THE INFORMATICS ASPECT INTEGRATION OF PROCESSING APPROACH OF QMS

Nataša Gojgić[1], Vesna Ružičić[1], Marija Nikolić[1]
[1]Faculty of Technical Sciences in Čačak, Čačak 32000 Serbia

natasa.gojgic@ftn.kg.ac.rs (N. Gojgić)

ABSTRACT:
The processing approach is a basic principle of a management quality system. Monitoring and measuring are the requirements of the management quality system. Introducing the indicators as well as their further development and control should be one of the essential tasks of each organization. Therefore, while projecting the database, it is necessary to predict the connection between the very process and its indicators which are used for measuring since it is the only relevant indicator of success. The paper presents the informatics aspect for the development model of transactional base that integrates business processes QMS and their indicators.

Keywords: *the processing approach, QMS,integration*

1. INTRODUCTION

The standard ISO 9001 for quality management rightly emphasizes the application of the process approach, as the ground for the development and implementation of the quality management system. It is the process approach itself that makes it possible to balance the relationship between the functions in the organization, route everyone in the organization towards the needs of the users and the comprehensive fulfillment of the defined goals. Each process is characterized by appropriate performance and it is necessary to define at least one process performance indicator in order to monitor the success of the process and to see possible ways of improving it.

2. PROCESS APPROACH

The process approach is one of the eight principles of the ISO 9001 quality management system, which states that the desired result is achieved more efficiently when related resources and activities are managed as a process [1].

The quality management system requires the acceptance of a process approach, where the processes are connected in a single system, where as a rule, the output from one system is the input to another system. The importance of focusing on processes is reflected in the

focus on monitoring the results of the organization's work (finished products and services provided) on the processes by which the organization realizes the product or services.

Processes consist of a logically ordered sequence of related activities. Activities can be further divided into tasks (or operations in the technological process) which represent the detailing of activities. One process activity consists of several tasks or operations performed with the same resources [2].

3. PROCESS PERFORMANCE INDICATOR

The quality management system requires the acceptance of a process approach, where each process is characterized by appropriate performance and it is necessary to define at least one performance indicator in order to monitor the success of the process and consider possible ways of improving it.

Business performance is an indicator in which the product, process or system achieved the established goals/characteristics/requirements [2]. The ISO 9001 standard requires organizations to establish and implement their own approaches to measuring and continuously improving process performance. In the standard SRPS ISO 9004 - Guidelines for improving performance, guidelines are given for establishing them.

The operation of the organization depends on the measurement and analysis of performance for which the value indicators are defined [3].Each business process is characterized by appropriate performance, i.e. features that define the efficiency and effectiveness of the process, i.e. quality of process execution. A process performance indicator is a measurable parameter.

4. INFORMATICS INTEGRATION OF BUSINESS PROCESSES

At the beginning of each year, general goals, strategic goals and special goals arising from general goals are defined, which are applied to the goals of each process in organizational units, which are being documented by plans. Plans are documents that determine how to achieve goals, including the allocation of resources, programs, and other necessary actions to achieve goals.

Planning sets goals, determines the necessary means, time and method of achieving goals. Planning is a creative thought process, ie. activity that makes assumptions about the future, which reduces uncertainty and risk in business and company development [4]. From the general goals at the organization level, the process owners determine the process goals and activity plans for their achievement.

The owners of the process monitor the effectiveness and efficiency of the process according to the defined indicators in certain time intervals given in the process sheets [2].

Therefore, it is necessary to have plans integrated with the processes in order to establish the monitoring of the success of the processes and consider possible ways of their improvement.

Fig. 1. Logical data model

In the displayed logical model, the process entity defines the hierarchy of the process and is connected to the plan/activity entity, in which the given attributes describe the activities for the realization of the process within the given plan, which will fulfill the integration. The activity goal attribute represents the performance that is monitored for a certain process, and the activity is the performance indicator, while the quantity is the planned value of the indicator.

A record is a document that shows the results obtained or provides evidence of the activities performed. Evidence for the realization of the process is generated record documenting the completion of the process. The reason for establishing records is to provide information needed to manage processes, achieve goals and demonstrate

compliance with requirements - both the requirements of standards and laws, and customer requirements. Because records are the result of a process, the generic label of the process is also the label of the record.

Defining subcontract performance indicators and defining data collection methods must be adequate, reliable and valid. Therefore, one of the most important tasks in this context is establishing and developing of an information system, which will ensure, on the one hand, the efficient collection and processing of various data on the functioning of business processes, and on the other, suitable ways of organizing, presenting and using those data [5].

By realizing the entry of the given logical data model into the database and by implementing the user interface, the obtained values of the process indicators can be monitored from the records of the monitored and realized process of the planned indicators for the respective one.

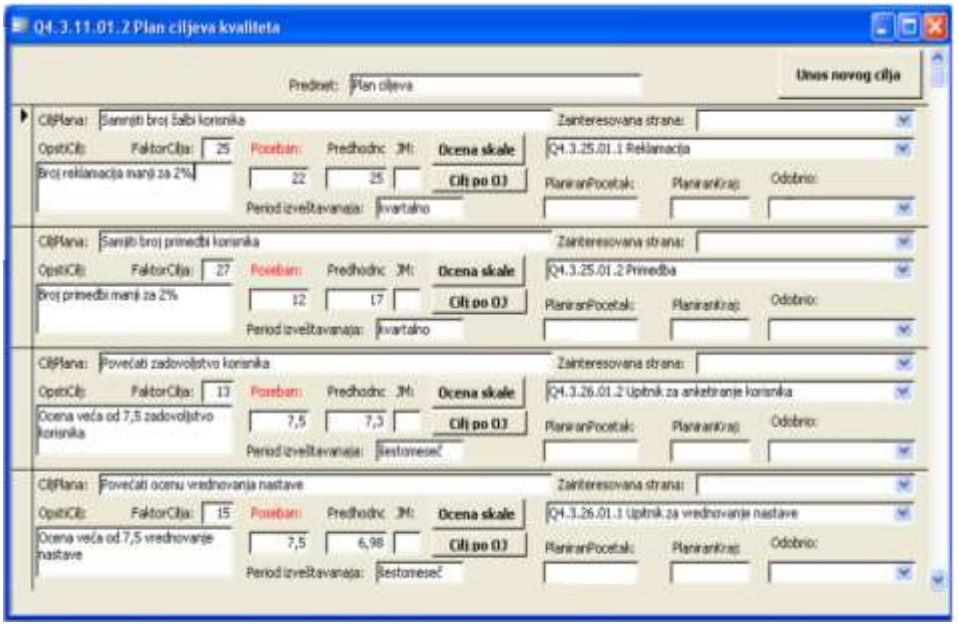

Fig. 2. User interface

Performance indicators enable comparison of achieved values with target values/ with values from previous measurement periods, i.e. established standards, and even with the performance of competitors.

The process of monitoring and measuring indicators takes place over time, and the obtained results serve as a basis for improvement. The obtained indicator values (special field) are used for comparison with the results of previous measurements (previous field) for determining the trend or setting the target values of the indicator. The results of the comparison are further used for appropriate corrective measures and activities to improve and achieve the planned values of the indicators. This provides the necessary methodological framework for drawing significant conclusions about the success of the process or for making decisions about concrete measures for gradual and continuous improvement.

5. CONCLUSION

The quality management system is created, established, maintained and improved by applying a process model to different processes for the realization of products or services, as well as for the maintenance and improvement of the system itself. Each business process is characterized by appropriate performance indicators that are monitored and measured over time and on the basis of which the success of the process is monitored. Based on the obtained values, possible ways of improvement can be seen.

With the existence of an information model that integrates the organization's business processes with planning, a methodology for monitoring the value of business process indicators can be established in order to reduce uncertainty and risk in the business and development of the company. Process indicators, designed, monitored and measured in an adequate way, with IT support, provide a strong potential in the process of evaluating the organization's quality performance. However, within the requirements of the mentioned standards, voluntary application and complete freedom in the choice of parameters and success criteria were left.

6. LITERATURE

[1] SRPS ISO 9001: 2015, *Sistemi menadžmenta kvalitetom* - Zahtevi
[2] M. Heleta (2010), *TQM - modeli izvrsnosti i integrisani menadžment sistemi*, Zavod za udžbenike - Beograd, 178-185.
[3] SRPS ISO 9004:2018, *Menadžment kvalitetom - Kvalitet neke organizacije* - Uputstvo za postizanje održivog uspeha
[4] A. Veljović (2004), *Informatičko upravljanje razvojem preduzeća*, Kompjuter biblioteka Čačak, 123-129.
[5] N.M. Kilibarda. (2007), *Definisanje ključnih indikatora logističkih performansi*, Časopis tehnika Vol.6. Beograd 2007., 15-21.
[6] Peter R., Carlos C. (2007), *Database systems: design, implementation, and management, Cengage Learning*, 275-279.