Application of the Principles of Total Quality Management in the Knowledge Formation

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The economy of developed countries is very much dependent on the production of knowledge, distribution and application. According to foreign researchers and practitioners, future is the age of knowledge, knowledge organizations, new economy that forces organizations to create new methods of work, competences, processes, management methods and the principles of strategic management. The scope of knowledge sectors (education, communications) increases very rapidly. Knowledge is obtained through thinking, experience, observation, information channels and other sources.

Modern managerial science has introduced a lot of new terms, theories and the ways of problem solution. These developments have been stimulated by changing business conditions. Thus, the main objective of organizations is to increase both international and international competition. It should be noted that it is not only the people who are the agents of change, but their knowledge and abilities play a crucial role in this competitive world. New management methods are very useful in forecasting the organization’s future, however, human resources are of the utmost importance in this process. Both human and financial capital open wide possibilities for further growth and development. The intensication of these agents under the conditions of growing globalization and competition is the main obligation for every organization and its managerial staff.

Seeking to survive in contemporary stiff competition, the organization is to concentrate its efforts on the development of human intellect and managerial practice. Only highly qualified employees with considerable experience are expected to feel and be able to overcome difficulties and support their organization in the struggle for advance. This situation has called for special research in order to ensure the quality of studies, the latter begun the main facet in knowledge development and dissemination. European and other countries have already introduced advanced methods of total quality management.

The aim of this research is to determine the main factors influencing the quality of studies. The research was conducted in the period of 2002-2004. The students of Bachelor and Master studies of Lithuania Agricultural University took part in the investigation. So called mind attack method was used for data collection. The method of cause and consequence as well as Paret law were used for the generalization of the results.

The investigation has helped to determine the level of the knowledge delivered to the students. Seeking better results in this field, total quality management should be introduced. The introduction of the system of quality management according to ISO 9001 is the obligation motivated by both clients’ requirements and the necessity to increase the University’s service quality through the improvement of studies process management.

Keywords: knowledge, information, competence, quality, management.

Introduction

Human intellect becomes the main capital in future organizations. People are not only resources or one of the main resources in organizations. It is the factor influencing the creation of competitive advantage. Moreover, people themselves do not make organizations competitive and more advanced in the market. It is the ideas that are embedded in people’s minds as well as the ability to use and manage them that lead to advantages. Therefore it is not enough to manage people, the main task is to manage people’s knowledge, abilities and intellect. Organization management theories use the term “human capital” meaning organization employee’s intellect. Working in changing surroundings under the conditions of changing environment, increasing competition and globalized markets, organizations turn to the aspects of quality and quantity. This process increases the importance of management, competence and knowledge. Thus, it is not only knowledge quantity that matters, but its quality, effective use and constant inspection as well as adaptation to the changing environment assisting in seeking foreseen objectives (Ramanauskiene, 2005).

Some USA and European universities apply the principles of Total Quality Management in teaching and administration processes. According to these considerations, the application of quality standards and approaches is one of the main requirements for higher schools, seeking to satisfy their clients’ wishes and realize the objective foreseen. The application of quality methods in administration is som how easier and not so much threatening to the academic personnel, the latter often suspecting its freedom limitations. When the success in the field of administration improvements has been achieved, it is easier to attain the approval to improve quality in teaching processes (Adomatiene, 2002).

Present science of management has introduced a lot of new terms and new ways of decision making. It is some kind of reaction to the changing conditions of business environment. Knowledge, new management methods are necessary in order to forecast the future of
organizations. According to most scientists and practitioners, future is the age of knowledge, knowledge organizations, new economy stimulating new work methods based on knowledge, competence, managerial methods and the strategies of organization management (Bieliunas, 2000; Evans, 2003; Hoyle, 2001; Jucevicius, 1998; Vanagas, 2004; West, 2000).

Lithuania as well as other EU countries face a very important and complex task to create an effective system of higher education quality adopting the most advanced experience of other European countries and developing their own system (Zekevičienė, 2005).

The main problem is how to manage, develop and convey knowledge as well as to create new programs, i.e. what study programs, new methods and aids should be used in order to achieve a proper level of the knowledge conveyed and competition advantage on the way to long-term success.

Research aim is to determine the main factors influencing studies quality and suggest the means to improve it.

The main tasks in achieving this aim are as follows:
1) to analyze the importance of teacher’s knowledge and competence in developing studies quality;
2) to investigate the level of university teachers’ knowledge and competence approached from the view of business management programs (students’ approach);
3) to determine the main factors influencing the quality of conveyed knowledge;
4) to evaluate the means improving the level of knowledge quality.

Research object – the process of business management studies

Research methods. Theoretical analysis is based on the study of scientific literature; practical analysis employs empirical data obtained from the research in 2002-2004. The problem dealt with in the article is based on general and special methods of investigation: systems analysis, logical analysis, expert evaluation methods that have helped to determine the factors influencing studies quality; the method of phenomena causative relationship and Paret law in grouping factors have been used.

Interrelationship of teachers’ competence and studies quality

The experience of foreign researcher’s shows that only the wishes and activities of the members of the whole organization can lead to the expected results. It is very important to direct the activity of the whole organization to these activities. Employees should be treated as a decisive factor of organization developments. This feature manifests the distinct significance of the staff. Moreover, employees’ obligations are very high and their role is very important. Employees’ competence becomes more and more important. V.I. Škatula (Skatula, 1998) singles out the following types of competences (Figure 1):

- speciality – ability to conceive and solve speciality problems;
- personal – personal development, ability to communicate with people and groups of people;
- methodical – participation in social processes;
- managerial – management of the field.

Thus, it could be concluded that rapid environmental changes increasing competition and globalized market, close European integration processes require full commitment on the part of employees and activity itself. Competitive advantage is created by the following factors: loyalty, competence (knowledge and ability to use it) and work processes. Knowledge as any other process should be managed. Knowledge management means intelligent knowledge accumulation seeking to optimize its use for the organization (Kėdaitienė, 2000). There exist several stages of knowledge management: identification, acquiring, dissemination, distribution, expansion, application, preservation, assessment (Figure 2).
The research has been firstly related to knowledge dissemination and application phases. Knowledge dissemination is expressed by various terms in scientific economic literature: “professional education and development” (Friedman, 1998), “investment into human capital” (Quinn, 1996; Nahapiet, 1998; Schultz, 1998, Starkevičiūtė, 1999). In this research we use these concepts in conveying knowledge to the subjects. The first group of investments comprises direct expenses assigned for the development of teachers’ professional abilities and qualification. Thus, university management representatives (heads of departments) are to ensure constant staff development. University should have the plan of constant staff development. Personal development is not only the matter of the staff, it is also the commitment of management. Staff development plan is an integrated document. The main thing is teaching, assessment is the secondary matter. The guru of quality management E. Deming paid much attention to training. He held that it was very important to implement training programs and to create the atmosphere of universal development. Training expenses should be considered as necessary investments. Qualification development is to engage all hierarchical levels. Starting with the top level management training is no the only thing, the staff should be motivated and motivation also needs expenses. The realization of quality conception is to be started from the top level. There should not be the situation when you come to the chief with your own opinion and leave the office with the chief’s opinion.

The second group of investments includes the investments which should create general university culture, attractive working conditions and payment system. There should not exist sphere barriers. Vertical barriers create communication issues between the management staff and staff. Horizontal direction raises the problems between structural units and their staff. Coherent ties appear when the quality system ensures the rationality of all plans and actions. The third group includes the investments that change the nature of the work itself. These investments are assigned for the development of work and objectives. A number of factors are singled out in economics, management and practice. These factors are successfully carried out by business sector, universities, governments and non-governmental organizations (Anskaitis, 2000)

This research embraces only those factors, which help to improve employee’s work. People are not simple screws in both manufacturing and service processes. Much depends on them, and they should feel this. They are community members, and they could be identified with the organization itself. Person should be allowed to show himself/herself as a personality. Only then it is possible to speak about work quality. There should not be baseless tasks. Situations improve when employees get real tasks reflecting not only managers’ wishes but the possibilities of a real system.

What conclusions could be drawn from these considerations? Seeking the answer to this question, the students’ attitudes towards knowledge quality acquired from business management programs has been investigated side by side with the study of the knowledge conformity to the requirements of the present developments. Fifty students of the Bachelor and Master studies of Lithuania Agricultural University, took part in the investigation in 2002-2004. So called mind attack method has been used. According to this method, each student has been asked to write down five causes predetermining the quality of their studies. The information obtained has been grouped according to similarities into five groups. Pareto diagram has been used to present the influence of the causes in a decreasing order (Figure 3).

![Figure 2. Stages of knowledge process management](image)

![Figure 3. Factors, influencing the quality level of studies](image)
Figure 3 presents the factors determining the level of the knowledge conveyed to students. The factors have been presented in a decreasing order: 1) knowledge and information novelty – 27.8%; 2) studies programs 25.4%; 3) teachers competence – 20%; 4) shortage of finance for the implementation of new teaching aids – 16.6%; 5) students’ activity – 10.3%. Thus, it could be concluded that earlier acquired knowledge needs constant innovation.

The quality of studies is very much dependent on the unification of quality regulations and norms as well as the introduction of European standards. The standards of International. Standardization Organization (ISO) are of the utmost importance. ISO standards are the basis of all activities.

There are educational institutions in Europe that have already created quality systems or they are in the development phase, however, only few of them have the certificate of ISO series standardization in the field of management systems. The biggest number of certificated educational institutions is in Great Britain, Germany, Holland and France. The standards of ISO 9000 series are mostly applied in technical universities because it is easier for them than for humanitarian institutions to adapt to special requirements. Besides, the former are much closer related to business practice and can use their experience in creating quality systems (Adomaitienė, 2002; Ruzevičius, 2004; Slatkevičienė, 2005).

Quality improvement and its support are not the only causes why universities seek to get the certificate of ISO 9000 series. The most important motive is interior need, e.g. studies programs, examination and assessment quality. Furthermore, universities strive for better image because ISO 9000 certificate can be some kind of an indicator for clients proving that the institution is very much interested in teaching quality (Hang, 1996).

The quality management system of ISO 9000 introduces strict documentation and management control, raises employees’ responsibility, motivates management staff to keep to the requirements. The universities that have introduced the quality management system assert that ISO 9000 certificate is neither obligatory nor sufficient condition to ensure the quality of educating and administrating, however, the certificate serves as a basis for constant improvement and indicates that the improvement has already been achieved.

Implementation of the system of Total quality management

Quality is achieved through the introduction of quality management system. This system has been created in order to improve the results of organization activity taking into account the needs of all those who are interested in the issue, Quality management systems (QMS) and their introduction are rather complex issues, they call for bigger solutions on the part of the managerial staff and other employees. The experience of most universities shows that the introduction of Total Quality Management (TQM) is quite possible in higher schools, especially if the model has been created by the institution itself (Canic, 2000; Dew, 2000; Ho, 1996; Michael, 1997; Montano, 1999). The system is to be prepared according to ISO 9001:2000 standard. Quality management system functions and is reliable when:

- The system is easily understood, implemented, controlled, renovated and producing results.
- Products/services satisfy clients’ needs and expectations.
- The system has been created taking into account the needs of society and environment.
- There is a possibility to stop the occurrence of problems.

Quality management system is usually applied for the whole activity concerning the quality of product/service. The system should include all the stages of product life service: from the primary market need analysis to the total satisfaction of need (Ramanauskiene, 2004). Typical stages of the realization of quality management system keeping in line with ISO 9000 series of standards are as follows:

**Stage 1. Preparation work for the creation of quality management system:**
- Decision to create quality management system (the order of the head of the organization);
- The preparation of the main program:
  - The study of ISO standards.
  - Formation of managerial and work groups for the introduction of ISO standards.
  - The analysis of the present elements of quality system.
  - The formation of the program for quality system creation.
  - Preparation of quality policy.
  - Distribution of capacities and authorizations according to the functions of quality system.

**Stage 2. The preparation and implementation of the documents of the quality management system:**
- Documentation structure and composition.
- Working out the schedule for document preparation.
- Document preparation and implementation.

**Stage 3. The preparation of the quality management system for certification:**
- The assessment of the quality management system (interior organizational audit with the help of consultants).
- Correcting activities and their realization.
- The choice of a certification institution, documents preparation.
- Presentation of the order for a certification institution.
- Creation of certification conditions.

In order to introduce TQM in the university it is necessary to form a multifunctional team able to solve the issues of teaching services quality and interdepartmental activity. Moreover, it is indispensible to ensure feedback from all the participants who are engaged in program implementation. The model of quality system implementation based on the previous stages is presented in Figure 4. The model defines the order of the system introduction. Every step in this activity is very important, especially
the very first steps as the effectiveness and the end result depend on them.

The implementation of the system according to ISO 9001 standard is motivated not only by clients’ requirements, but by the need to guarantee high quality of teaching services according to the obligatory demands to improve educational process.

Not a single stage can be omitted in the realization of the model. If there is some need for the highest competence, consultants could be hired. The motives for this might be as follows; 1) the practical application and interpretation of standards and their requirements; 2) need to save the time of organization employees; 3) a smoother process of implementation and less mistakes.

Introducing TQM universities should follow the following attitudes:

- Not to make any concessions that could decrease the quality of teaching services.
- To acknowledge mistakes and try to correct them.
- Teaching services should be supplied according to the most recent programs and with less expense.
- To fix decent and unconditional relationships with clients and suppliers.
- Not to make any decisions or to take actions that could worsen quality or consumers’ need satisfaction.

Striving to achieve that the team of TQM implementation were able to manage the process, its members should be trained according to TQM conceptions, methodologies and modern theories.

![Figure 4. Model of total quality management implementation](image)


The applications algorithm of TQM in educational organizations is similar to that in business practice. TQM introduction is carried out through the following phases:

1) The main forms of activity are identified (organization, systemizing management, standardization, self-analysis), and they are obligatory to every employee in order to ensure total quality environment.

2) Management of marketing and teaching quality management. As marketing function is directly dependent on a client and activity effectiveness, its success is the main objective. TQM principles should be applied in every marketing aspect, e.g., students’ body formation needs exact and rapid information.

3) Quality management teams, small groups are to independently manage quality in their working places. Educational development aspect is very important in such groups. It is important to teach group leaders and members to be ready to fulfill all tasks. Discipline programs could be created and improved by such groups, as well as knowledge assessment methods, etc. The successful activities of these groups depend on the following conditions: informed and educated employees; authorities willing to share information; “group spirit” in the team; clear tasks in the hierarchical division; stimulating system.

4) The creation of the quality management system according to the standards of ISO series and certification. This model should be realized in accordance with the previously mentioned sequence of ISO 9000 standards implementation.

5) Total support is expected. There should be created the system of all organizational equipment planning, management control, ensuring the highest effectiveness. Laboratory equipment, computer technologies producing direct influence on teaching / learning process should be controlled in order to achieve the quality level of the services supplied.

It could be concluded that the implementation of quality management system in higher schools is beneficial in these respects: better understanding of university...
vision, mission and objectives could be achieved; the involvement of all employees into the process of quality improvement increases university responsibility for teaching services; team work ensures students’, teachers’ and administration’s cooperation, better understanding of students’ needs, creates friendly atmosphere; constant improvement of teaching programs and process is under way; employees’ capabilities are used to the full, and business organizations start relying on educational institutions, their product and service quality; competitive advantage increases.

Conclusions

1) Teachers’ knowledge level and competence directly determine studies quality. General teachers’ competence consists of the ability to perceive and solve specialty problems, ability to cooperate and participate in social processes as well as to manage activities.

2) Under the conditions of the present market reality, not only knowledge quantity is important, but also its effective use and adaptation in changing environment. Qualitative knowledge management, i.e. intelligent knowledge accumulation is to help to strive for studies quality.

3) Knowledge management stages are: identification, obtaining, development, dissemination, application, preservation, knowledge object distinguishing and assessment. The stages of knowledge use and development are the main phases in the studies process. The leaders of the university structural units should ensure personnel’s qualifications development according to a constant staff development plan.

4) The main factors influencing studies quality level are presented in the following decreasing order: 1) novelty of knowledge and information – 27.8%; 2) study programs – 25.4%; 3) teachers’ competence – 20%; 4) shortage of finance for new teaching aids – 16.6%; 5) students’ activity – 10.3%.

5) Optimal use of investment into knowledge development can help to achieve positive results in increasing teachers’ competence, loyalty to studies, increase of quality level and higher qualifications.

6) The introduction of TQM can assist in better knowledge quality. TQM standards according to ISO 9001 motivate clients’ needs and higher level of university service in teaching process and its management.

References


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**Visutinės kokybės vadybos principų taikymas žinių formavimo procese**

**Santrauka**

Organizacijoms dirbant nuolat kintančioje aplinkoje, didėjant konkurso ir globalizacijos neseniai įvairios formos kokybės sistema. Šios procesas sparciai didina valdymo, kompetencijos ir žinių svarbą, todėl svarbu ne tik turimų žinių kiekis, bet jų kokybė, efektyviausius panaudojimus bei nuolatinis peržiūrėjimas ir adaptacija kintančioje aplinkoje, padėsiantys organizacijoms siekti numažėjusių tikslų.

**Dabartiniai vadybos mokslės sparčiai daugėja naujų terapių, teorijų, naujų problemų sprendimo būdų. Tai reiškia tarpusavio klausimą tarp kūrėjų ir reginėjų, norint progresuoti organizacijų atėjimą. Anot daugelio Val- karų šalių mokslininkų ir praktikų, atėtis – žinios, amžiaus, žinių organizacijos – tai nauja ekonomika, verčiant organizacijų turimų žinių pripažinimą, veiklų šaltiniams naudotis. Tad visiems svarbiausias darbo metodus, kompetencijas ir procesus, valdymo strategijas.**

Lietuva, kaip ir kitoms ES šalims, išskilo labai svarbus ir sudėtingas labai svarbus ir sudėtingas. Šis procesas skiriasi šiuos laikus žininių įvairių sferų, kurios organizacijos. Šis tyrimas apima tik tuos mokymo institucijų kūrėjų pasirinktas. Tai procesas sparčiai daugėja naujų terapių, teorijų, naujų problemų sprendimo būdų. Tai reiškia tarpusavio klausimą tarp kūrėjų ir reginėjų, norint progresuoti organizacijų atėjimą. Anot daugelio Valkarų šalių mokslininkų ir praktikų, atėtis – žinios, amžiaus, žinių organizacijos – tai nauja ekonomika, verčiant organizacijų turimų žinių pripažinimą, veiklų šaltiniams naudotis. Tad visiems svarbiausias darbo metodus, kompetencijas ir procesus, valdymo strategijas.**

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