

**ОЦІНЮВАННЯ КОГЕРЕНТНОСТІ СИСТЕМ  
УПРАВЛІННЯ ЯКІСТЮ ВИЩОЇ ОСВІТИ  
ТА ІДЕНТИФІКАЦІЯ СФЕР ПОЛІПШЕННЯ****EVALUATION OF THE COHERENCE OF THE QUALITY  
MANAGEMENT SYSTEMS IN HIGHER EDUCATION  
AND IMPROVEMENT AREAS IDENTIFICATION**

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**Розглянуто пропозиції для оцінювання стану систем управління якістю вищої освіти на підставі рівня зрілості процесів її створення та їх застосування для визначення сфер поліпшення.**

**Ключові слова: системи управління якістю, поліпшення якості, самооцінювання, ISO 9000.**

**The paper considers the proposals for the evaluation of quality management systems of higher education on the basis of creation processes maturity level and their application to identify areas of improvement.**

**Key words: Quality Management System, quality improvement, self-evaluation, ISO 9000.**

**Introduction**

Today's economy requires an extremely rapid response by universities in meeting the needs of the market of specialists with higher education. The needs and the criteria determining the adequacy of personnel, are also changing dynamically in time. Meeting the needs requires a knowledge of the current production and educational technology, as well as readiness for their implementation in the actual training of specialists. If we add the effects of globalisation and the need arises to possess modern communication skills necessary for their quick integration and prosperity in terms of international teams. All of these requirements, it is desirable to implement in relatively limited resources for education. Therefore, a fundamental for the success of the educational institution is its ability to manage the effectiveness and efficiency of the educational process, as well as its ability to quickly adapt to the needs of the modern economy.

Any organization is possible to achieve efficiency and effectiveness only when an adequate management of the status of each one of the processes are forming, managing and supporting the creation of its products. The processes must possess the ability to change, in concert with one another in a dynamic environment of constant change. Everything mentioned above, plus the risk to achieve the planned results, require very careful management of the status of processes and their ability to produce the required product. Process management is impossible without the creation of tools for an adequate assessment of their success. Compliance with the sequence of periodic evaluation and continual improvement, would allow to minimize risk, improve the effectiveness and efficiency of the organization.

**Needs and opportunities for the assessment of management systems. improvements**

At the modern stage of globalization of the world economy, more and more often impose restrictions upon the realization of a specific project. The success of this initiative depends on the skill of the personal to navigate quickly in the value systems of the organizations and their ability to perform the required processes effectively and efficiently. The students created by the universities need, to be able to comply with the specifications arising from national, State and organizational differences. The competitive

environment requires the personal to recognize companies that have approximately the same value, organizational and cultural models. Their ability to assess adequately the possibilities for collaboration leads to a reduction of problems associated with the coordination of the implementation and to the reduced risk in the implementation of joint projects.

Initially, as a role model for shared values and organizational culture in the 90s of the last century, had world standard ISO9000 for quality management [1,2,3]. Gradually the great popularity, which has gained the certification of management systems, contribute to the relative devaluation of the criterion of recognition certification of partners capable of contributing to the implementation of the joint project [7]. The different practices of the certification organizations, the overlay of national and international legal requirements specific to current regions and the imposition of State requirements for implementation of management systems, practically forced the most organizations to implement the standard, without affecting on the motivation of senior management of the companies [4,5]. Criteria for certification and certification shall wipe away gradually lost its importance as quality criteria for achievement [7]. It is observed a gradual reduction of the credibility of the certification standards for management.

Building skills for orientation in the competitive environment and habits in the periodic assessment of the status of the organizations is of particular importance for the successful training of the students. If the University applies in principle, continuous evaluation of the processes of learning and related processes, that allows it to be managed in accordance with the current strategies for competitiveness, and educates students to work in constantly assessed environment. General presentation of any organization depends on: her ability to interact with the external environment; internal consistency of the processes and the speed with which they can interact and change. Processes, building the quality management systems, in general it is possible to be classified into four main groups:

- strategic processes – reflecting the specificity of the value system of management organization, including management processes and achieving related objectives;
- system processes – reflect the way of management of the Organization adequately securing the necessary resources, the way of planning, management, evaluation and continuous improvement;
- processes creating product-include all core processes for the creation of the product, and the processes associated with the interaction with stakeholders;
- supporting processes – processes, ensuring the normal flow of the core elements of the management system.

In today's economic situation to meet the needs of the market require all associated in the implementation of specific project processes in an organization to proceed in a mutually agreed manner, allowing his successful processing. Failure to comply with the requirements of the process, irrespective of any of the phases of the life cycle for the creation of the product at the time (logistics) or quality requirements hinders or makes impossible the execution of the planned targets for the overall process. The achievement of such synchronization is difficult, especially in conditions of constant change. The realization is possible by simultaneously manage the status of processes. To achieve the desired effect of each project is appropriate to use the concept of "coherence of the processes" [7]. The concept of "coherence" is used: in the social sciences and Humanities with the meaning "connectivity, coherence, consistency", and mainly in physics, which means "consistent conduct in space and time of wave processes in which the difference of their phases remains constant".

Like a living organism, every system is unique in structure and status of the constituent processes. The status of each process is individual and reflects to a large extent the culture of the people who run it. In order for an organization to be viable it is necessary to quickly adapt to the changes in and outside the system. If each process performs its functions effectively and achieves its objectives, it will operate, and the balanced and achieve common goals. From the point of view of the usefulness of an organization for the community and constituent processes are required two essential qualities: reliability (minimum risk) in achieving set goals and adaptive ability to advancing change. Appreciating the importance of the development of the system, the constituent processes and their balance in 2000 [2] had been developed and in 2009 updated ISO 9004 standard "Management for the long-term success of any organization. Approach to management through quality" [3]. In the standard, as one of the main instruments for assessing the status of the management system is used self-evaluation through the model of maturity. Self-evaluation is possible to be realized on key elements, with the goal of senior management to obtain an idea of the

organization's staff and its actual achievements, or on individual items, for the needs of the operational guidance for obtaining insight into the status of the organization and its actual achievements.

An organization regarded as mature when it functions efficiently and effectively. Evaluation is realized through the maturity levels, which can be modified according to the needs and level of development of the organization. Best summed up the degrees of maturity of individual processes, it is possible to have five levels (table 1).

*Table 1*

**The levels of process maturity**

Maturity levels	Performance level	Instructions
1	<b>Lacking documented approach</b>	There is no systematic approach; no documented results, bad or unpredictable results
2	Approach of reaction	Troubled or correction-oriented approach; a minimum data set for the results on the improvement.
3	Stable, documented systematic approach	A systematic approach towards processes, system improvements at an early stage, the availability of data for the fulfilment of the objectives of quality, presence of trends for improvements
4	Highlighted continuous improvement	Introduced a process for improvement; good results and clear trends for improvement
5	Best performance	Documented and optimal results from the comparison with the best

Periodic review of the status is helping senior management in the identification and determination of priorities for actions to improve or innovate, necessary for balancing or switching of individual items or a group of processes to a higher level.

**Assessment of the status of management systems**

During the period 2001–2015 years were carried out a number of independent evaluations and analyses of organizations from industry (mechanical engineering, shipbuilding and chemical industry) and educational institutions, for the purpose of improving them and achieve a balanced management systems. In all of them was used a model of maturity. The realized analyses provided the opportunity to define the guidelines weak spots and to take corrective action for their improvement. The results of the analysis were presented in the form of radar charts, which successfully “mapping” the problems and are clearly understood by the management [7]. The accumulated experience allow us in the framework of the project “EN 051 PO 001-3.1. 08-0014-C0001 Development and improvement of management system of Technical University – Varna “, to develop a methodology for periodic self assessment of the Technical University-Varna and carry out initial self-assessments. Self-assessment is oriented towards achieving two main objectives: assessment of individual elements of the standard of basic training units and evaluation of key elements of important for the existence of the organization departments. Of Fig. 1 to Fig. 7 is presented overall condition of one of the leading faculties in the University in relation to the elements of the ISO 9004. They were originally assessed the elements defining the overall condition of the system of management and its strategic potential. In the analysis of the situation, it is necessary to take into account that the Faculty has no full autonomy for the determination of strategic management. Fig. 1 takes into account the aspects of the status of processes related to the sustainable development of the structure and the reporting of changes occurring in the environment in which the organization operates. Fig. 2 presents the Organization’s contact with the main clients and determines its position in society. Fig. 3 presents the processes related to the management of resources in the IRM products. Some of them are essential to ensure adequate implementation of the training process, others are important for the preservation of knowledge and experience within the organization. Fig. 4 presents the summarized level of maturity of processes, implementing the basic product of the organization. Obviously the favorable development of the main aspects of these processes. Important reporting and balance in the level of maturity of the faculty.

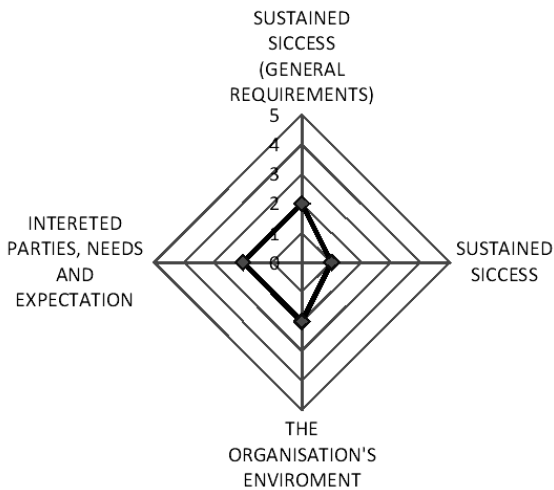


Fig. 1. The self-evaluation in the elements "control for sustainable success"

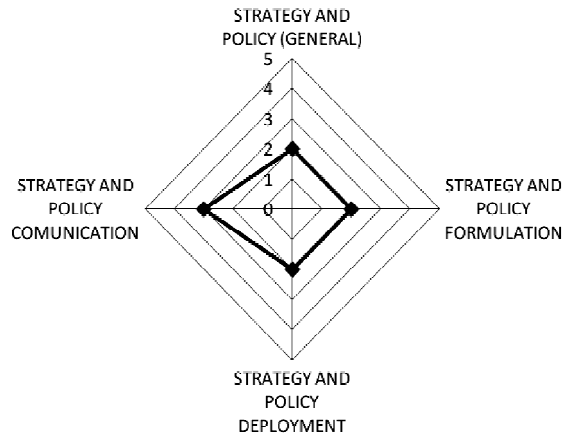


Fig. 2. Self-evaluation in the elements "strategy and policy"

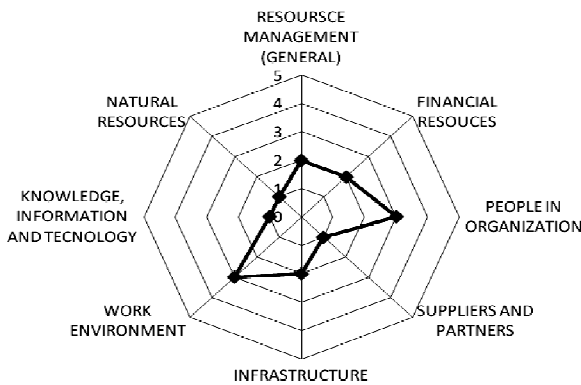


Fig. 3. Self-evaluation in the elements "resource management"

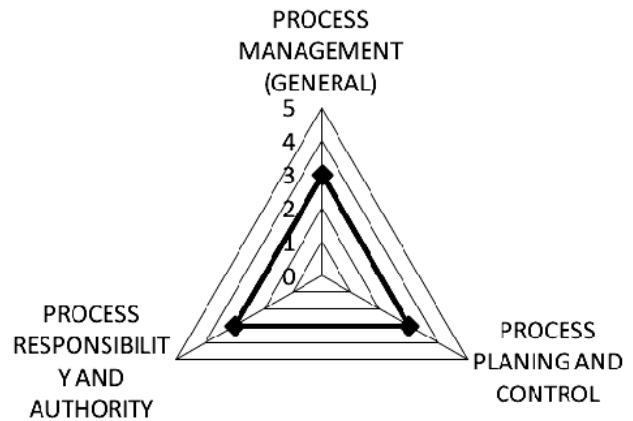


Fig. 4. The self-evaluation in the elements "process management"

Fig. 5 reflects the State of the processes determining the ability of the Organization to assess objectively its condition and the priorities for the future state of the processes related to determining the ability of the organization to assess objectively its condition and determine the priorities for future development. The evaluation is correct for the status of Bulgarian universities. Very few of them have the possibility and objective criteria to define its condition and actual position relative to its competitors. Even the Government approaches to evaluation are not objective and comply with the lobbies close to the management circles and educational institutions. That is why it is difficult to conduct self all the analyses and studies relating to objective information on the level of a country or the European Union, without the support and the corresponding policies on the part of State authorities. Critical to the development of the University are the lag in the criteria allowing for the achievement of the objective and devoid of subjectivity which control as shown on the diagrams are maturity level 1. On fig. 6 visible General presentation of the structural unit of the University on the main directions of the standard. When assigning specific levels of maturity is currently observed the principle of keeping the lowest level for an item, subject to the assessment by the group.

The analysis makes it possible to map the State of structural unit and evaluated to identify key opportunities for development and improvement. A similar approach is applicable to basic structural units involved in the creation of the product. In the case of necessity to achieve the total traceability of the status of structural units, affecting the overall results of the Organization, it is appropriate to perform the assessment of key elements. In this publication is presented a similar assessment of significant to the learning process link.

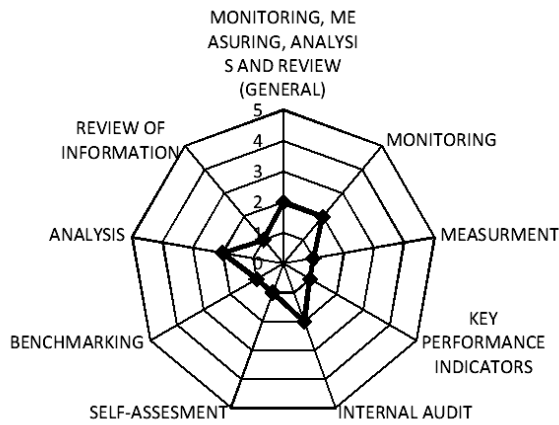


Fig. 5. Self-evaluation in the items “monitoring, measuring and analysis”

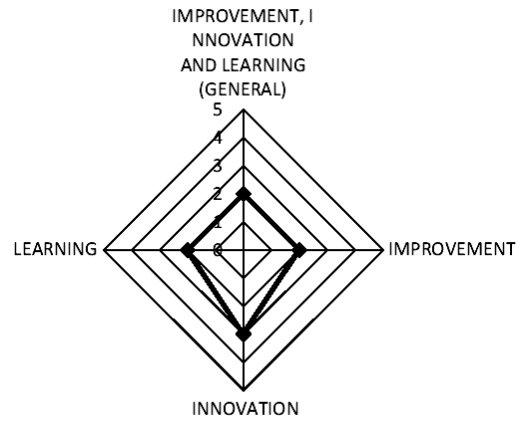


Fig. 6. General self-assessment by groups of elements

The presented in Fig. 7 results indicate the status of the key elements of the standard in the Department. In General, to contribute to the achievement of the basic objectives of the processes creating products, the level of maturity of such processes must be at level 4 and 5, by way of exception, level 3. The reasons for this are consistent: these processes must adapt as fast as possible towards the necessities of basic processes in order to achieve the requirements to the product. Maturity level 2 and 3 slow down possibilities for the development of core processes and put the reverse task, how the main processes to comply with the current state of the support process. Undesirable trend is the ability of the criteria “management for long-term success,” and “strategy and policy” to outpace many other criteria, which demonstrates a policy of development, without taking the interests of the University.

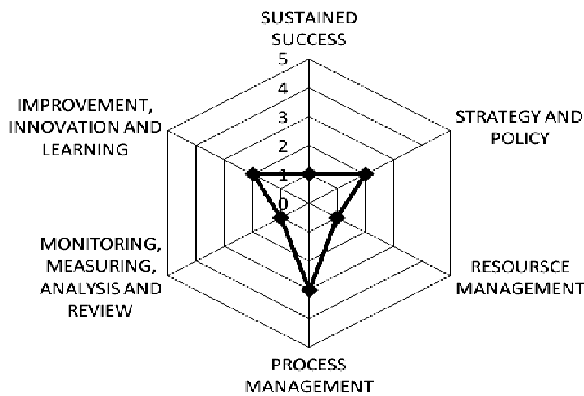


Fig. 7. Evaluation on key elements

### Identification of improvements through the “coherence” of the processes

The advent of modern methods of managing and providing the possibility of separate units to have credentials for the relatively self-management (i.e. the real introduction of the notion of “process owner”), having the full analyses of structures located relatively lower in the hierarchy of the organizations. It is obvious that their autonomy is relative, and is logically require analyses of interactions between two or more organizational units, carried out by comparing the radar charts of the processes and the analysis of possibilities of quality management processes, as well as their ability to adapt to the coming changes. When building the analysis is logical to follow the sequence of their realization [8]. Opportunities for interaction, schemes are: sequential processes; parallel and hierarchical interacting processes. In successive processes, overall performance may not exceed the capabilities of the process with the slightest maturity. In parallel processes, the basic workflow when creating the product will prefers process with better performance, which at some point would negate the existence of the parallel structure. In the long term is

important to achieving sustainable capabilities of all participating processes to improve (i.e. to be on level 4–5). In hierarchical interaction, in the determination of priorities is necessary:

- to strive to achieve the “coherence” of the processes at all levels;
- continuously to maintain the levels of maturity of processes creating a single product, the highest level of maturity;
- the levels of maturity of ancillary processes, it is desirable to outpace the levels of core processes, contributing to the rapid development;
- the levels of the processes responsible for the interaction with the environment and determine the competitive position of the Organization would have to anticipate at least one level of maturity the main processes.

The areas of possible problems in the implementation of specific projects are different. In the examination of numerous educational and industrial institutions, we have come to the conclusion that to achieve sustainable and continuous development of the organization charts of the hierarchical organizational units are interrelated and need diagram to a higher organizational unit to focus covers the subordinate. The opposite is valid for the supporting processes to ensure the unhindered development of core processes-the chart of the supporting processes should cover the main processes. The presence of overlap or gaps in specific point, allows to define the area for the improvement of the present process.

### Conclusion

This analysis presents the possibilities for use of the level of performance and maturity of processes in achieving balanced development of the Organization and identifying opportunities for improvement. It is possible to optimizing the interaction between structural units and processes within the organization.

Identification of areas for improvement, it is necessary to follow the sequence:

1. Compiling a chart of the hierarchical subordination of organization.
2. Compose process diagram for their interaction in the Organization.
3. Assessment of the levels of maturity of processes that meet the requirements of the standard ISO 9001 and 9004 for each of its interacting structural units.
4. Determination of the areas of improvement in the interaction of organizational units.
5. Identification of areas for improvement in the organizational unit.
6. Determining the possibility of adaptation (improvement) in those structures and processes to achieve the “coherency”.
7. Setting the strategy for the development of the management on keeping their “coherence”.

This approach is recommended for use by organizations wishing to achieve continuous improvement of competitiveness and balanced development. Through the initial and subsequent periodic evaluation of the “coherence” of the processes between organizations are reducing the risk of default of the requirements to the quality of products, as well as the related quantitative and qualitative changes in the requirements to them.

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