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**Change of the University Management System for Enhancing the Employability
of Graduates**

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Abstract

Due to globalization of all social and economic processes in modern society the system of higher education was presented with new demanding challenges. It is especially true for the Russian universities since Russia entered the transition to a market economy quite recently. The most important challenges for the Russian universities were: 1) how to become competitive on the world educational market, and 2) how to train graduates who could be competitive on the international labor market. As industry is more sensible to a market those challenges were addressed to the industrial employers. In order to bring together the standpoints of academia and industry a series of special training sessions has been conducted under supervision of Tomsk Polytechnic University and Tomsk Chamber of Commerce and Industry. Academics, university administrators and employers from industry took part in the trainings. Trainings allowed developing a set of competences that are necessary for the university graduates to be employable and competitive on the labor market. However, the trainings demonstrated some divergences of opinions of academics and employers. A special research showed that these divergences rooted from the difference between business and academic organizational cultures which are a factor highly influencing on the management systems. Also, the peculiarities of the academic organizational culture were studied as well as the way of adjusting of the academic organizational culture to the market conditions were explored in this research. Implementation of the research results allowed enhancing employability of graduates of the Tomsk Polytechnic University.

1. INTRODUCTION

Transformation of modern society from industrial into knowledge-based society results in critical increasing of role of the universities because they are just those organizations where the knowledge is gathered and disseminated (World Bank Report, 2001). To comply with this role the universities, in they turn, have to be changed in the way allowing them not only to meet the social demands to the greatest extent but also to assist society in forming those demands adequately.

This circumstance has presented universities with a number of demanding challenges. Those are:

1. Changing requirements for the graduates of the universities and corresponding changing requirements for content and methods of teaching;
2. Changing financial system at the universities;
3. Enhancing transparency of the higher education system;
4. Changing management at the universities.

The first challenge is crucial for enhancing employability of the university graduates, while the fourth challenge could be treated as an integrative one since coping with three previous challenges is impossible without creating corresponding university management system. Thus, to cope with the challenge of enhancing employability of the university graduates one shall attentively evaluate the management system at a university.

The challenges mentioned above have been of crucial significance to the Russian technical universities when Russia entered the transition to a market economy about twenty years ago.

Historically, graduates of the Russian technical universities have held a number of distinguishing characteristics in common. These included: a high level of knowledge in natural, mathematical, and applied sciences accompanied with a relatively low level of ability to use this knowledge efficiently for accomplishment of practical tasks, such as lack of understanding about effective use of natural resources or an ignorance and neglect of market demands when designing and manufacturing of products and services.

Acquisition of high levels of knowledge has been based on the assumption that a specialist receives the basic education only once during his/her life, hence, this education needed to be as broad as possible in order to ensure an effective performance over a long period of time.

Russian engineers generally were unconcerned about the effective use of natural resources because these resources were extensive and relatively inexpensive in Russia. Also, saving natural resources had never been of primary importance in the performance evaluation of the Russian engineers.

An absence of market economy in Russia resulted in Russian engineers paying little attention to the consumer demands for product design and manufacturing. Furthermore, the quantity, quality and distribution of all goods and services to be produced were determined and controlled by offices in Moscow which was a disincentive for engineers to consider consumer needs.

When Russia entered the transition to a market economy, many high quality western goods and services flowed to this new market. Russian designers and manufacturers turned out to be noncompetitive in this market because they had not been trained to compete in the market conditions. At that time Western universities also entered the Russian educational market and offered an education that met the new conditions. So, in order to survive in the new environment and to be competitive on the educational market,

Russian universities had to change their approaches to the training of their graduates; their teaching processes and how they were managed.

Tomsk Polytechnic University (TPU) found itself in this situation along with other Russian universities at the beginning of 1990s.

TPU is one of the oldest, largest, and leading Russian technical universities with about 23,000 students and 5,000 staff members including academics, researchers and non-instructional staff. It was founded in 1896 in the Siberian city of Tomsk. For many years TPU was the only technical university in the Asian part of Russia covering an extensive territory from the Ural Mountains in western Russia, to the Far East. At that time Russia was an advancing capitalistic country consuming a lot of natural resources that were abundant in Siberia and Far East. Many technical specialists were needed for effective exploration and processing of these resources and the building of railways and factories. So, training of such specialists became the basic element of the TPU mission. For almost one hundred years TPU has continued to develop in this manner, since throughout the 20th century the economics of these regions remained predominately resource consumptive rather than being technologically innovative.

When TPU has faced the new challenges it launched some steps to distinctly apprehend these challenges and to meet them.

2. Study of the required competences of the university graduates

Since employability of the graduates resulted basically from the extent to which their competences meet the requirements of the labor market it is reasonable to define the expected competences of the university graduates.

Study of the required competences of the university graduates had two main purposes:

- (1) To specify the university graduate competences supposing to be the most important for the employability of graduates; and
- (2) To identify coincidence and difference of the standpoints of both academics and employers regarding the expected competences of the university graduates.

In order to achieve these purposes a number of special discussion sessions have been organized within TPU with participation of 30 TPU's academics and 30 top managers of the industrial enterprises. Those managers represented the advanced enterprises from such the industries like nano-materials and nano-technologies, power engineering, oil and gas exploration and processing, computer systems and IT etc. Participants were invited to share their opinions about the required competences of the university graduates in the area of expertise they belonged to. Opinions expressed during the sessions were generalized and classified.

It was concluded that all competences can be divided onto two groups: professional competences and business competences. The main professional competences are as follows:

1. Knowledge in natural sciences and mathematics.
2. Basis knowledge and up-to date information in particular professional area.
3. Analytical skills for stating technical problems as well as for finding ways for their resolution.
4. Skills of applying of the modern design methods in engineering.
5. Skills of working with the reference information.
6. Skills of technical experimenting, analyzing of the experiment results, and making conclusions.
7. Ability to interdisciplinary research and engineering.
8. Knowledge of engineering practice.
9. Knowledge of ethical, legal, economic, and ecological issues in particular professional area.

Exploration of professional competences

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The list of business competences includes:

1. Team work ability.
2. Time management.
3. Negotiation skills.
4. Knowledge of foreign languages.
5. Competence in handling computers.
6. Business communication skills.
7. Presentation skills.

A very interesting fact has been explored during the discussions. Academics emphasized mainly professional competences of graduates arguing that graduates of technical universities are targeted to resolution of the technical problems without dipping into issues covered by business competences. Top managers emphasized the equal importance of

both kinds of competences stating that in market conditions any product cannot be successfully designed, manufactured, and sold if people involved in those processes do not possess the proper business competences.

It is clear that this gap of opinions crucially influences on employability of graduates and its reasons have to be revealed and eliminated.

In our opinion the reason of depreciation of the business competences by academics is in organizational culture of the Russian universities.

3. Organizational culture of the Russian universities

Organizational culture of the Russian universities has been emerged and developed under specific conditions. First of all those are ones mentioned above: assumption that a specialist receives basic education only once; unconcern about effective use of natural resources; and little attention to the consumer demands for product design and manufacturing. Also, it is worth mentioning the forced placement of the university graduates in Russia and secure financing of the universities by federal government.

It led to a specific organizational culture within the universities that was not oriented to a market economy.

Academic departments and research units, which had the vision that the processes of teaching and research without any competition are the main processes at a university, assumed and believed that the university's senior management should be oriented from the bottom up and should place the interests of these subdivisions first.

As the result, students being trained in uncompetitive conditions became uncompetitive (unemployable) in the free labor market conditions.

To change this situation it was necessary to change the university organizational culture. The new culture required had to accept the entrepreneurship as an indispensable element of university operations, while at the same time retaining other traditional elements that provide the academic freedom and academic essence of the university.

The first step in this changing was a study of the TPU's organizational culture. The Organizational Culture Assessment Instrument (OCAI) developed by K. Cameron (Cameron & Quinn, 1999) was chosen for this research.

The model of organizational culture proposed in the OCAI presumes that the organizational culture of any organization consists in some proportion of four subcultures: 'Hierarchy', 'Adhocracy', 'Family', and 'Market'. According to this model, the content of each subculture can be shortly described in the following ways:

The Hierarchy culture

Organization is concentrated on internal problems, stability, predictability, controllability, and efficiency. All kinds of work are formalized and structured. Everything is governed by procedures, guidelines, instructions that are mainly in writing. Orderliness is especially encouraged. Any employee can be passed over for a reward if he/she achieved a success by violating the procedures, and can avoid penalty for a loss by following all procedures precisely. Any changes in organization are absolutely impossible without official changes of corresponding procedures, guidelines, and instructions. Leaders are proud of being good coordinators and organizers.

The Market culture

Organization is a result-oriented entity that is concentrated on interaction with the external environment, stability, and controllability. The main task of both an organization as a whole and each employee individually is the achievement of planned goals by the fixed time. And these goals, as well as striving for their achievement, hold an organization together. As a rule, these goals are defined in quantitative economic terms. For instance, to increase a profit by 15% by the end of the year, or to expand a market niche twice. In this culture, the organization emphasizes competition both outside and inside. Leaders are tough and demanding competitors. Success is defined in terms of market winning.

The Adhocracy culture

This organization is concentrated on flexible interaction with the external environment. It is characterized as a dynamic, creative workplace where entrepreneurship and individual results are especially encouraged. Employees incline to take initiative and risk, and independence and freedom are highly respected. Leaders are also innovators and experimenters, and are respected for their creativity. The main task of both an organization as a whole and each employee individually is to be on a cutting edge of a problem and leader in their area of expertise. Commitment to innovation holds an organization together. Organization feels a need for complex challenging tasks. The criterion of success is in the possession of unique technologies, products and services. It is supposed that readiness for changes and innovations are able to open new resources and to increase a profit.

The Family culture

An organization manifesting the family organizational culture looks like an extended family with perpetual employment that has an informal approach to a work, a weak hierarchical structure, and an emphasis on team management. The organization focuses on internal problems and concerns of individuals. It is sensible to the needs of a customer who is considered as a partner. In fact, it is a friendly-oriented place of work where people share a part of themselves. Leader is perceived as paterfamilias with almost unlimited rights and charges. The organization is held together because of traditions and devotion to the family values. Team work, commitment and consentaneity are encouraged. Great attention is given to the development of personnel, solidarity, and a moral climate. Success is defined in terms of concern for people and sympathy to customers.

In order to measure the portion of each of the four subcultures within the organizational culture, the employees of an organization are asked to complete the questionnaire developed by K. Cameron and R. Quinn and adapted to the research of a university (Pushnykh, 2010). The questionnaire provides information regarding both entire organizational culture and some of its elements, including the management system, leadership, goals, uniting forces (“organizational glue”), effectiveness, the motivation system, decision making processes, and conflict resolution.

The detail description of both methodology and results of the study can be found in the book “Organizational Culture of the Russian and American Universities” (Pushnykh, 2010).

The study demonstrated that the Hierarchy culture prevails in the present state of the TPU’s organizational culture while a trend to increasing the role of the Family culture exists in the desirable for personnel state. The organizational profiles illustrating these results are shown on the Figure 1 by solid and dashed lines respectively. Both an accent on Hierarchy in the present state and an accent on Family in the desirable state are typical for egocentric (self-centered) autonomous culture. This kind of culture poorly accepts the outside-oriented, competitive, innovative goals and doesn’t support the efforts to enhancing the employability of the graduates.

Later such research has been done for 30 other Russian technical universities (Agranovich, 2008) with the very similar results obtained.

4. Applying of the results of the organizational culture study for development of the TPU’s organizational culture

4.1. General approach

Being familiarized with the organizational culture study results rector of TPU organized a number of special training sessions at the university with the following objectives:

- to discuss the results and analysis of the study,
- to develop shared insights and perception of the future among the top administrators and faculty.

Every administrator, faculty member or employee of a unit was invited to take part in a session but their participation was voluntary. The total number of sessions was 15 with more than 1,000 participants. On the basis of the analysis done a new state of the organizational culture is beginning to emerge. This state, called “needed”, is shown in the Figure 1 by the chain line. The needed organizational culture emphasizes the Market and Adhocracy cultures, reduces the Hierarchy culture, and slightly reduces the Family culture. This state will enhance entrepreneurship at the university, but also will keep the basic university traditions and academic freedom.

In order to identify those elements of the organizational culture that should have primary consideration for the university transformation it was necessary to examine the congruency among all elements of the culture in the present and needed states. For this purpose the results of the study were redrawn in the way shown in Figure 2. The solid line in this figure indicates the present state of the organizational culture and the dashed line represents the needed state.

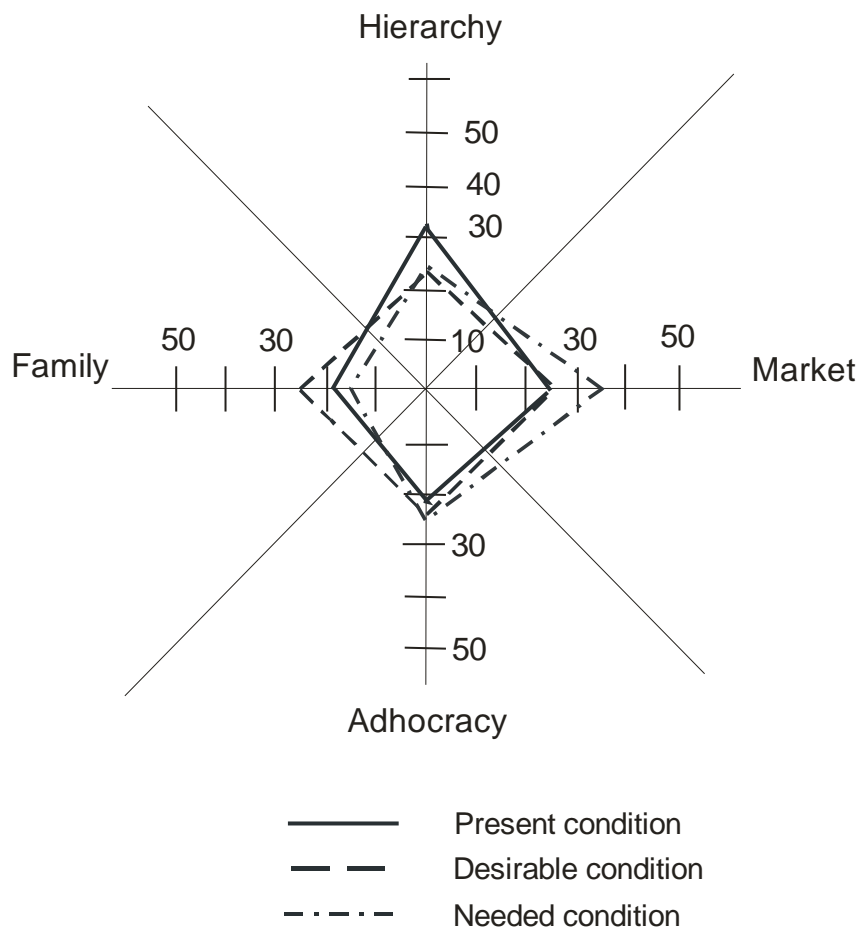


Figure 1. Three variants of the TPU organizational profiles.

As follows from Figure 2, the forces uniting the university, or so-called “organisational glue”, are the first element of the organizational culture deserving special attention. In the present state, the indexes of the uniting forces for almost all kind of cultures have the largest deviations from the needed state. Other elements also demonstrating noticeable deviations from the needed state are motivation and decision making (including conflict resolution).

In the Hierarchical-Family culture the uniting force can be defined as an implicit devotion of the personnel to the university, independently on the effectiveness of both the university as a whole and each member individually.

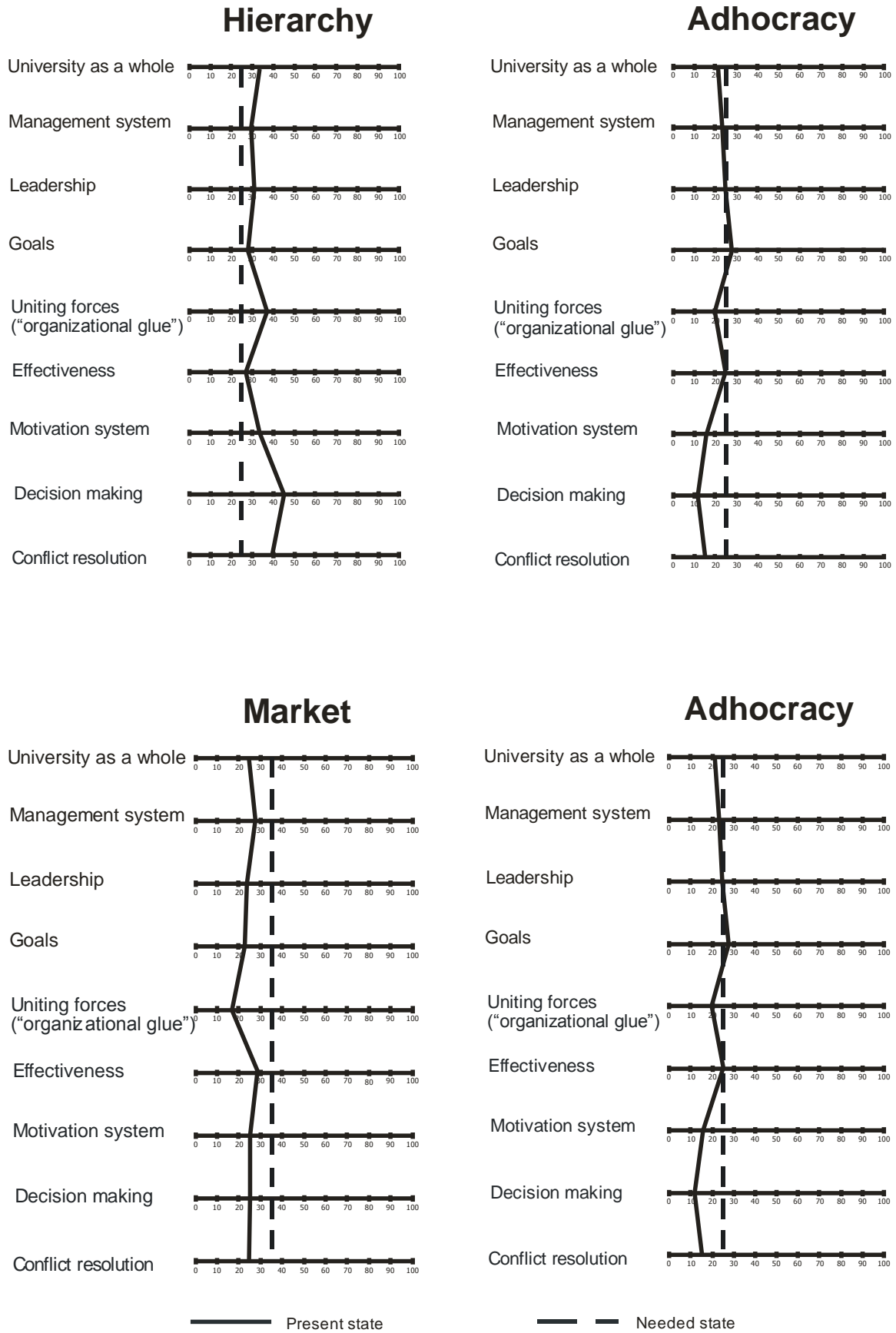


Figure 2. Congruency of the TPU organizational culture elements in the present and needed states.

Decisions making is based on formalized procedures and the leader's charisma. A linear-functional management system is based on centralized planning and disciplinary responsibility and encourages the corresponding behavior.

In the needed Market-Adhocracy culture, which was recommended to become predominant, the uniting force is defined as a common efficiency-targeted system of goals shared by university members. Achievement of those goals will determine the decisions to be made. The management system shall be based on competition, self-evaluation, and effectiveness motivating and shall encourage the proper behavior.

4.2. Practical actions

The first project targeted to enhance competitiveness as well as effectiveness motivation received the name "Candidate Pool". In framework of the project one hundred young promising academics of TPU were selected to be included in the Candidate Pool. Through special psychological examination the Pool was divided in accordance with the main areas of the university activity onto three groups: research, educational, and administrative. Each group received a substantial support from the university administration for enhancement of their capabilities in the area they belonged to. The administrative group was provided with the number of short-term trainings and seminars such as Project Management, HR Management, Leadership, and Team Building. But as it has turned out those trainings and seminars were not very effective since: 1) they were separated, i.e. did not create the system of knowledge and skills, 2) the specificity of the university being was not taken into account by providing these trainings and seminars, and 3) the trainees did not have background in management.

In order to improve the situation the Master Programme "Management in Higher Education" has been established at TPU. It was the second project targeted to improve university management. The programme was aimed to provide students with the following core competences:

- ability to run educational and/or research institutions (or their subdivisions) on the system basis,
- ability to effectively use the knowledge obtained as well as to generate the new knowledge in the area of the university administration and management,
- ability to create competitive advantages for the institution (subdivision) they run,
- ability to work in a team as both leader and team member,
- ability to apprehend and to create innovations in the university administration and management.

Curriculum of the programme consisted of two parts. The general part taking about 30% of the curriculum included such the courses as General Management; General Marketing; Project Management; Business Planning etc. The special part included courses devoted to various issues of the university administration and management. Some examples of these

courses are: University Management: strategy and tactics; Higher Education Legislation, Finance and Finance Management at a University; Organizational Behavior and Human Resource Management at the University etc.

A specific goal of the programme was to teach students an “effective thinking” which means ability to perceive and to work in unpredictable or uncertain environment. This part of the programme has been provided with the course “Change Management at a University” devoted to the approaches to deep changes at a university. This course includes three parts: changing a leader, building the team for promoting changes, deep changes at a university.

The first nineteen graduates of the programme were members of the TPU Candidate Pool. After graduation they were appointed to the top and middle administrative positions at TPU like: deputies of vice rectors, directors of institutions, departments’ Heads etc.

The programme is getting more and more popular among Russian universities. Now faculty from other Tomsk universities (there are nine universities in the city of Tomsk) as well as from universities of Novosibirsk, Krasnoyarsk, Yoshkar-Ola are studying on this programme.

5. Conclusion

To meet the modern social demands the universities have to change all spheres of their activity. These changes are integrated in the university organizational culture.

To cope with the challenges facing the universities the organizational culture should be reformed in a manner that provides enhancing entrepreneurship at the university while at the same time keeping the basic university traditions and academic freedom held by the university. The directions of this transformation have been explored by the analysis of congruency of all elements of the university organizational culture. It may be recommended to the university leadership to draw much more attention to the transformation of the organizational culture so long as without this transformation the structural, functional, and other changes that are being implemented at the university nowadays will fail. The serious difficulties existing now by implementation of the changes are an evidence of the correctness of this conclusion.

A particular result of developing of entrepreneurial organizational culture at a university can be enhancing the employability of the university graduates (Clark, 1998). On the one hand, this kind of culture impels academics to be innovative, to keep abreast of both scientific and industrial developments as well as the modern teaching technologies. On the other hand, entrepreneurial organizational culture is a creative atmosphere allowing students to be better prepared to their future professional life.

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