An innovative approach to the evaluation of a Quality Management System in a production enterprise

Katarzyna Midor
Silesian University of Technology, Faculty of Organisation and Management
Institute of Production Engineering
41-800 Zabrze, ul. Roosevelt 26, e-mail: katarzyna.midor@polsl.pl

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Abstract
Enterprises functioning on the contemporary market oblige their suppliers to prove that they are ready to fulfil the requirements in a systematic and reproducible way. Such a proof can be an effective Quality Management System, functioning in an enterprise in accordance with ISO 9001-2008 standard. The effectiveness of the system depends among others on the degree of the employees’ involvement in the fulfilment of requirements and regulations resulting from the system documentation. The most frequently applied method for evaluating this effectiveness are reports on internal audits. However, the results of audits are not always sufficient. In the article the author will present an innovative method of evaluating a Quality Management System (QMS), based on the author’s survey study conducted among the employees of an industrial enterprise, which was aimed at exploring their opinions, the degree of engagement and acquaintance of QMS functioning in the enterprise. The results of the conducted research will be used by the Quality Management System Plenipotentiary to improve the system and co-operation between departments functioning in the organisation.

Introduction
An increasing number of enterprises operating on the contemporary market expect their suppliers to provide a proof of their ability to fulfil the required quality conditions in a systematic way. For this reason, the majority of companies strongly emphasise Quality Management System (QMS) elements in their strategies, considering them to be a very effective tool that allows achieving the satisfaction of not only customers, but also employees, suppliers, owners and the society. These elements are contained in ISO series 9000 standards issued after the year 2000, as well as in the concept of Total Quality Management (TQM).

One can easily see the necessity of having a certificate among others by reading the specification of order conditions to be fulfilled by participants of tenders for delivery of goods and the provision of services. In many such specifications the condition to be fulfilled in order to participate in the tender is the supplier’s having an ISO 9001 certificate. This means that a Quality Management System implemented in an enterprise enables fulfilling the customer’s requirements and, in consequence, allows enhancing the prestige and bargaining power in negotiations.

QMS models proposed in ISO series 9000:2000 SERIES have been generally accepted, as they fulfil a number of conditions favouring their practical implementation, because they are [1, 2]:

- **comprehensive**: they contain all elements necessary for creating an effective quality management system;
- **flexible**: final responsibility for the selection of quality management methods and tools is left to the organisation;
- **universal**: they can be applied in organisations which provide the market with very different products (goods, services);
- **based on good organisation**: they are supported by organisations that are generally accepted as forums used to introduce changes in the stan-
The implementation of a Quality Management System in MAX was ordered by its owner. The contracting party obliged itself to implement a management system including the Quality Management System in accordance with ISO 9001:2000 standard. The QMS implementation took into consideration its planned certification and was conducted in a series of necessary trainings for the employees and management staff. Next, necessary documentation was worked out and the organisation was prepared for certification.

In the year 2006 the first initial audit verifying the compliance with ISO 9001 standard was conducted and the first certificate was issued. In 2010 the company obtained a certificate, which is valid until the end of 2013.

The system was implemented in stages.

1. Stage – an initial review of the existing system – the existing management status in MAX was compared to the requirements of the standard. The procedures and documentation, the scope of employees’ duties, the duties and powers of the management staff were reviewed.

2. Stage – trainings – a training in quality management was organised for the management staff, next, for the quality system plenipotentiary, followed by a full training for internal auditors.

3. Stage – counselling – major and auxiliary processes were identified, environmental aspects were determined, principles and documenting methods were established. Mutual relations and effects between the processes and records confirming their implementation were determined. Principles of monitoring and measuring the processes, goods and services were established. QMS documentation was prepared.

4. Stage – conducting the internal audits and preparation for certification – an internal audit was carried out, post-audit corrective and preventive measures were taken, documentation on the system inspection with regard to certification was prepared. At the end of this stage an application for certification was filed.

The implemented system was documented by preparing: Quality Policy, Quality Book, 9 Procedures, 25 Process Cards and 3 System Instructions.

When implementing the QMS, relevant orders issued by MAX director were recorded, including among others: an order on QMS implementation in the organisation, an order on requirements to be fulfilled by physical and non-physical workers, as well as instructions for the company employees regarding the continuous improvement activities.

Characteristics of the Quality Management System in the analysed enterprise

The enterprise whose QMS has been subjected to analysis in this article is situated in the Silesian Province. It deals with the production of cobblestone for the Polish market. As the management of the company did not agree to reveal the firm’s name, in the article the enterprise will be referred to as MAX.
All the employees were obliged to become acquainted with:

- the management staff’s obligations;
- the quality policy and quality objectives;
- QMS and apply it within the scope of their duties.

A member of the Management Board, deputy technical director was appointed as the QMS plenipotentiary supervising the system on behalf of the company’s management, while the manager of the department for employee affairs was appointed as the QMS plenipotentiary assistant. Currently this function is held by a Management Board Member, Operational Director and Employee Affairs Department Manager.

All the employees were obliged to organise an efficient system of collecting, recording and analysing any important remarks on the system’s functioning in their fields of activity and to propose corrective and preventive measures, which will be cyclically analysed in order to improve the QMS. At this time internal auditors were appointed and the QMS plenipotentiary was empowered to appoint auditors.

**An evaluation of the Quality Management System in the enterprise subjected to analysis**

In the described enterprise the system was on several occasions reviewed and improved in internal audits, which verified the compliance of the documents and procedures applied in the organisation with the provisions of the Quality Book. However, the analysis alone does not provide a full picture of the functioning system. A lot depends on the employees’ involvement, on what they think and how much they know about the system, how engaged they are in the implementation of provisions contained in the Quality Book and what activities they really undertake. Therefore, a QMS diagnosis should go further than mere provisions in the system documentation [7]. To this end, the author of the publication developed a questionnaire to be completed by employees implementing the QMS requirements in accordance with ISO 9001 standard in MAX company, which is aimed at exploring their opinions on the certified System. The study was conducted in April 2012 among 55 employees, who accounted for 100% of the staff. Forty-two of the distributed questionnaires were returned, which accounts for 76%. The questionnaire consisted of 18 questions, including 3 descriptive questions and fifteen questions based on one and multiple choice. In some questions the respondents were also asked to specify the degree of intensity of a particular quality. It is worth noting that during the survey the researcher encountered resistance of the employees who were not willing to complete the questionnaire (despite the fact that it was anonymous). They explained their refusal quoting the lack of time, having no knowledge of the topic and a fear of potential consequences.

Due to the limited form of the article, only a part of the conducted evaluation results will be presented in the article.

**Analysis of results**

The survey was carried out among all the employees of MAX company. In terms of seniority, the biggest group of respondents was the one including persons working for more than 6 years – approximately 71% of the surveyed. Another, 10-person group consisted of employees working for the company for 4–6 years. Two people worked shorter than 4 years.

The seniority analysis shows that the respondents are experienced staff members, which should translate into a good acquaintance of the company’s needs and the knowledge of the QMS functioning in the company.

In the conducted study the respondents were asked to evaluate basic elements of the QMS functioning in the company. These elements include such issues as: the system’s effectiveness, the system’s assistance in the solving of current problems of the organisation, the engagement of the management and staff in the fulfilment of the system requirements and evaluation of the company’s QMS documentation. The results have been presented in figure 1.

An analysis of the above figure allows stating that the best evaluated element by the employees was QMS documentation. It is an important aspect in the system functioning, as documentation is a proof of its functioning and provides a basis for undertaking system activities in the company. Documents determine good organisation of work.

A crucial element is the engagement of the management, which was evaluated by the employees on an average level. It is a very important aspect, as according to the 8 principles of quality management, it is the management that should be the most involved in the implementation and fulfilment of the system requirements. It, therefore, seems that the top management should take measures aimed at strengthening its engagement, as it translated into a higher involvement of the employees, which, as indicated in figure 1, has also been assessed on an average level. Taking into consideration the fact...
that the employees assessed their own involvement, the evaluation is most probably overstated. It is, therefore, even more necessary to take measures improving the employees’ engagement in the fulfilment of the system requirements. The conducted evaluation of the system’s effectiveness allows stating that the employees involved in the fulfilment of the system’s requirements assessed its effectiveness on a safe average level. This may mean that in the employees’ evaluation it is necessary to take measures aimed at increasing the system’s effectiveness or that they do not have a clear-cut opinion on this issue. In each case the top management should take corrective measures, as the effectiveness of the quality management system is its crucial element, which determines the company’s success.

The conducted evaluation of the quality management system contained a question concerning the need for such a system in the company. There were 91% positive replies; the respondents justified their answers explaining that such a system is necessary for the sake of good organisation of work, control and coordination of activities. According to the surveyed, it improves the company’s functioning, allows achieving the planned tasks and enables continuous improvement of the processes within the company. Attention was also drawn to the international aspect, the increasing of competitiveness and the improvement of the provided services. Another emphasised issue were economic aspects. In the opinion of the surveyed, a well-functioning Quality Management System improves the company’s image and prevents the occurrence of defective products. Here also 4 negative replies were given, quoting the loss of time and superfluousness of such a system in the organisation. Although these answers accounted for a small percentage, such an attitude among the employees gives reasons for concern. It seems that during another internal audit it will be necessary to establish which elements of the system are so negatively assessed by the employees and take appropriate corrective measures.

The questionnaire also contained a question the aim of which was to determine problems encountered by the employees in connection with the Quality Management System functioning in the company. Figure 2 presents the obtained answers.

According to the surveyed, the biggest problem involved in the QMS functioning was the employees’ resistance and interpretation of ISO 9001 standard requirements. The employees’ resistance is usually related to the lack of trainings and, in consequence, their being unaware of the need and purpose of implementing a quality system in the enterprise. The role of the management is to inform and convince the employees of the rightness and the necessity of having such a system in the company. Another worrying issue is also the problem related to the interpretation of the standard’s requirements. If such a situation takes place in the company, it is absolutely necessary to train the employees and thus increase their awareness and knowledge of the topic. The employees cannot have doubts about the interpretation of particular provisions contained in the standard. It seems that these two elements are closely related to each other, and the problem can be solved by organising a series of trainings for the employees.

An analysis of figure 2 shows that the respondents identify the problem related to the insufficient engagement of the employees in the fulfilment of the system’s requirements. Bearing in mind the results presented in figure 1, regarding the evaluation of the employees’ involvement, one can agree with the thesis that the employees are not properly motivated to engage in the fulfilment of the requirements contained in the standard. As long as such a situation persists, the system will not be
effective. For this reason, the top management must take measures aimed at increasing the employees’ involvement in the fulfilment of the standard’s requirements.

It should also be noted that there were a few answers pointing to the absence of problems, which proves the fact that the system is no trouble to some people and it can be presumed that they are satisfied with it. However, such people account for merely a small percentage of the surveyed, so it is definitely necessary to take measures aimed at improving the QMS in the company.

The conducted evaluation also contained questions regarding the procedures, as they form a system document describing procedures in the process implementation which is most frequently used by the employees.

In the questionnaire the respondents were asked what they thought of the established and documented procedures. The majority of the surveyed (55%) claimed that such procedures were helpful. This proves the fact that the procedures have been properly described and are comprehensible to the employees. It should be noted, however, that 38% of the respondents marked the answer claiming that the provisions contained in the procedures make work difficult, and 7% of the surveyed decided they were unnecessary. Such results should certainly become a basis for the Quality Plenipotentiary for analysing the system documentation, especially that in the subsequent question regarding the employees’ acquaintance of the procedures, the results show that 30% do not know the procedures to be applied in the process, while 40% do not use them. Such a state of affairs may result from the fact that the company has only 9 procedures, and the majority of processes have been described in Process Cards, which contain a detailed description and the rules of conduct in particular situations. Perhaps, the surveyed took a stance solely on the procedures, while forgetting the rules of conduct contained in the process cards, which they should also abide by. Nevertheless, the results are alarming, because even the best designed and implemented QMS is worthless if the employees do not apply the procedures, instructions and rules which are contained in it. Therefore, it is very important that the employees are acquainted and act in accordance with the documentation.

The conducted evaluation also contained a question regarding detailed application of the provisions specified in the procedures. The majority of the surveyed (57%) answered that they did not strictly abide by the procedure which should be applied at a particular moment. In such a situation it is absolutely necessary to verify the content of the system documentation, as the currently binding provisions apparently make work difficult and the employees work according to their own rules, which is obviously unacceptable in a well-functioning system.

In the questionnaire the employees were asked a question regarding their acquaintance of the location of the Quality Book and Quality Policy. More than 64% of the employees answered that it was stored by the Quality Plenipotentiary and in the computer system “ISO for units”. However, there were also several people who did not know where these documents were stored. The management should give some thought to this fact and perhaps convene an official meeting for all the employees, during which they could once more pass on the content of Quality Policy to the employees and inform them of the place where the system documentation is stored.

Questions contained in the evaluation of Quality System Management also referred to QMS train-
ings for employees. Employee trainings are a very important element of a well-functioning QMS. Each employee should complete such a training so as to be aware what kind of system QMS is and what it should prove in the company. The surveyed were asked if they had undergone such a training and how often they attended trainings increasing their qualifications. The majority replied that they had completed such a training, but a considerable number (40%) gave a negative answer.

The surveyed were also asked about the frequency of trainings increasing their qualifications. A very small percentage (20%) wrote how often they had this kind of trainings. The answers included: “every 6 months”, “once in a few years”, “seldom” or “never”. This is a poor result, because the increasing of staff’s qualifications should be an issue of interest for the management, as it is mainly the people that the company’s functioning and its success on the competitive market depend on. The management should think of organising more frequent trainings. This is probably an expensive investment, but it is bound to pay off in the future.

Conclusions

In the opinion of the author of this article, looking for evidence proving that the system in an organisation functions properly should not be based only on internal audits. It is advisable to supplement this activity with a cyclical survey conducted among the employees, which would provide them with a possibility to evaluate the QMS functioning in their company, point to the most frequently encountered problems, assess the engagement of and communication among the employees, as well as answer questions regarding the application of procedures and the acquaintance of Quality Policy and quality objectives.

The conducted evaluation indicates that most of the employees in the examined company are satisfied with the quality system. Despite a few negative opinions claiming that the QMS is a load for the company and the procedures make the work difficult, in general, the employees think that the system is good and contributes to the improvement of the enterprise’s functioning. According to the surveyed, it improves the company’s functioning, allows achieving the planned goals and improving the processes in the company on an on-going basis. Attention was also drawn to the international aspect, the increasing of competitiveness and improvement of the provided services, economic and ecological aspects. It is a very good signal for the management as it proves the staff’s acceptance of the Quality Management System’s requirements.

Despite the well-constructed documentation, the company should carefully examine and supplement the procedures, as well as the process cards. It is necessary to apply methods for monitoring all the processes as they allow the process control and verification of the effectiveness and efficacy.

The conducted evaluation indicates that the company should step up its efforts to increase the employees’ awareness and knowledge of the system documentation. Consequently, it is necessary to organise a larger number of trainings and meetings with the employees so as to make them well-acquainted with the QMS functioning in the company and make sure that all its requirements and assumptions are known and comprehensible to them.

Summing up, it can be concluded that the conducted evaluation of the system functioning in the company enabled identification of a few important system improvement elements, which would not have been identified in standard activities. The conducted investigations also allowed specifying the areas to be corrected in co-operation between the departments of the analysed enterprise, especially between the production and maintenance department.

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References