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ECONOMICAL ASPECTS OF QUALITY MANAGEMENT SYSTEMS

Abstract

This report is about quality management systems and about a role of evaluation in maintaining and improving a system. There are assessing tools indicated in that paper and levels of estimation of the performance. It is a combination shown between tools of assessing the system when using them on different levels in organization.

Revision of ISO series 9000

Several of the key standards within the 1994 version of the ISO 9000 family of Quality Management and Quality Assurance standards have been revised to form of the year 2000, ISO 9000 family standards. These revision includes ISO 9000 [1] which had replaced ISO 8402 and part of the content of ISO 9000-1. Another norm from that family ISO 9001 [2] had replaced ISO 9001 (2,3) and ISO 9004-1 into a new ISO 9004 [3] standard [4]. The phase of co-existence of the availability of accredited certification to the 1994 editions of ISO 9001 (2,3) and to ISO 9001:2000 will last from 15th December 2003. In that time users will have to upgrade their quality management systems to meet the requirements of ISO 9001:2000, to maintain an accredited certificate [5]. There is new terminology in the ISO series 9000:2000. There is substitution of quality assurance system for quality management system. It is not only of name change. Management is more wide word than assurance. Quality management system is defined as management system to direct and control an organization with regard to quality [6]. Moreover 18 of 20 requirements included in ISO 9001:1994 begin of words "The supplier shall establish and maintain documented procedures...". Requirements concerning documented procedures had changed. There are six requirements re: documented procedures in ISO 9001:2000 for the following six activities:

- 4.2.3 Control of documents
- 4.2.4 Control of records
- 8.2.2 Internal audit
- 8.3 Control of nonconforming product
- 8.5.2 Corrective action
- 8.5.3 Preventive action

Measurement of quality management system

The documentation aspect of quality management system according to ISO 9001:2000 is not the most

important element of system. The most important element is process approach what is defined as the application of a system of processes within an organization, together with the identification and interactions of these processes and their management [7]. In addition, the methodology known as "Plan-Do-Check-Act" (PDCA) can be applied to all processes. It is connected with requirement show in point 8.5.1 (Continual improvement) in the norm ISO 9001:2000 where it is said that the organization shall continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review. There is a one important phrase-"If you can not measure it, you can not manage it, because you will not know if it improves" [8]. There is a requirement to monitor, measure and analyse identified processes in ISO 9001:2000 in point 4.1 (General requirements). Effectiveness is the first element which is assessed in quality management system. Effectiveness of the system is defined as: meeting the company's specified requirements and prescribed quality objectives. The measure of effectiveness of the system is dependent on what the company defined as its purpose. In other words, if you do not define what the system is set to achieve (define its objectives) you can not measure the effectiveness or impact of the system [9]. The second element which is to assess (efficiency) is defined as relationship between the result achieved and the resources used [10].

The levels of measurement

In quality management system effectiveness and efficiency concern every single process. Effectiveness of process = ability to achieve desired results (focus of ISO 9001:2000). Efficiency of process = results achieved versus resources used (focus of ISO 9004:2000) [11]. There are two aspects of measurement: internal and external measurement. Internal measurement is carried out in organization. External assessment is carried out by clients or suppliers. In order to assess quality management system (QMS) it should assess every element in QMS what is connected with levels of measurement. This aspects of evaluating QMS can be shown in graphic way at the figure below.

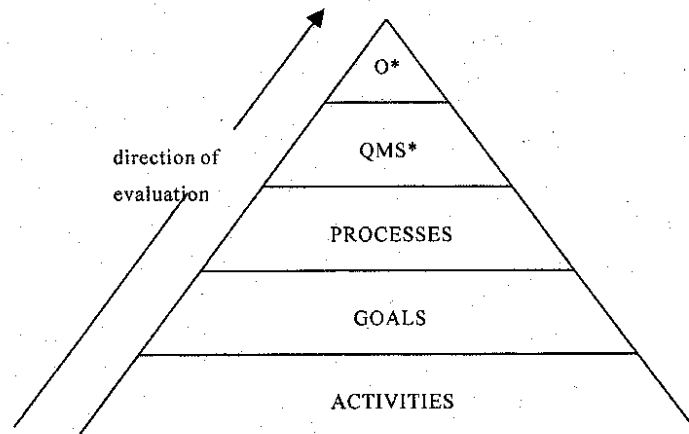


Figure. 1 Levels of measuring in quality management system

* O-Organization; QMS-Quality Management System
Source: own elaboration.

Within the confines in quality management system The goals at relevant functions and levels within the organization should be established. The quality objectives shall be measurable and consistent with the quality policy [12]. Degree of realization of activities' influence on effectiveness in gaining the goals. On the next stage it affects processes and the sum of processes create quality management

system. The QMS among another systems determine effectiveness and efficiency of organization.

Method of evaluation

In order to assess effectiveness and efficiency of quality management system one should use the methods of evaluation. There are six methods of evaluation of quality management system:

1. Self assessment.
2. Internal audits.
3. Opinion poll (questionnaire).
4. Management review of quality management system.
5. Management review of organization.

Self assessment is a very simple method. Every one in organization can (should) assess the effects of his work. Internal audits are planned and done according to requirements show in ISO 9001:2000 (point 8.2.2 Internal audit). The aim of internal audit is to ensure that quality management system is effectiveness according to ISO 9001:2000. Of course, it can use internal audit to indicate that quality management system is efficient according to ISO 9004:2000.

Opinion poll (questionnaire) can be use in internal and external way. In internal process the questionnaires are fulfilled by employees. In external process of research the questionnaires are fulfilled by clients or suppliers. The results show the opinion about quality management system and about effectiveness of the whole organization.

Management review of quality management system is a requirement show in ISO 9001:2000 (point 5.6 Management review). It is connected with another requirement (8.4 Analysis of data) and the aim of that review is to ensure continuing suitability, adequacy and effectiveness of quality management system.

Management review of organization is a review of all activities and assess ment of organization performance. Of course that review is connected with planned goals on organization levels. That review is an analysis of the relationship between strategic planning and organizational performance [13].

The above mentioned methods are shown in figure below.

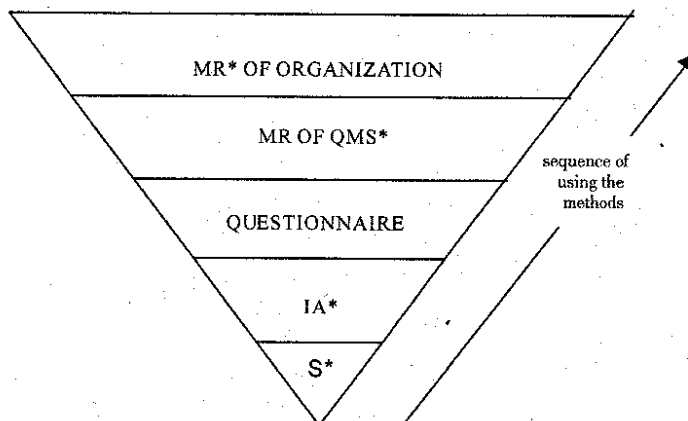


Figure. 2 Methods of evaluations of quality management system

* MR-Management review; QMS-Quality Management System; IA-Internal Audit; S-Self assessment

Source; own elaboration.

Evaluating the system

Effectiveness of quality management system can be assessed in system (systematic) way. It can draw up a documented procedure which describes activities and responsibilities during process of evaluation effectiveness. Such procedure can refer to levels of measuring quality management system and methods of evaluations of a quality management system what is show at figure below.

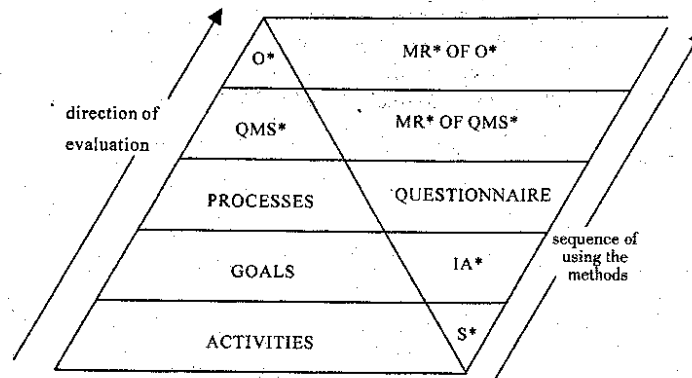


Figure. 4 Levels and methods of assessing a quality management system

* O-Organization; QMS-Quality Management System; MR-Management review;
IA-Internal Audit; S-Self assessment

Source: own elaboration.

Conclusion

Assessment of quality management system is necessary because of the requirement of continuous improvement. The system of measurement can be organized in various ways and described in the procedures. It can describe the levels and methods of assessing what is shown at figure above. Additionally, it can point out responsibilities and activities at planned intervals. Summarizing the way and system of measurement influence on fulfilment the requirements and assessing the effectiveness of quality management system.

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