MODEL FOR A REGULAR EVALUATION OF THE EFFECTIVENESS OF MANAGEMENT PROCESSES IN HIGHER EDUCATION USING CORRECTIVE ACTIONS

Yoana Hadzhiyska, Ivan Ivanov, Katia Rasheva-Yordanova

University of Library Studies and Information Technologies (BULGARIA)

Abstract

Quality assurance in higher education is a process that requires a lot of time, human and material resources. The article describes a conceptual model of methodologies for assessing the effectiveness of management processes in higher education using corrective actions. It presents an approach to modelling of methodologies, objects and activities related to this type of processes. The proposed model is the basis of a project of a computer system for modelling of methods and procedures for quality assessment of higher education. In particular, this specific model includes stages as: building a formalized structure of a standard, generating a report, information flows to fill the report data, analysis of a state, an interim evaluation, analysis of the data, suggestions to make amendments in the system for quality management, corrective actions, feedback and final assessment of the system for quality management.

Keywords: Conceptual model, quality assurance in higher education, feedback, management processes, corrective actions.

1 INTRODUCTION

The European Union has adopted Standards and Guidelines for Quality Assurance (QA) in the EHEA. They state meaning of a general framework and guidelines for the quality that assume the elaboration of formal models and software applications.[2] QA agencies suppose that it is needful the evaluation procedures they execute on a national level should obtain international acceptance. The general fields where agencies think there is a primary requirement for development in the future are: use of data in QA, international recognition of national QA and international benchmarks for QA.[1]

Seemingly, quality education is determined by administration and organizational process pointed at accomplishing superiority, recognition of the quality by external institutions as excellent and distinguishing the educational institution as an international model [1].

The trends towards internationalization of quality assurance processes in higher education, the frequent change of procedures used, the need for international recognition of the quality of education and the comparability of educational products and services will make major changes in the ways in which quality in education is provided. It is necessary to develop flexible software tools to serve these complex and often changing processes in order to ensure the transparency and publicity of the quality assurance procedures.

This paper presents a conceptual model of methodologies for assessing the effectiveness of management processes in higher education through corrective actions. It uses a component model to build a formalized structure of standards as well as to configure quality assurance procedures that make it open, expanded and easy to adapt, depending on the needs of educational institutions and quality assurance agencies. The model can be used to build a common quality assurance system which provides services to various educational institutions and quality assurance institutions.

2 ACCREDITATION PROCEDURES

Developing a model for self-assessment and accreditation that can be used by many educational institutions with a different organizational structure for the assessment of the quality of the different educational units – organizational units, professional training courses and e-learning tools, etc., defining the following basic requirements [4]:
• Modeling the structure of the educational institution. In order to ensure strict control of the participants in the evaluation procedures, it is necessary to know which person belongs to which organizational unit in the educational institution.

• Modeling the system of criteria. Different methods and criteria are used to assess the different educational units. In the simplest case, they have a linear structure and include numerous indicators. Often they have a multi-level hierarchical structure where indicators are grouped according to certain characteristics defined by different assessment areas.

• Generating different types of reports, statements, maps and other necessary documents for the participants to report on their activities in accordance with the established administrative procedures.

• Keeping an archive of completed procedures to be kept for future reference, reporting and analysis.

• Integration with other software systems. Some of the data needed for evaluation procedures can be automatically retrieved through web services from other systems at the university.

The accreditation procedures of National Evaluation and Accreditation Agency of Bulgaria (NEAA) use well-structured criteria systems based on multiple criteria on which evaluation is carried out. Criteria are grouped into standards. On the other hand, the criteria contain one or more characteristics. A system of criteria for evaluation of NEAA can be presented as a tree structure with 3 main levels: (1) Standards, (2) Criteria, (3) Content of the criteria. In evaluating, a specific assessment is only given on a content of a criterion, which can be called a criterion characteristic (3). [3] Criteria have their own relative weight that moves within certain limits. For each characteristic in the content of the criteria, the methodology contains evidence indicating where the necessary information is sought, how it is evaluated and the maximum score. Assessment of the above two levels and the overall ratings are respectively obtained as a sum of the sub-module ratings.

In order to evaluate a characteristic from the content of the criteria, the institution evaluated must provide various data - documents, references, protocols, regulations, etc., which are part of the official documents of the university and its structural, basic and subsidiary units. Therefore, in the developed model, in addition to the naturally emerging need to evaluate a characteristic, criterion, and standard, serious consideration is given to corrective actions and the assessment of the effectiveness of the university management system.

To make things simple, the process is presented as a sequence of activities performed by individuals, teams or units. In cases where performance logic and transition conditions from one activity to another are clearly defined, the sequence of steps necessary for the success of the process can be modeled by the so-called “Workflow of Activities”. For the implementation of a specific activity of a work process corresponding to the modeling process, there must be certain input data of the activity - resources, data, documents, etc. The output data is used to determine the next activity to be performed in the process. Workflow management systems allow the execution and maintenance of various activities and processes by type and content. [5]

3 DEVELOPING THE MODEL

The first level in the model of Fig. 1 begins with the stages of building a formalized structure of a standard and generating a report. The following levels include information streams to fill out report data, status analysis, interim evaluation, and data analysis. On the basis of the previous stages, proposals for modifying the quality management system, corrective actions, feedback and eventually final evaluation of the quality management system are generated.
Building the formalized structure of the standard. Each standard of the Criteria System has a uniform hierarchical structure that allows to define a formalized structure including the main components: Standard (1), Guidelines (2), Criteria (3), Content of criteria (4), Evidence (5), Evaluations (6). [3]

Generation of a template. From the formalized structure already built into the database, a template is created, which is initially blank. Entered are specific data such as the name of the standard content of the guidelines to the standard criteria, along with their relative weights (coefficients), the content of the criteria with their respective maximum points, a list of evidence for criteria and a description of the methodology for the evaluation – minimum and maximum measured result and method of evaluation.

Creating a new document based on the current template of the standard. At this stage, a self-assessment report is generated based on the current template, filled with input data for all standards. Here, it is required to collect and input evidence for the assessment elements of the methodology justifying their implementation, which will later be used by an external evaluator or expert group for evaluation. Three types of evidence are defined – materials, evidence and generalizations:

- Material is a presentation of document, subject, system, event, etc. It is characterized by name and type (file or link location), a brief description and a link to which it refers;
- Proof of an indicator is a material that must meet at least part of the indicator requirements. The evidence includes a material and description that specifies exactly what part of the material (section / paragraph of a file or webpage or all of the material) is relevant evidence;
- Summary is a text description that is used for automated self-report or report generation.

Status Analysis. When the data template fill process is complete, an analysis of the current status is performed. Thus defining the criteria for which no evidence exists or the available does not meet the requirements. Particular attention is paid to the elimination criteria for the relevant procedure.

Interim Evaluation. It is necessary to define the logical link between the content of each criterion and the defined list of evidence. For each characteristic, what is sought - specific document (rules), several documents for the review period (annual reports), website (hyperlink), degree of compliance (complete, substantial, partial) and others.
Data analysis. For realization of this stage it is necessary to use an intelligent data processing system that contains different evaluation algorithms based on different mathematical models. Determines the mode of valuation of the assessment element, which can be of two types. The first one contains a link to an external software tool for valuation of the valuation element, where the value is automatically obtained. In the other, it is formally defined in a declarative language, set for example by using the set theory and the mathematical apparatus. After selecting the required mathematical model and evaluation algorithm, an automated evaluation of the content of the criteria is carried out according to the introduced evidence. Then the standard is also evaluated with the relative weight of the criteria.

Proposal to modify the university management system. When all the standards have received their score formed can clearly identify vulnerabilities for which it is necessary to take measures. For each marked characteristic of low evaluation define a few suggestions for modification, and the expected result from the change. Based on a mathematical model of the behavior of the managing authority and the algorithm for decision support solution generates a proposal for introduction of a change in the overall system for the management of the university.

Corrective actions. The corrective actions here are expressed in the modeling of management processes in order to increase the assessment in the accreditation procedure. Corrective actions are being applied to inconsistencies. The description of the non-conformities must be comprehensive and cover both discrepancies with the control activities of the organization and the discrepancies associated with the management system. A mandatory requirement is to record the results to prove the actions taken. Finally, a review of the effectiveness of the corrective actions is carried out.

A real system for managing the university. A report is prepared on the state of the university management system, which contains:

- results of the risk assessment carried out during the year;
- feedback from units for problems in processes and activities regulated by the control system;
- state and effectiveness of preventive and corrective actions on the management system;
- extent of implementation of recommendations from previous management reviews;
- other information concerning the adequacy and effectiveness of the management system.

The review and evaluation of the management system ends with decision making (baseline elements) related to improving the adequacy and effectiveness of the system and its processes, measures to improve its operation in line with changes in external and internal regulatory requirements, provision of the necessary resources For the normal functioning of the system and increasing the assessment under the accreditation procedure. Once the real system is evaluated as effective and new resources are generated for evidence, the process of filling the template of the data standard continues.

4 CONCLUSION

The ability to create formalized models and quality assurance procedures is due to a well-established common concept of quality in education and the ever wider use of European ESG standards. Defined benefit of the presented model is the ability to multiply the results - using already accumulated and shared data for conducting different procedures, such as accreditation procedures, quality management, internal evaluation, etc.

REFERENCES