both from the side of business and from the point of view of corresponding strategies’ realization, as the Chair of Information Science Department and as a Vice-rector of classical university. Moreover, the author has a twelve-year experience as a Vice-rector on international relations which allowed him to study and use the experience of different European and American universities (Glasgow Caledonian University, University of Nice Sophia Antipolis, *Royal* Institute of Technology in *Stockholm*, *State University of New York in Canton*, in *Potsdam* and many others).

Factors determining the integration of universities and real businesses:

1. **Re-engineering factor.** We understand it as a system of demands towards the professional competences of future specialist, who is able to reduce at most the number of production communications surrounding him in the concrete business-system.

2. **Adjustment factor** – is singled out as the essential need of contemporary business for specialists who are able to adjust their knowledge while transferring from one kind of subject activity to the other.

3. **Closed contour factor** – capability of business to provide some personnel for lecturing at universities.

4. **Interpenetration factor.** Availability of legal possibilities for starting some part of business inside the universities (in the framework of clear and transparent system of requirements). And vice versa, ability of universities to participate in business beyond the limits of universities by means of different mechanisms. In this case business is considered, first of all, as platforms for students’ practical training.

5. **Ecosystem factor**– by this we imply the existence of university laboratories which provide students with the possibility of participating in the research work and also the availability of a company, collaborating with the university (companies recruiting the future specialists are considered). In fact, donors of the universities must not have a monopoly on students, only in such a way the equal possibilities for students with a regard for their educational and commercial interests are provided.

6. **Synergetic factor.** Just within the integration bounds of business processes in the companies and universities it is possible to obtain new quality and new speed of knowledge and technological renewal which is based on a considerable improvement of quality of specialists training and on the appropriate business development.

Metrics evaluating the integration of business and universities

1. Average wage of the graduating students of a particular institution of higher education.
2. Average wage of the students working part-time in the companies according to their training specialization.

3. Percentage of professors in the general university staff list who are the employees of the companies which specialize in the sphere corresponding to specialization of students training.

4. Percentage of donations from business to the budget structure of the university.

5. Percentage of students who participated in the concrete researches carried out by the higher educational institutions to the orders of both state and private organizations and received a fixed wage for this work.

The author considers that the management mechanism of the integration processes between the companies and higher educational institutions can be represented in the form of matrix shown in the table 1.

The matrix across represents those who make decisions concerning integration of business and universities. Thus each column is divided into two components, first of which represents those who are responsible for incoming data compilation, and the second – for those who directly make decisions. It should be noted that not always those who are responsible for incoming data compilation, make corresponding decisions. Moreover, in certain cases it is necessary to distinguish both structures and concrete persons from incoming data compilation and decision-making. Otherwise there is a temptation to manipulate the information for a choice of this or that decision. Thus we have the following types of accepted decisions:

1. **The state institutions.** We mean the state committees or ministries which carry out the monitoring (responsible for incoming data compilation), the Parliament forming legislative base, and also executive powers which bring it into action. Classical cases, for example, are decisions in the field of interaction between the Ukrainian Academy of Science and universities, as well as creation and functioning of techno parks on the basis of Ukrainian Academy of Science and the institutions of higher education.

2. **The Administration of Universities.** These are top-managers represented by Rector, Vice-rectors, Deans and the Heads of the chairs. It is important to understand that university departments (for example, a personnel department), collecting the incoming data, and those who send requirement for a public contract to the Ministry of Education and Science should be balanced. Otherwise, both a labour market and the tax bearers paying for the work of university bear losses. It is favourable only for personal interests of some faculty, who do not want to upgrade their professional competence. It is a separate question which was considered in the previous works of the author [4, 5].

3. **Faculty.** Here we mean informal, not legalized mutual relations between faculty and the companies which have current interest to these or other students. Thus business is not much interested in the prospect of long-term relations focused on transformation of curricula, the change professional competences of students, the investments connected with the academic process. Usually it is the chaotic process which does not bring strategic benefits. For example, the temporary employment of senior students of pedagogical higher educational institutions at schools where the main thing is to fill a vacancy at a back-country school. Another example is a spontaneous employment of good students (in the field of programming) at the rapidly growing software companies. In these cases the student is in fact untaught at the university, the university changes nothing in curricula, the student doesn't study a complete course of fundamental mathematical sciences, and the company most often retrains the specialist.

4. **Business.** It is a special case when business lives its own life, by default, having agreed to retrain those who leave higher educational institutions. Thus the companies act simply as the consumers of what universities produce. In this case the incoming data formation is minimized.

5. **Jointly.** The characteristic feature of this type is a creation of committees including both representatives of business structures, and representatives of higher educational institutions. Variants when such joint formations also exist at the level of ministerial structures are not excluded. Unfortunately, experience of the author convinces that such work is so formalized that benefits only to very narrow circle of persons. The data analysis of the well-known program "Intel" shows that, for example, during a year it is possible to retrain at once 40 thousand teachers though a simple calculation and common sense show absolutely another results. In this case the main thing is not to formalize to much the work of such structures. The efficiency of such work should be measured only by realization of concrete projects and the metrics mentioned above.

The vertical matrix represents the possible types of accepted decisions. In our opinion, taking into consideration the research carried out, we mainly distinguish three cases showing how decisions concerning integration are made. Thus, we have three basic archetypes:

1. **De jure.** The case of integration based on adoption of certain regulatory documents. For example, creation of techno parks on the basis of universities, based on adoption of corresponding statutory acts of the Parliament and the Cabinet of Ministers of Ukraine.

2. **De facto.** The case of integration representing the certain situational moment when, thanks to the present circumstances, and also the creativity of some faculty and representatives of

business the informal relations are formed and promote mutual penetration of business and a higher educational institution. The sources and prerequisites of the specific steps in this regard may become different grants, including both international and the sponsor.

3. **Precedent-based.** The situation which is based first on realization of **De facto** archetype, and then legalized either by **De jure** archetype or a normative document, signed by the Rector, within the current Legislation.

Thus, on the intersection of corresponding lines and columns of the matrix we get the real picture, showing the system of incoming data formation and acceptance of the proper decisions concerning the integration of business and universities by the main acting persons.

The Model of Integration Management of Business and Higher Educational Institutions

For the model building we use the modified model of Mark Moore [6], represented on fig.1, which from our point of view specifies the integration processes between business, power and education.

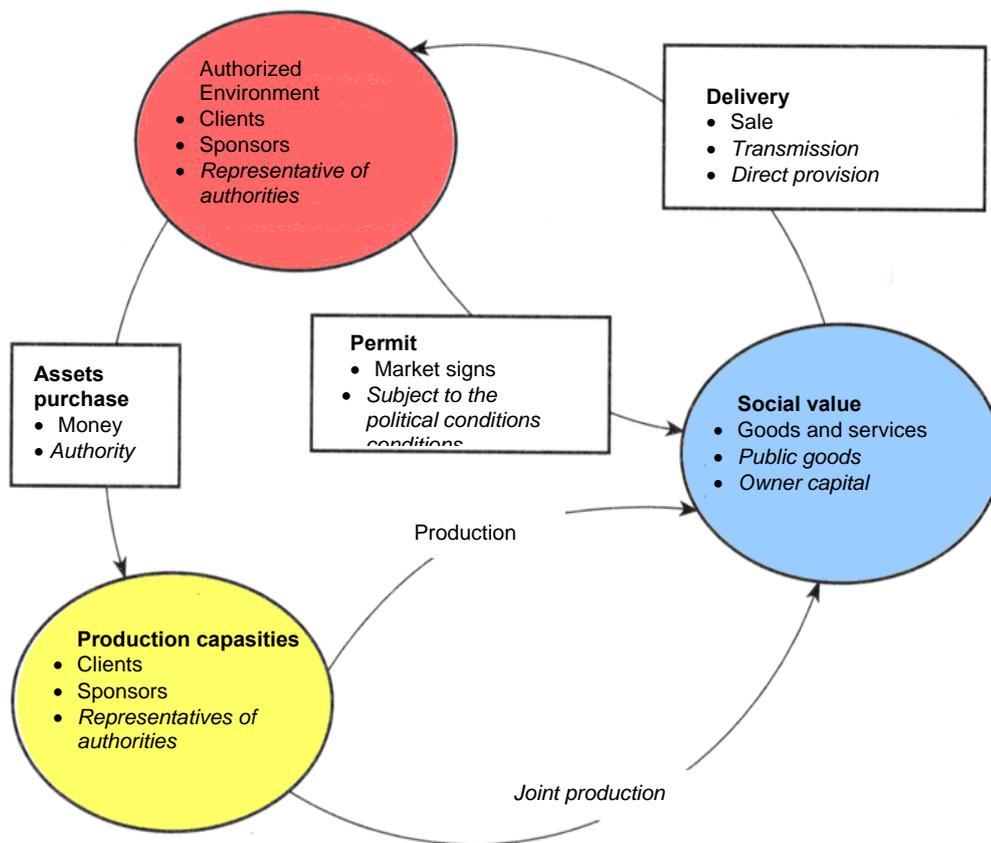


Fig. 1. Structure of value for the management of nonprofit organizations

To our opinion, the given model presents not only the mechanism of co-operation of business and universities but also forming of value of the main product of higher educational institution – the value of graduating student.

4. **Authorized environment.** In this case the clients are companies and establishments, including state institutions, which give workplaces for students graduating from universities. Sponsors are the companies, which try to influence indirectly the academic process by means of investments, including human resources, rather than just material and financial.

5. **Acquisition of resources.** It is very important here, using the proper metrics, to balance four basic resource sources of universities – budgetary resources, resources from sponsors,

resources, got as a result of research and production work, and also grant resources, got from the donors.

6. **Permissions.** Exactly this fact, from one side, determines the flexibility in the work of universities, adaptability of curricula to the current necessities of society and business, and from the other, takes into account strategic priorities, formed by the political elite of both state and the region.

7. **Production capacities.** Exactly these three key constituents (clients, sponsors and power) determine the fundamental aspects of academic, research and production activity of institutions of higher education. The presence and level of basic assets of universities – material, financial, human, non-material, including know-how, relations and IT-actives – depend exactly on them [7]. They determine the priorities in the activity of higher educational institutions and in general, what the institutions of higher education can be engaged in together with the academic activity.

8. **Public value.** This is the key element of the model which actually determines the main metrics, estimating the efficiency of integration of business, science and education. That is why in the most of American universities corporations are involved both in serious scientific researches and organization of some business processes, providing the practice of students by that. It is important to realize that exactly forming of public value makes it possible to understand mechanisms, linking a production, joint production and permissions. The permissions define the priorities in academic, research and also in production activity of institutions of higher education. Moreover, the permissions legalize the joint production of universities and business, allow to conduct necessary capitalization of higher educational establishments. Thus, the fundamental constituent of the integration of higher educational institutions and corporations appears in a public value.

9. **Delivery.** This is a key element of the model, determining closure of a return loop, allows to estimate not only efficiency of integration but also to expose the dynamics of basic processes, determining its management. As a result of integration, we return through a sale, transfer and direct rendering of services and commodities, back to the authorized environment. It is important to understand how it changes in this case. Each university, using a necessary normative base, should define and classify:

- what it produces, and then, how and to whom sells it (for example, software development in the form of finished products and outsourcing);
- what services and products it develops, to whom and how delivers them (for example, electronic multimedia textbooks for a gratuitous transfer to schools);
- and, finally, what is necessary and possible to create for a legal direct transmission both to state and public subjects, and subjects of business structures (for example, books, textbooks, articles etc.).

As it was mentioned before, at the modern stage of market relations development in Ukraine the problem of creation of qualitative, competitive, innovative education concerns public authorities, scientific society, public organizations, representatives of various business structures, employers, and other institutions of civil society.

However it is only one of the possible, from our point of view, ways of integration of education and business, which can be carried out quite differently. Within the framework of this research it was conducted the survey of employers, as well as businessmen, representatives of business society of the Southern region. About 250 business representatives of the Kherson, Odessa and Mykolaiv areas were interviewed.

The survey results showed that a great deal of business community representatives consider universities to be one of the main business personnel suppliers (74% of the respondents). Moreover, the role of universities in business and society, in the opinion of 52% of the respondents, is in educational services provision, 28% consider universities the source of raising the level of employees' skill, so many respondents (28%) see universities in a role of possible business partners, and approximately as much respondents (26%), consider that universities perform functions of

researches realization, development of basic and applied scientific knowledge and technologies. And only 1% of the respondents think that the activity of universities contributes the implementation of modern progressive experience at enterprises and firms. These data are represented in the Figure 2.

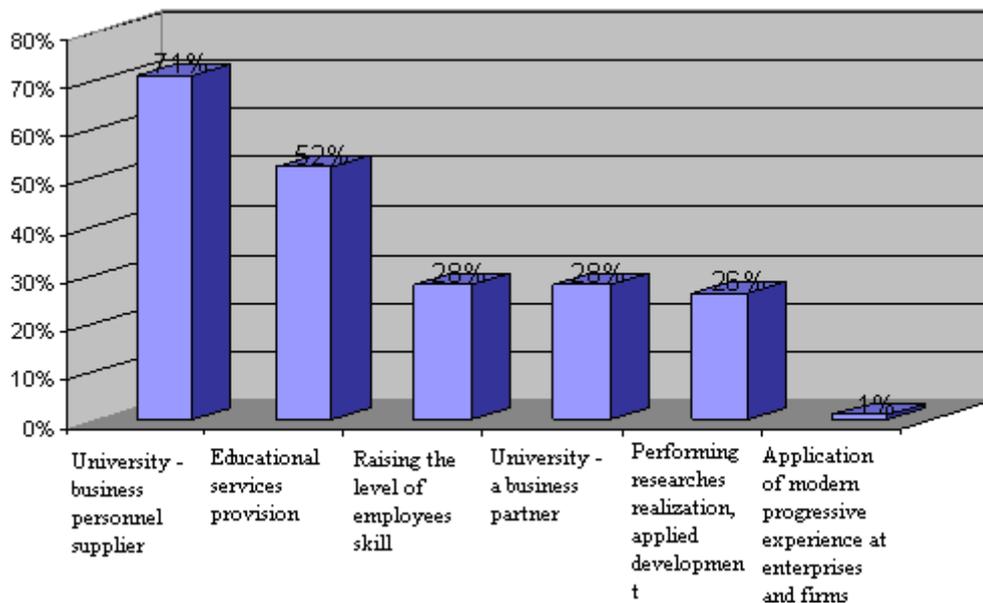


Fig.2. Role of universities in business and society (based on the survey results)

Businessmen see the following ways and directions of cooperation with universities:

- 48% of respondents – in raising of the level of their employees' skill on the basis of university;
- 38% of respondents – in creation of mutual scientific and production projects;
- 33% of respondents – in the employment of university graduates;
- 19% of respondents – in realization of seminars, round tables, conferences;
- 14% of the respondents – in organization of social, charitable and cultural projects and actions.

These data are represented in the Figure 3.

Some businessmen would like universities to create loyal extramural curricula for specific professions.

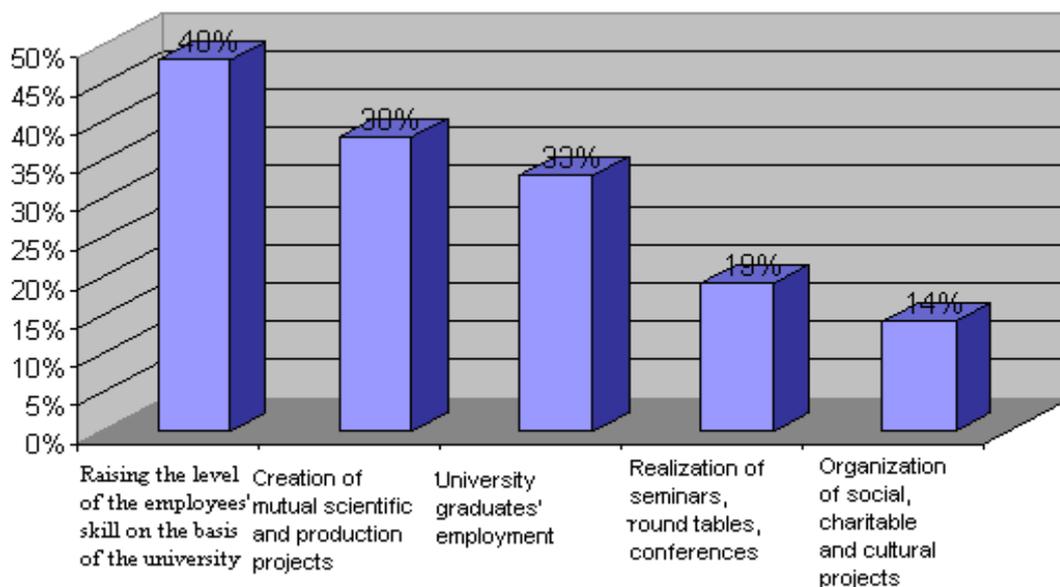


Fig.3. Ways of cooperation between business structures and universities (based on the survey results)

Employers and businessmen are interested in possibilities of common projects with institutions of higher education in the following fields:

- Information technologies – 45% of the respondents
- Scientific researches and development – 36%
- Educational programs – 27%
- International projects – 18% of the respondents
- Cultural and mass media projects – 13% of the respondents

These data is represented in the Figure 4.

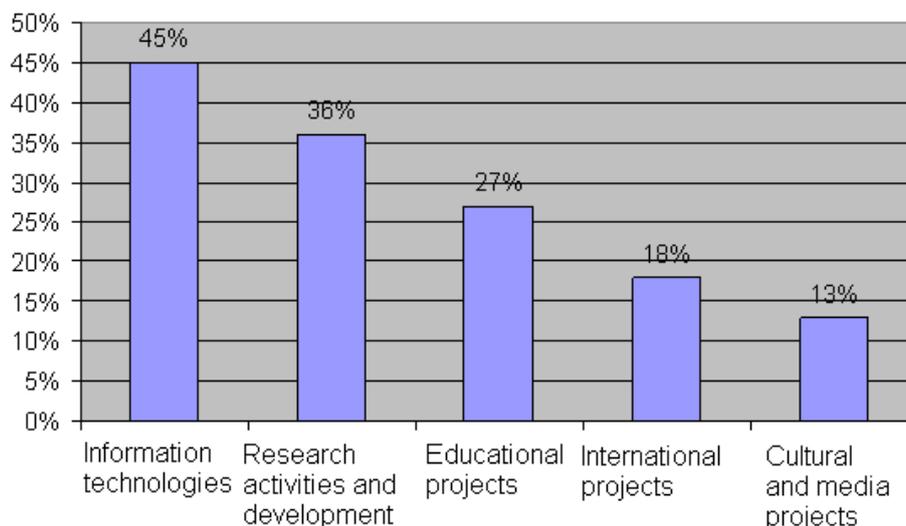


Fig.4. Possibilities of joint projects of business structures and institutions of higher education (based on the survey results)

59% of the questioned employers confirmed, that university graduates, who did not have any experience, i.e. have got fixed up in a job after termination of studies, work (or worked) for their enterprise.

67% of the respondents are not completely satisfied with the level of university graduates training, but consider this level acceptable for employment; 24% are satisfied with the level of training, and only 9% are not satisfied with students training (Fig. 5).

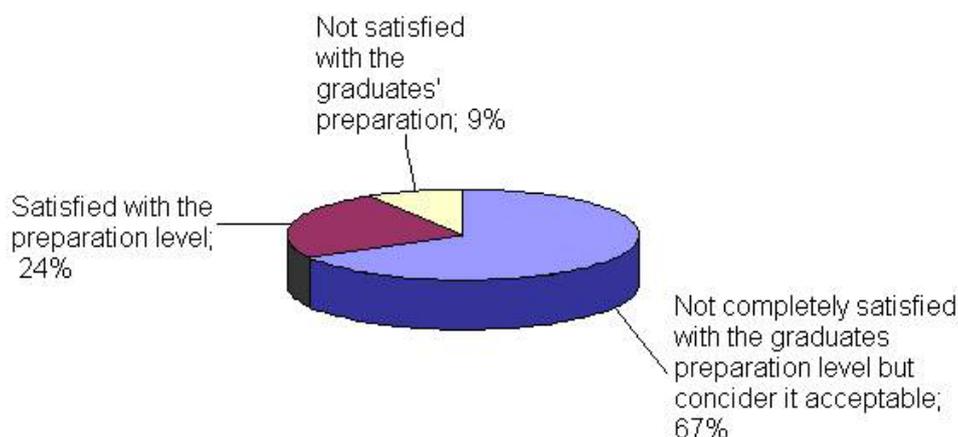


Fig.5. Estimation of employers' satisfaction with the level of university graduates training (based on the survey results)

Estimating the level of their satisfaction with learning capabilities of young specialists, their adaptation to a new environment and new knowledge perception, 59% of employers evaluate positively university graduates according to this description, 27% are not satisfied with these

capabilities of young specialists, and 14% can not give a well-defined answer to this question, as they consider that all universities graduates have very different level of learning capabilities, abilities to adapt and perceive something new, and they can not give general characteristic for all the graduates.

36% of employers would willingly accept university graduates for employment, 27% would accept young specialists for employment only in case of absence of better candidates, 18% would accept graduates for employment only within a condition of less salary comparing with other employees, 32% do not want accept graduates of institutions of higher education for employment at all, as they consider that it is better to accept specialists with work experience.

Employers distinguish the following main drawbacks of graduates of institutions of higher education:

- Lack of professional knowledge – 14%
- Lack of practical skills – 71%
- Low level of discipline – 19%
- High “demands” of the graduates, i.e. the fact that young specialists want to get high salary, flexible work schedule and have other requirements – 38% (Fig. 6)

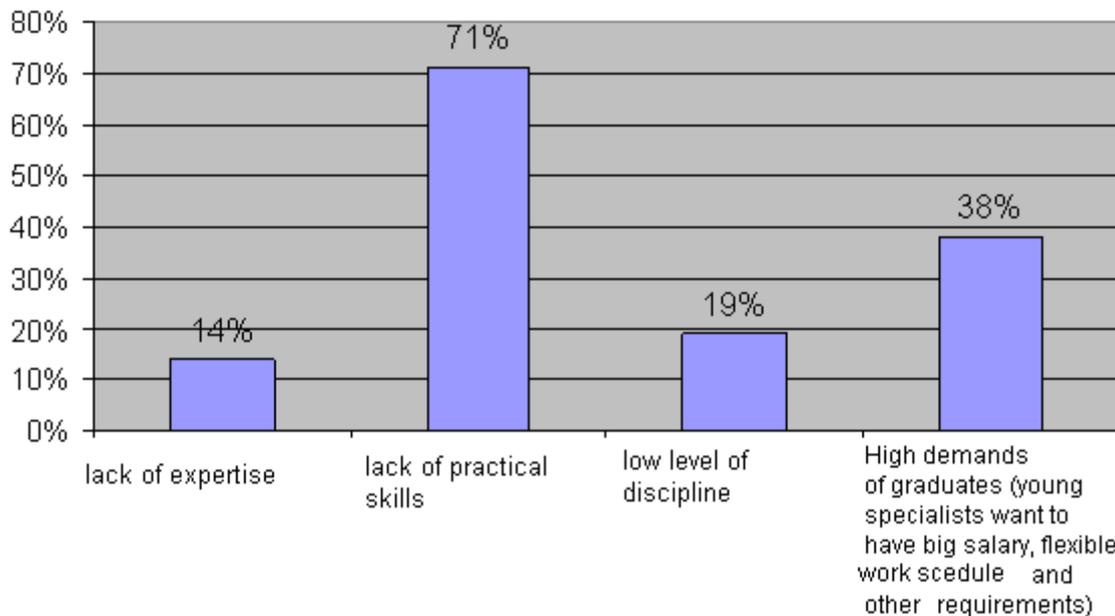


Fig.6. Main drawbacks of graduates of higher educational institutions, in the judgment of employers (based on the survey results)

The main professional competences, which employers want to see in young specialists-graduates from the institutions of higher education (Fig. 7):

- Organization and management skills – 59% of the respondents;
- Learning capability – 58% of the respondents;
- Ability to think creatively – 58% of the respondents;
- Computer skills (users level) – 40%;
- Economic knowledge – 59%;
- Knowledge of foreign languages – 36%;
- Engineering and technical skills – 23%;
- Good knowledge of information technologies – 22%;
- Programming skills – 13%;
- Basic knowledge of psychology or medicine – 8%.

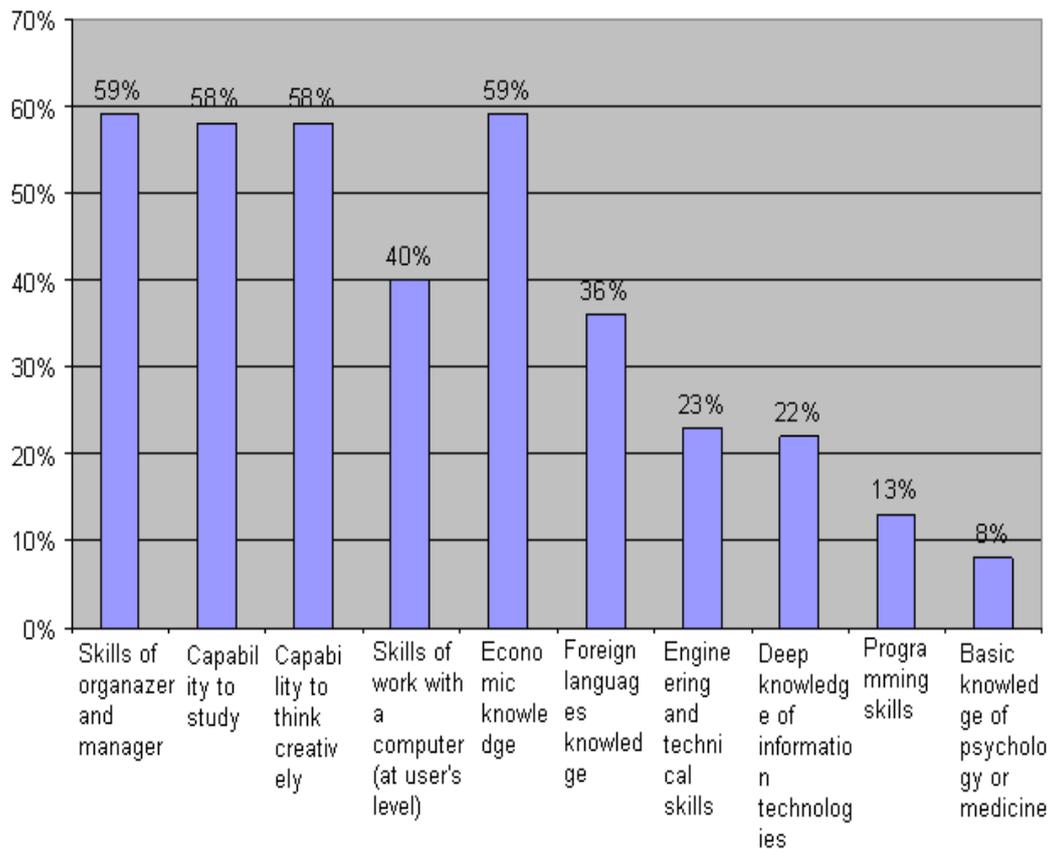


Fig.7. The main professional competences which employers want to see in young specialists-graduates from the institutions of higher education (based on the survey results)

Management realization mechanism between institutions of higher education and companies, enterprises, as it is seen by the most of businessmen at the present stage, is represented in the Table 2. This process can be characterized as the actions of the government and university authorities on forming of incoming data and decision making, which is mainly implemented according to the management archetype “de-jure”, described above, and in particular cases, according to the archetype “precedent-based”.

In opinion of the interviewed businessmen and business representatives, it is possible to optimize control of integration process between universities and enterprises by strengthening the role of business structures and universities in incoming data compilation, and also in case if they will take part in decision-making concerning integration processes as well. The optimization matrix in accordance with the survey is represented in the Table 3.

CONCLUSIONS

The research confirms wide possibilities for integration of the system of education, and universities in particular, and business structures and other non-governmental organizations. Involvement of corporations and enterprises to the process of incoming data formation at the actual and official level and their participation in decision-making process concerning integration, will contribute to more quick and effective integration realization.

The survey, conducted by the author, on the whole represents the positive tendency of labor relations between employers and graduates of institutions of higher education, however it becomes completely clear, that the level of training at universities must be higher, it should provide a broader programs for students' practical skills training, be close to realities of modern business in order to satisfy the requirements of employers, corporations, enterprises and public organizations.

The author would like to use this opportunity to express his gratitude to the respondents and all those who helped to carry the survey out (separate gratitude to Kherson Regional Centre of Employment). Also the author expresses gratitude for participation in survey organization to researcher of the Kherson State University Yaroslava. Fedorova.

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