IMPLEMENTATION AND CERTIFICATION OF THE QUALITY MANAGEMENT SYSTEM AT THE UNIVERSITY

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ABSTRACT

Purpose: The Quality Management System according to ISO 9001 can be applied not only in terms of manufacturing enterprises but also in education. The management system is applied at the level of Higher Education Institution (HEI).

Methodology/Approach: This paper presents description of the process of quality management system implementation according to ISO 9001:2008 standard including ESG standards, which have the significant influence on improving the quality of education in the university. The basis of the quality management system according to ISO 9001:2008 standard and ESG standards, which are processes oriented, were also presented.

Findings: An interesting area of further research would be improvement process and activities taken at universities after certification of quality management system.

Originality: The paper provides instructions and methodology for all universities that wish to implement the quality management system by ISO 9001 and ESG standards. Also, the guidelines presented in the paper might be helpful for universities considering certification of quality management system or implementing quality management system without certification.

Keywords: Quality of education; Quality management system; ISO 9001; ESG standards
1 INTRODUCTION

System of education functioning at present in considerable range was designed and shaped in 21st century. In the system of education the perception of the quality was based on the rule of the mutual confidence. In the conditions of the fast development of the higher education, indispensable became creating the formalised systems assuring the fulfilment of the academic standards (Michalska-Cwiek, 2009:744).

At present European universities are defending their point of view that quality of a university and its learning outcomes can be achieved only when there is a link between outcomes and objectives, achieving university objectives, that outcomes fit the objectives (“fitness for purpose”). National systems of quality assurance have started using the quality conception based on enhancement in university processes.

According to (EUA, 2009; Zgodavová, 2008) they have shifted from the conception “fitness for purpose” to the conception of “quality enhancement/improvement” and thus having impact on the current situation in quality culture in the European and also Slovak universities.

Internal quality assurance processes are recognised as essential components of institutional autonomy (Sursock, 2011).

Learning process can be understood as providing customer service. The mission of educational organizations is to create satisfied customers such as students, employees, partners and the public. The best educational organization is the one that recognizes that it must continually improve. The educational process can essentially be seen as a preparation of human resources for various areas of human activity. One of the roads hot to increase the quality of education is the application of management systems in education. In our case it is the implementation of the requirements of standards in the field of quality management in terms of educational institutions (colleges, universities, secondary schools, etc.).

The Slovak Higher Education Institutions are developing their quality management systems to support processes and utilize several tools to improve the quality of teaching and learning process according to the various models (Zgodavova, et al., 2014):

- tailor-made to the institution’s needs and does not apply any ready-made model;
- institution-specific but follows national QA frameworks and guidelines;
- ready-made model such as ISO, EFQM, CAF, etc.

Currently, some universities use the ISO 9001:2008 and its predecessor, ”Guidelines for the application of ISO 9001:2000 in education” as described by
the International Workshop Agreement – IWA 2. Implementation of Quality Management System of the educational process at the University does not exclude the possibility of simultaneous coverage of the scientific activities and business. Meeting the requirements of Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) produced by European Association for Quality Assurance in Higher Education (ENQA) as well as the requirements of the quality management system according to ISO 9001 can help to ensure the effectiveness of the internal quality assurance system for universities in the Slovak Republic and the EU (Jambor, 2013).

For example, The University of Žilina have applied ISO 9004:2010 to assess maturity level of compliance with individual Internal Quality Assurance (IQS) criteria with following outputs (Rostášová and Čorejová, 2014):

- List of strengths assigned to the individual criteria;
- List of opportunities for improvement assigned to the individual criteria;
- List of evidence assigned to the assessment.

According to (Hrnčiar, 2012:46) the ESG standards for Higher Education Institution (HEI) were created as a priority for education in universities, can also serve the area of non-formal education.

ESG standards and guidelines are divided into the following areas (European Association for Quality Assurance in Higher Education, (EUA, 2009):

ESG 1 – Policy and procedures for quality assurance
ESG 2 – Approval, monitoring and periodic review of programmes and awards
ESG 3 – Assessment of students
ESG 4 – Quality assurance of teaching staff
ESG 5 – Learning resources and student support
ESG 6 – Information systems
ESG 7 – Public information

Management system educational organizations will be welcomed if and only if it helps to achieve its objectives in the area of quality. Nevertheless, a system management does not always contribute to the achievement of the set objectives if implemented only formally. With this paradox it is necessary to calculate in advance and choose an approach to learning management system of the organization helps to meet the requirements and objectives of the University (Jambor, 2013).

The quality of education has become the critical factor for famous universities at present and forced a completely different approach to university management.
Therefore universities have a great interest in quality management systems (Michalska-Cwiek, 2009:744).

Top management of the Alexander Dubček University of Trenčín launched the project to implement a quality management system according to ISO 9001:2008, including ESG standards for HEI, in March 2013.

2 METHODOLOGY

The paper is developed as a case study, to present a draft procedure of implementation of quality management system ISO 9001:2008 and its certification. An important part of this paper is description of the implementation of the quality management system at Alexander Dubček University of Trenčín (University) the publication process map, charts, and links among the requirements of ISO 9001:2008 and ESG standards. From ESG standards based on internal quality assurance criteria, published by the Accreditation Commission for Higher Education in the Slovak Republic.

2.1 Procedures for the implementation of quality management system

Procedures for the implementation of quality management system ISO 9001:2008, taking into account the requirements of European HEI standards and guidelines ESG and indicators for internal quality assurance system was as follows:

1st Preliminary Stage:

a) Initial meeting of university management with management representative for quality and consultants:
   - presentation of project, presentation requirements of ISO 9001 and ESG standards including ESG standards, determination of the project team.

b) Analysis of organizational structures and job:
   - review of the current organizational structure of the university and the individual components of the University;
   - job definition, design changes and modifications to the requirements of process management and ISO 9001.

c) Identification of processes:
   - workshop to identify processes and activities carried out at the Rector’s office and other parts of the University;
   - determination of the staff responsible for defined processes - process owners;
• draft process map of the University.

d) Review of the current status of the quality management system and develop a timetable for preparing the documentation:

• assessment of the state management system of the organization;
• review of compliance ESG indicators and setting internal quality assurance system;
• verification of the existence of managing documentation;
• detect deviations processes and a quality management system requirements of ISO 9001, ESG requirements and indicators of the internal quality assurance system;
• the development of the schedule creation and implementation of quality management system documentation at the University.

e) Initial training implementation team.

2nd Creation and implementation documentation stage:

a) Gradual discussion of the quality management system processes at the Rector’s office and other organisation parts of the University:

• analysis of specific processes and individual process steps;
• taking into account the findings of the initial review of input output system status;
• taking into account of the requirements of ISO 9001, ESG and other requirements in the processes and activities;
• detailed review of existing documentation and records generated and their consideration in the processes;
• designing the management of process,

b) Draft working of proposals document management to processes and activities.

c) Consultation procedure on a preparation working document.

d) Consider these comments and finalizing the draft document management.

e) Approval procedure.

f) Implementation of agreed procedures.

g) Development of the Quality Manual.

3rd Carrying out internal audits stage:

a) Participation of employees selected for training internal auditors,
b) Implementation planning of internal audits,
c) Carrying out internal audits,
d) Evaluation of conducted internal audits,
e) Possible revision of documentation based on the findings of internal audits,
f) Proposal to address the weaknesses identified in internal audits and proposal of corrective and preventive actions.

4th Final stage:

a) Review of the quality management system:
   • define areas of assessment and data collection forms,
   • data collection and analysis by process owners,
   • preparation of a report for the review of the quality management system,
   • draft of measures, targets, objectives and findings to identified problem areas.

b) preparation for the certification of quality management system:
   • final training,
   • the presentation of the results of the project construction and implementation of quality management system,
   • selection procedure certification organization,

c) the certification audit,

d) addressing the findings and recommendations of the certification audit.

2.2 Process map of the Alexander Dubček University of Trenčín.

An important activity was to develop a process map of the University, which was prepared in the initial stage of implementation. The main processes, management processes and support processes have been designated by process owners. Process map shows the identification and interaction processes:
Each process is described in detail in the Processes table. Processes table contains the following fields of information:

- process owner,
- a brief description of the process,
- input in the process,
- outputs of the process,
- important interaction processes,
- outsourced activities performed,
- measurement process,
- procedure process,
- related documentation.
2.3 Linking criteria of internal quality assurance system (KVSK) to the requirements of ISO 9001

Alexander Dubček University of Trenčín, including its components, has implemented a Quality Management System according to international European standards ISO 9001:2008. The implemented Quality Management System according to ISO 9001 is an internal system of quality assurance for this university. It is based on “Criteria for evaluation of the internal quality assurance system of higher education” (hereinafter referred to as KVSK) namely KVSK A1 to A6 and KVSK B1 to B6, set by the Akreditačná komisia, poradný orgán vlády SR (Accreditation Commission, a Government Advisory Body of Slovak Republic) pursuant to § 82 paragraph. 7 of Act no. 131/2002 Z. z. on universities and on amendments to certain laws, as amended (AK, 2013). The above KVSK are also part of the top of the document for a quality management system called “Quality Manual”. This document is about top quality describes the internal quality assurance system, which is in the form of a certified quality management system according to ISO 9001 for education, which is implemented on Alexander Dubček University in Trenčín. For clarity links to ISO 9001:2008 with the criteria KVSK A1-A6 and KVSK B1-B6, we present a summary table of criteria and their links with the international norms of quality management system (ISO 9001:2008).

Table 1 – Correspondence between ISO 9001:2008 and KVSK

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<thead>
<tr>
<th>Chapters ISO 9001: 2008</th>
<th>KVSK (criteria of internal quality system) / ESG directive</th>
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<tbody>
<tr>
<td>4.1 General requirements of system - the process approach and improvement of processes</td>
<td>Criterion KVSK-A3: The organization of the internal quality system</td>
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<td>4.2 Documentation requirements</td>
<td>1) University and its components have built an effective internal quality system, clearly defined linkages and transfer of information between its various parts.</td>
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<td>2) University regularly evaluates the effectiveness of the internal quality system</td>
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<td>5 Management responsibility</td>
<td>University should have a policy and associated procedures for ensuring the quality and standard of their study programs and awarding academic degrees.</td>
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<td>5.1 Management commitment</td>
<td>Criterion KVSK-A1: Basic tools to achieve the main objective of the internal quality system</td>
</tr>
<tr>
<td>5.2 Customer focus</td>
<td>1) University has clearly stated objectives of the internal quality system and tools to achieve them. These objectives and tools are adequate mission of the university, are transparent, publicly available, realistic, stimulating development, comprising a reversing-binding mechanism that allows the entry of the main stakeholder groups of HEI life both inside and out.</td>
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<td>5.3 Quality policy</td>
<td>These objectives and instruments are not materially linked</td>
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<td>5.4 Planning</td>
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<td>5.4.1 Quality objectives</td>
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<td>5.4.2 Quality management system planning</td>
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<td>Chapters ISO 9001: 2008</td>
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<td>5.5 Responsibility, authority and communication</td>
<td>to KVSK A2 – KVSK A6.</td>
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</tbody>
</table>
| 5.5.1 Responsibility and authority | **Criterion KVSK-A4:** Distribution of responsibilities component of higher education in the field of quality assurance.  
1) University of clearly defined division of responsibilities and powers of all the components involved in the university quality assurance. |
| 5.5.2 Management representative | **Criterion KVSK-A5:** Characteristics of student involvement in internal quality system.  
1) University shall determine the involvement of students in quality assurance activities in higher education. |
| 5.5.3 Internal communication | **Criterion KVSK-B6:** regular publication date, objective, quantitative and qualitative information on study programs and their graduates  
1) University regularly publishes updated information (quantitative and qualitative) of the offered study programs and learning outcomes. 2) University publishes quantitative and qualitative information on graduates of study programs. |
| 5.6 Management review | **Criterion KVSK-A6:** Methods deployment, use, monitoring and review of the principles of higher education in the field of quality assurance  
University has developed effective procedures for the implementation, use, monitoring and review of the principles of higher education in the field of quality assurance. |
| 6 Resource management | **Criterion KVSK-B3:** Quality assurance of university teachers  
1) University has clear guidelines and requirements for quality assurance of university teachers, the teachers and the qualification process to assess the level of competence of all new teachers.  
2) University has developed a mechanism using results of the evaluation of teachers by students and other teaching staff.  
3) University provides its teaching staff the opportunity to further develop and improve their teaching skills. |
| 6.1 Provision of resources | **Criterion KVSK-B4:** Providing material, technical and information resources to support the training of students responding to the needs of courses  
1) University regularly assesses the provision of the material, technical and information resources to support the training of students in their fields of study (libraries, laboratories, computer facilities, information systems, etc.). |
### Chapters ISO 9001: 2008

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<td>2) University supports extra-curricular collaboration with external entities to ensure the physical and human resources to support the education of students responding to the needs programs.</td>
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**Criterion KVSK-B1: Development, approval, monitoring and periodic evaluation of study programs**

1) University has **developed an effective system of creation, approval, monitoring and periodic evaluation of study programs.**

2) University has developed **formal procedures and timetable for periodic evaluation** (internal and external) of individual modules and study programs in terms of objectives and expected learning outcomes.

3) University allows for the **participation of students, representatives of employers and other relevant organizations** in the development, approval monitoring and evaluation of the study program.

**Criterion KVSK-B2: criteria and rules student assessment**

1) University has developed transparent and publicly available **criteria and rules student assessment** that support the achievement of learning objectives and expected learning outcomes.

2) University establishes and implements effective, clear and consistent policy for the selection, processes, powers and responsibility of the members testing and evaluation committees.

3) University publish and maintain **rules and conditions to advance to higher levels** of study and the award of the degree.

4) University regularly **evaluate the success rate of the tertiary study**, student performance, student involvement in research, development, artistic and other creative activities, mobility programs and other activities of HEI.

**Criterion KVSK-A2: Characteristics of the relationship between higher education and research, developmental, artistic and other creative activities at university**

1) University has in relation to its objectives and the integration in the system of higher education defined **relationship between education and research, developmental, artistic and other creative activities** at university. That relationship is based on the results of education, research, developmental, artistic, or other creative activities of HEI.

2) University has developed its own procedures for the transmission of the results of original research in the teaching...
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<th>Chapters ISO 9001: 2008</th>
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<td>8. Measurement, analysis and improvement</td>
<td>Criterion KVSK-B5: collection, analysis and use of information necessary for effective management of the implementation of study programs</td>
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<tr>
<td>8.1 General</td>
<td>1) University has developed effective systems to collect, analyse and use information needed for effective management of the implementation of training programs.</td>
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<td>8.2 Monitoring and measurement</td>
<td>2) University has developed an information system to collect data on quality, success and profile of students, student performance and results, job opportunities in the labour market.</td>
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<tr>
<td>8.2.1 Customer satisfaction</td>
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<td>8.2.2 Internal audit</td>
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<td>8.2.3 Monitoring and measurement of processes</td>
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<td>8.2.4 Monitoring and measurement of product</td>
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<td>8.3 Control of nonconforming of product</td>
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<td>8.4 Analysis of data</td>
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<td>8.5 Improvement</td>
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<td>8.5.1 Continual improvement</td>
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<td>8.5.2 Corrective action</td>
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As an example, the criterion described by KVSK - A6, which is described in the documentation of the University as follows:

Criterion KVSK-A6: Alexander Dubček University of Trenčín has developed effective procedures for the implementation, use, monitoring and review of the principles of university in quality assurance. The above effective procedures are defined and described in the Quality Manual, Processes map in the Processes tab and other documentation related to process management according to ISO 9001:2008. In accordance with the criterion KVSK-A6 is a review of the quality management system of the University and its components (evaluation of curricula, assessment of the quality and effectiveness of staff training, evaluation of internal audits, corrective and preventive actions, quality objectives and quality policy) and draft quality objectives for the next period and related resources.

2.4 External audit of quality management system

Before the external audit was conducted at the University pre-audit, based on the conclusions was still fine-tuned quality management system according to ISO 9001 standard. Subsequently, an initial certification audit carried out by an external certification company. The certification audit was composed of two phases. Subsequently, an initial certification audit carried out by an external certification company. The certification audit was composed in two phases. The first and second stage of the certification audit was aimed at verifying the conformity of the quality management system built with the requirements of EN ISO 9001:2008 in force. Pre-audit and certification audit consisted of the following seven steps:

1) Starting audit:
   - Appointing the head of the audit team
   - Defining the audit objectives, audit scope, audit criteria
   - Determination of audit methods
   - Selection of audit team
   - Establishing initial contact with the audited company
   - Determine the possibility of audit

2) Performance review documents:
• Review of the QMS documents, including review of records with respect to audit criteria

3) Preparing for the audit work performed at the site:

• Preparing the audit plan
• Referral to the audit team
• Preparation of working documents

4) Implementation of activities on-site audit of the company:

• Implementation of the opening meeting
• Communication during the audit
• Roles and responsibilities of guides
• Verification of the information collection
• Formulation of audit findings
• Preparing audit conclusions
• Implementation of the final meeting and evaluation of audit

5) Preparation, approval and distribution of audit reports:

• Preparation of the audit report
• Approval and distribution of audit reports

6) Closure audit

7) Realize activities after completion of the audit (Jambor and Majerík, 2011).

Alexander Dubček University of Trenčín has been successfully certified as a whole, including its components according to ISO 9001:2008. The certificate below presents the components of the university:

• Rector’s office;
• Faculty of Social and Economic Relations;
• Faculty of Special Technology;
• Faculty of Health Care;
• Faculty of Industrial Technologies;
• University Department of Political Science;
• Joint university Research Centre Vitrum Laugaricio – Centre of Excellence for ceramics, glass and silicate materials.
3 CONCLUSION

Based on the experience of the quality management system implementation and audit shows that the quality management system is beneficial only if it is:

a) practical – it is tailored and appropriate for all managers of university to achieve the intended results (all activities are facilitated, all materials and information can be found immediately, each employee knows what to do, how to do it, there are clearly defined and interchangeable competencies...).

b) economic – the ultimate aim of introducing a system of quality management and business is to achieve a positive profit (reduce costs, optimization of numbers of students, increase of quality of education, increase profitability ...),

c) documented – quality policy, quality objectives, quality manual, documented procedures and records,

d) continuous improvement – the improvement of all activities and everything in the university can improve the ever-changing needs and customer requirements (continuous collection of views of customers at the university regarding their satisfaction and ideas for process improvement). (Jambor, et al., 2010).

The first positive results from the implementation of quality management system according to ISO 9001:2008 in our experience are reflected in the university after three years of operation.

REFERENCES


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