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Procedure and Methods for Implementing a Process-oriented Quality Management System

Process-oriented Quality Management (PQM) is a helpful tool for meeting customer requirements, but also specific standard requirements. The global competition, steadily increasing competitive pressure and higher customer expectations make it essential for a company to deal intensively with this topic. This paper identifies, due to a qualitative and quantitative research approach through problem-centered interviews and questionnaires, a general procedure and possible methods for the implementation of a process-oriented quality management system with a view on a subsequent certification in an organization. After a description of the practical procedure for the identification, analysis and documentation of existing processes in an exemplary company, the findings are summarized and an outlook on further processes and future possibilities for improvement will be offered.

Keywords: Process descriptions, process management, quality management, certification

JEL codes: L15, M11, O31

Eljárás és módszerek egy folyamatorientált minőségirányítási rendszer megvalósítására

A folyamatorientált minőségirányítás (PQM) hasznos eszköz az ügyfelek igényeinek kielégítésére, de speciális szabványkövetelmények is. A globális verseny, a folyamatosan növekvő versenynyomás és a magasabb vevői elvárások teszik szükségessé a vállalatot, hogy intenzíven foglalkozik ezzel a témával. Ez a dokumentum kvalitatív és kvantitatív kutatási megközelítésnek köszönhetően probléma-központú interjúk és kérdőívek segítségével azonosítja az általános eljárást és a folyamat-orientált minőségirányítási rendszer megvalósításának lehetséges módszereit a szervezet egy későbbi tanúsításával kapcsolatban. A példamutató vállalat meglévő folyamatainak azonosítására, elemzésére és dokumentálására szolgáló gyakorlati eljárás leírását követően összefoglalták a megállapításokat, és további folyamatokra és jövőbeli fejlesztési lehetőségekre vonatkozó ki-látásokról számoltak be.

Kulcsszavak: Folyamat leírása, folyamatmenedzsment, minőségirányítás, tanúsítás

JEL-kódok: L15, M11, O31

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Introduction

Due to productivity-inhibiting side effects of traditional organizational structures, more and more companies are dealing with process management and the related concepts. They are looking for ways to optimize cooperation between business activities and their respective processes. Advantages can be achieved by the improvement of throughput times, the reduction of process costs or the optimization of value chains with customer reference. A clear system of well-defined processes and procedures is therefore essential for the success of a corporation. Process-oriented Quality Management (PQM) is a helpful tool for meeting customer requirements as well as specific standard requirements. The aim is to establish a basic attitude in which all operational activities are understood as the interaction of processes or process chains. There is a constant need to scrutinize where traditional organizational structures need to be preserved to secure core competencies. Customers always play a central role here. Measurements of their satisfaction serve as feedback for the evaluation and validation of the fulfillment of requirements (Rothlauf, 2014:12–14.).

The paper aims to identify a general procedure and methods for the implementation of a process-oriented Quality Management system (QM-system) with a view on a subsequent certification in an organization through a qualitative and quantitative research approach. After a description of the practical procedure for the identification, analysis and documentation of existing processes in an exemplary company, the findings are summarized and an outlook on further processes and future possibilities for improvement will be offered (Ross, 2017).

Process-oriented Quality Management (PQM)

Traditional organizational forms of corporations are based on the tayloristic division of labor. On the one hand, this strongly function-oriented specialization has led to operational and macroeconomic efficiency gains and learning processes, on the other hand, unintended side effects are becoming increasingly clear. Increasing clumsiness and decreasing innovative strength, as well as increasing bureaucracy and decreasing customer orientation are the hallmarks of this development (Jung, 2006:12-13.).

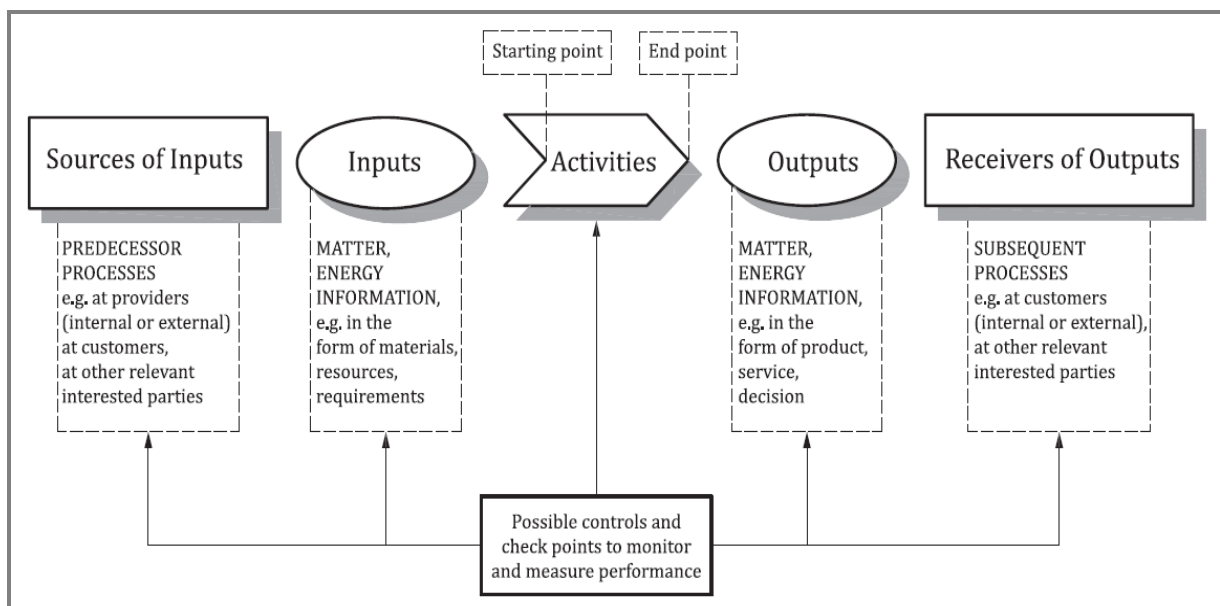


Figure 1: Schematic representation of the elements of a single process

Source: ISO, 2015:8.

Figure 1 shows the schematic representation of the elements of a single process by the ISO 9001:2015 standard. In the case of a process-oriented company organization, the organizational structure is based on the pre-defined process organization (Zeng et al., 2017). All major managerial decisions on organizational topics are only made after the process structure has been developed. Changing the processes is rethinking the organizational structure (Brunner & Wagner, 2010:22-23.). Process orientation is therefore understood as the basic attitude in which all operational activities are seen as the interaction of processes or process chains (Wagner–Kaefer, 2017:7.).

Different process-oriented approaches refer to the systematic recognition and control of processes. A process is a system of activities that convert inputs into results using certain means. It is already clear here that customers play an essential role in the requirements definition process. To assess whether customer requirements have been met, metrics are introduced as feedback on satisfaction (Jung, 2006:20.). An example of a process-oriented approach would be Six Sigma (Lupan et al., 2005). In general, it is a methodology and management philosophy to solve problems. It can be used as a process management tool, a tool to improve quality and minimize defects, a culture for improvements and change or a continuous approach to improve quality. Six Sigma can be adjusted to the individual needs of the requirements of a corporation. All activities are split into processes, and each process is analyzed according to its performance and efficiency (Hartung, 2012:6-7.).

Quality is the fulfillment of requirements and expectations towards all the stakeholders of a company. It is one of the most important foundations of trading and necessary to develop a stable trade relationship. A corporation must be dedicated to ensuring product quality so that more added value is created (Shiu–Jian–Tu, 2013:1.). Through targeted customer, employee and process orientation, the company must come to a quality-oriented rethinking process (Brunner–Wagner, 2010:1.). An appropriate definition of the technical term quality is the relation between the realized condition and the required condition (Geiger–Kotte, 2008:68.).

Quality objectives of companies must always be customer-oriented. A significant competitive advantage is the provision of appropriate quality, which in view of future customer demands requires constant market observation and market analysis. The customer expects reliable and low-maintenance products and articulates his wishes to the manufacturer as quality requirements. These are based on the following product characteristics: safe, reliable, durable, low-maintenance, ergonomic and ecological (Valenta, 2009:15.).

As shown in *Figure 2*, continuous improvement is not a method, but a long-term process that requires consistent planning. This model shows the continuous improvement process including the four phases (Plan-Do-Check-Act). By going through these phases, a corporate culture of continuous improvement is to be created, supported by constantly existing challenging objectives (Jung, 2006:93-94.).

Introducing a QM-system should be a strategic decision of the organization. Its design is mainly influenced by the environment and specific goals of the organization, changing needs, the products provided and their applied processes, as well as their size and structure. The ISO 9001 standard is used to assess the organization's ability to meet customer requirements, regulatory requirements, and organizational requirements. It promotes the choice of a process-oriented approach to continuously increase customer satisfaction. The advantage is the constant guidance offered by the links between the individual processes as well as their combination and interaction. It does not include requirements that are relevant to other management systems, such as occupational safety management, environmental management, financial management or risk management. However, it allows organizations to build their own QM-system or adapt an existing one that is consistent with the related management system requirements (ISO, 2015:5–8.).

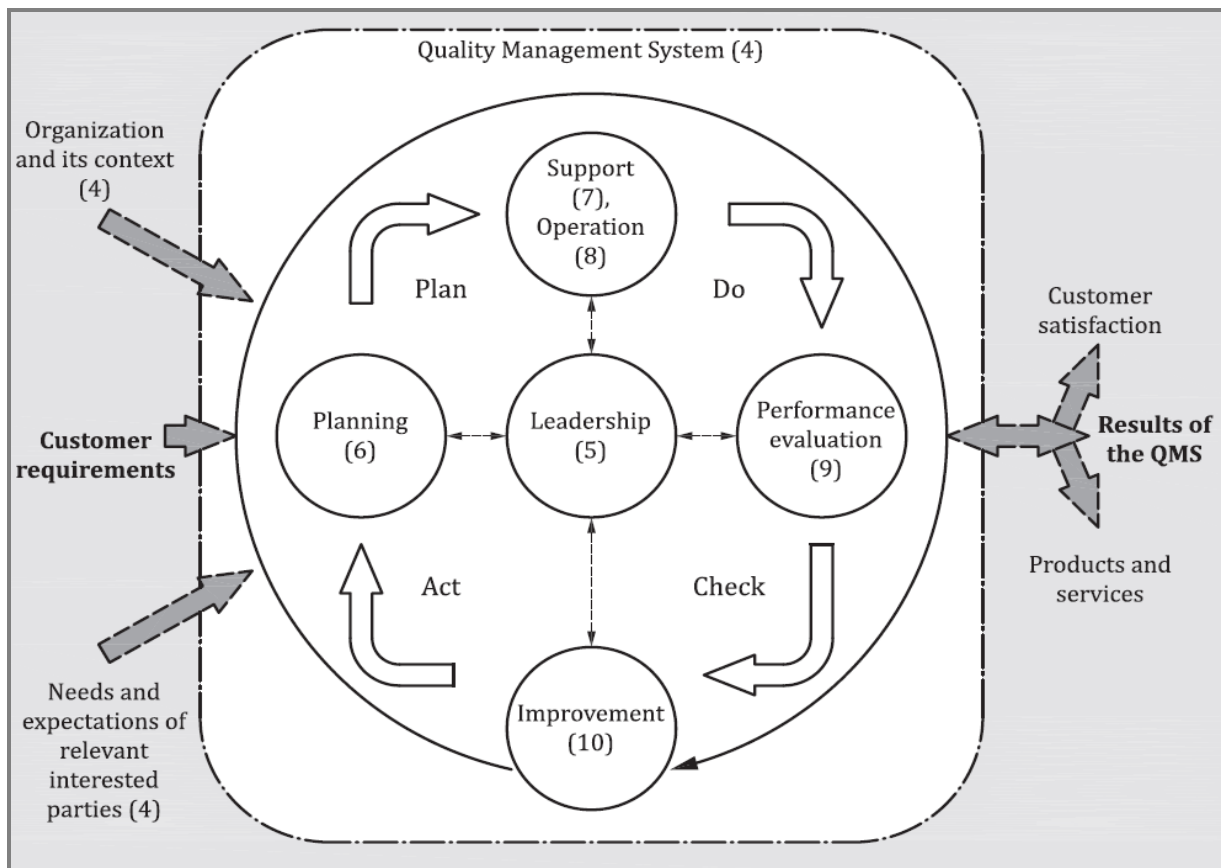


Figure 2: Representation of the ISO 9001 structure in the PDCA-cycle

Source: ISO, 2015:8.

Often, the abundance of requirements for a management system leads to a large number of different aspects and fields in the corporation. These different but related systems are no longer considered independently but placed on the common basis of process management. The basis for integrating the various management systems is the ISO 9001, as its underlying structure is shared by many other standards. The focus is on the process landscape, which can be supplemented with additional processes (Wagner–Kaefer, 2017:129.). Process management is understood to mean different management models, management principles, forms of process work and possibilities of organizational implementation. The focus is always on the processes taking place in the company (Jung, 2006:14-15.). A process is characterized by the orderly interaction of people, machines, materials and methods to achieve a goal (Brunner–Wagner, 2010:72.). The different process types, as well as their main tasks and respective examples are shown in the following table.

Table 1: Process types and their main tasks (including examples)

Process types	Main tasks	Examples
Service processes	Creation and marketing of products and services	Plan and execute marketing campaigns; develop products; process orders; manage customer complaints
Supporting processes	Creating the necessary conditions for efficient and effective service processes	Recruiting staff; develop staff; search for and release suppliers; develop/procure IT-applications; ensure know-how
Leadership processes	Short, medium and long-term corporate planning and corporate management as well as development and safeguarding of the corporate culture	Plan and implement the strategy; create and monitor a 5-year plan; carry out and plan internal audits; plan and conduct employee appraisals

Source: Jung, 2006:22.

A process-oriented QM-system of a company serves as a tool of successful corporate management in the area of conflict between identification and fulfillment of customer requirements, compliance with standards and legal regulation, etc. The term process management includes the tasks of planning, organization, management, funding, control and management as well as continuous improvement. Customer, employee and process orientation, preventive behavior and continuous improvement are the basis for every company. In the sense of this continuous improvement, a multitude of tools and methods are used. The customer's request and its fulfillment always come first. The goals of process management can be achieved through systematical optimization of the interplay of corporate processes in the sense of a management system with clear responsibility and active controlling. Based on the process landscape, the design of processes and their optimization, and the evaluation of process maturity, process management supports the development and introduction of a process-oriented organizational form. Although the actual benefits may be varied depending on the characteristics of the organization, they must become transparent and perceptible to each individual employee as well as to the entire company. For this reason, concrete successes, such as an increase in customer satisfaction, should also be communicated accordingly by the management for reasons of motivation (Wagner-Kaefer, 2017:37–40.).

Process descriptions are documented information, should be kept as simple as possible, as well as clear and easy to understand. Ideally, process descriptions specify the goals and performance of those processes that can impact the effectiveness and efficiency of the QM-system (Wagner-Kaefer, 2017:145–147.). In order to be able to identify the goals of the individual processes, one often uses the tool of the Balanced Score Card (BSC). The BSC provides instrumentation for navigation to the future competitive success of a corporation. It translates the corporation's mission and strategy into a comprehensive set of performance measure and enables the tracking of financial results while simultaneously monitoring progress in building the capabilities and acquiring the intangible assets they need for future growth (Kaplan-Norton, 1996:2.). It connects, as illustrated in the following *Figure 3*, the different goals and arranges them in four perspectives.

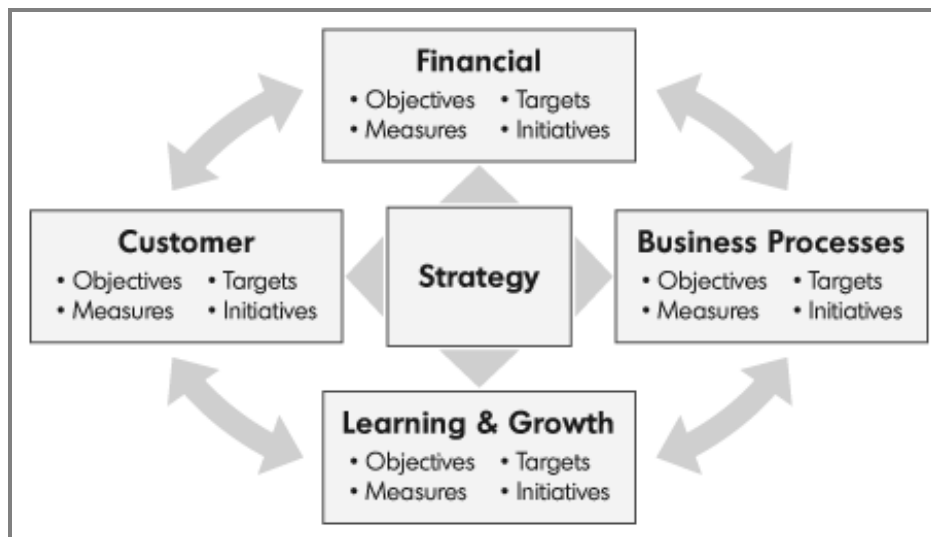


Figure 3: Four perspectives of the Balanced Score Card

Source: Wagner-Kaefer, 2017:30.

The ISO 9001 is an internationally valid standard, which represents the requirements of a QM-system. It intensifies a process-oriented approach to the organization of a company on the basis of a comprehensive concept of quality. This is characterized by the change of the creator- and result-related to the customer- and process-related access. An activity that uses resources

and that is executed to enable the conversion of inputs into results can be considered a process. Often the result of one process is the direct input for the subsequent one. A “process-oriented approach” is the application of a system of processes in an organization to produce the desired result, coupled with the recognition of these processes and their interactions. An advantage of this approach is the constant guidance provided by the links between the individual processes and their combination and interaction (International Standard ISO 9001, 2015:5.).

All activities begin with the customer and their requirements or expectations. They serve as an input into the processes of product realization, i.e. quality planning and quality control. The results are products or services that trigger reactions among the customers. However, product realization can only be accomplished with appropriate resources. Their provision requires supporting processes and corresponding “resource management”. In order to manage the interaction of all processes and their responsibilities, leadership processes are necessary, which fall under the responsibility of the management. A feature of any good QM-system is the emphasis on measurement, analysis and improvement processes. The results of this phase are used on the one hand as feedback to regulate the processes of product realization and resource provision; on the other hand, they serve as input for future management decisions. This closes the cycle of continuous improvement of the QM-system (Valenta, 2009:37.). The process-oriented approach model is explaining that customers play a very significant role in the process of defining product and service requirements. Measurements of their satisfaction serve as feedback to be able to assess and verify whether the claims have been met (Jung, 2006:20.).

The role of the documentation of the QM-system is ensuring the clarification and definition of the company processes. It consists of an optional QM-manual, the process descriptions, as well as work and test instructions, checklists and forms. The QM-system of an organization is described in overview by the QM-manual. In addition to the external presentation of the organization, it also serves to inform customers about processes and responsibilities. The main purpose is to reveal the rough structure of the QM-system. For example, a new employee should be able to get a good overview quickly and easily. At the same time, it serves as a constant reference in the realization and maintenance of the QM-system. The manual doesn't have to be a separate document within the meaning of the standard and can therefore also be used in electronic, e.g. on the intranet (Wagner–Kaefer, 2017:139.).

Scope and content of the QM-system must be aligned with the organizational structure, the respective products and services, the processes, the size of the company and the corporate culture. All documents relevant to the QM-manual are collected and sorted in advance, e.g. according to the structure of the ISO 9001 or based on the business processes. It may be necessary to revise or create documents (Brunner–Wagner, 2010:64.). An electronic QM-manual, for example, could serve as a homepage with links to other documents and information. All processes are displayed in a structured manner according to the representation of the process landscape. The process landscape serves as an interface to the existing processes in the company. By clicking on the respective process, the desired process description could then be retrieved and read by the employee (Wagner–Kaefer, 2017:142.).

In order to review the effectiveness of the QM-system and identify ways to improve it, internal audits need to be planned and carried out. A documented procedure is necessary to define the responsibilities and requirements for planning and conducting audits, keeping records and reporting on results. During audit planning, in addition to complaints received, customer surveys conducted, existing error reports and organizational changes, the results of previous audits must also be taken into account. Audit reports must be presented to the management personnel of the audited area and senior management. These reports and the associated corrective actions are a key factor in the evaluation of the QM-system. The improvement measures resulting from the audit must be defined and implemented by the responsible authorities. Subsequently, the effectiveness of the measures taken must be checked (Wagner–Kaefer, 2017:226-227.).

The quality officer of the organization and the company itself are under pressure to succeed in preparing for the audit since customers often require a certificate for future procurements. In the preparation phase, a certification body is selected first. Attention must be paid to the recognition of certificates by national and international customers. Of course, the costs incurred for certification play an important role in the selection of the certification company. For this reason, it is advisable to obtain accurate information and offers about the intended certification process (Enders et al., 2017). The preparation of executives and employees for the forthcoming certification takes place through so-called internal audits. The company management should be present for the introductory and final meeting (Brunner & Wagner, 2010:102–105.).

Methodology

The methodology for this paper uses a qualitative (interviews with employees) and quantitative (questionnaire) based approach. In addition to the identification, analysis and documentation of procedures and processes of the respective company, the practical implementation also includes the preparation of a QM-manual for the introduction of a QM-system according to ISO 9001. The aim is a certification within the framework of this scope of verification according to the standard. Corresponding surveillance audits (investigation procedures) are usually carried out after 12 and 24 months and a recertification audit after three years after completion of the initial certification.

The investigation has been carried out in a medium-sized company based in Vienna (Austria), offering a diverse range of services in the field of building services and industrial equipment. The main areas of activity are nationally the technical building equipment and internationally the pneumatic tube systems and materials handling business. The study took place in the pneumatic tube system area, consisting of eight interviews with all department heads and the management board. The questionnaire has been sent out to every employee of the respective area with a response rate of 100%.

Since the development and implementation of a QM-system is a complex and important project, it must be managed accordingly. The project should also be considered in the company's budget and a project manager should be responsible for the planning and implementation of the project.

The project goals can be defined as follows:

- Optimization of internal processes
- Improvement of product quality
- Increase customer satisfaction
- Better cooperation with production partners
- Minimization of internal friction losses
- Better information flow between departments
- Simple, understandable and workable documents
- Better insight into the company's business
- Creation of a continuous improvement process

Requirements for the employees:

- Constructive, creative and team-oriented collaboration
- Identification with the project
- Openness about discussions
- Self-motivation and motivation of the colleagues

The practical part of the study starts with a location determination of the respective company, as well as a detailed theory study on quality and process management and the development of the theoretical basis. Subsequently, suitable instruments and methods for detecting the actual state of the individual processes were selected. In addition, job descriptions and

employee expectations for the introduction of the QM-system according to ISO 9001 were recorded and evaluated via problem-centered guided interviews and a questionnaire. After conducting a detailed theoretical study on the introduction of a QM-system and the development of the theoretical basis for the implementation, the company-specific process control plan, the process description process and the key processes have been identified. All relevant documents for the QM-system were developed.

The actual state is an important instrument for the development of the desired state. If the creation of an actual condition is not taken into account, the corresponding package of measures for achieving the desired status cannot be determined. Tools relevant to the determination of the actual state are the conducted interviews and questionnaires. After an initial evaluation of suitable instruments and methods for assessing the current situation, the processes of the respective departments have been developed and defined in individual process meetings with the responsible employees of the affected areas and departments. Furthermore, forms for recording the different job descriptions were sent in order to elaborate and understand the relationships and responsibilities of the processes.

Results

The evaluation of the communication flow showed that departments that consist of several people have a relatively high internal communication share. Subsequently, it can be investigated whether a lack of communication is the cause of occurring interface problems. In this case, appropriate measures must be taken to improve or optimize the communication and the associated flow of information between the departments concerned. An internal flow of information, starting from around 15%, has the positive aspect of talking to each other, and on the other hand, it should be checked whether some of this time can be saved by better documentation of the information and thus productivity can be increased. Furthermore, communication flows between departments and managing directors, customers and/or suppliers were determined. A low proportion of communication with the managing directors shows that it is not flooded with information. This is because some departments already have functioning information systems. The aim of this example is to develop suitable information tools for other departments as well.

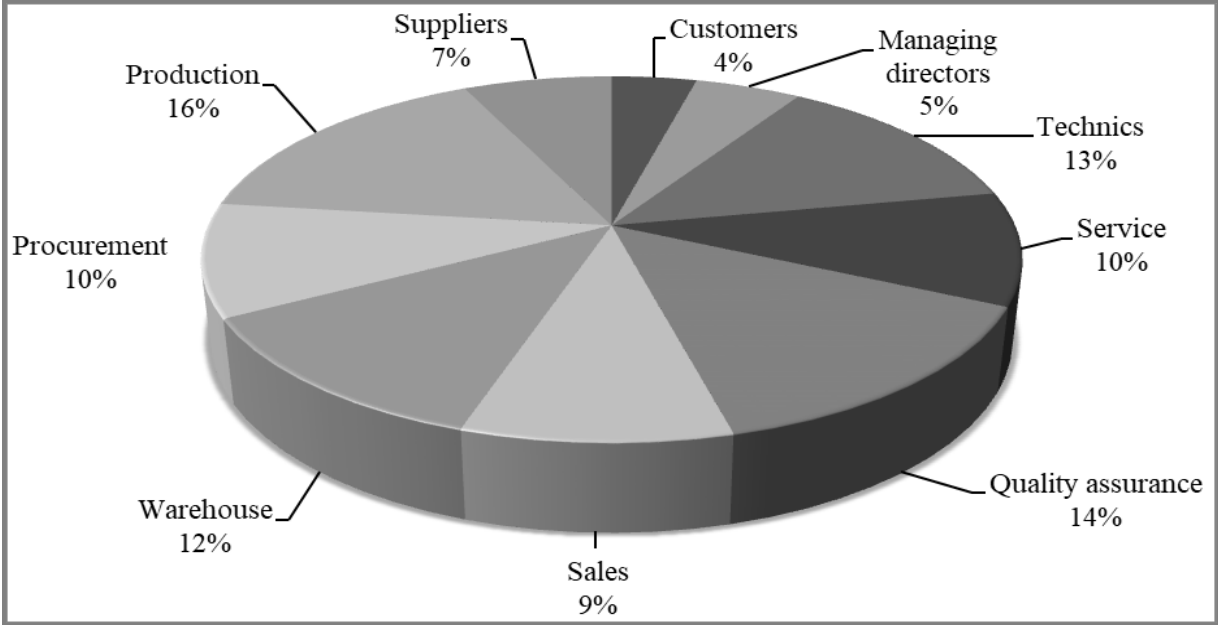


Figure 4: Example of the communication flow of the department “production”
 Source: Author’s figure

The results of the survey show that the implementation of a QM-system is primarily expected to improve the internal flow of information. Furthermore, it optimizes the processes and generally improves product quality. Above all, the efforts regarding the practical implementation, as well as higher demands on the employees and lack of motivation of the same are feared. Furthermore, personal remarks of the employees were taken seriously. Great importance is attached to the concerns and the comparatively high expectations of the departments. Overall, extensive departmental and one-to-one interviews have found a good balance between possible theoretical and practical tools for capturing the relevant processes.

Job descriptions are systematic, clear and objective descriptions of current work-flows in the corporation. They generally describe “what” is done by the workplace owner, “how” it is done and “why” the workplace even exists. Each workstation usually includes several tasks that are similar as far as possible and should not exceed the normal workforce of the worker. Preparing such a description you will get information about the basic tasks of the workplace. Furthermore, the organizational environment is characterized, and the main responsibilities and main tasks highlighted (Mader-Clark, 2013:3.). It makes sense to evaluate the personal expectations and feared difficulties of the employees in the course of the introduction of the QM-system and the associated certification by means of a corresponding anonymous questionnaire. It is important to keep in mind that there is enough room for your own opinions and comments of the employees.

Process descriptions primarily serve to represent processes in such a way that transparency is created for relevant activities, both for the respective management levels and for the employees concerned. The goal is, therefore, to think about process structures and the established organizational structure. On the basis of these visualized processes, statements can then be made concerning the necessary inputs and outputs. Process descriptions can also be used as a guideline for their practical work and generally provide a better understanding of the company's business. Furthermore, it is possible to give more targeted consideration to possible IT-support in process management. In order to provide a clear picture of temporal or logical sequences, flowcharts are available in which individual work steps and the respective dependencies on customers and suppliers are presented. They are the central element for the conception and communication of processes and thus also the most important tool for creating the necessary transparency. Furthermore, critical areas can be detected, and any weak points eliminated. It is advised to use a uniform symbolism, which saves time and nerves. It is recommended to describe the individual activities with noun and verb. Technical terms should be avoided, as the work steps should be understood by outsiders without additional explanations and long deliberation. It is precisely the interdisciplinary understanding of the individual activities that determines the success of process optimization and the associated creation of transparency (Jung, 2006:50-55.).

The process landscape represents the starting point for the presentation of the process-oriented QM-system and shows how the processes interact at the highest level. Based on this representation, any number of levels of detail can be used to represent the main processes, sub-processes, and process details. The classification into main processes, sub-processes and process descriptions is usual. The pyramid illustrates the increasing level of detail and the increasing number of documents in the respective presentation level. Usually, the company-specific process landscape is developed on the basis of an ideal process breakdown plan. Frame processes can be taken over directly as main processes or divided into several. Main processes always represent the highest level of the process hierarchy.

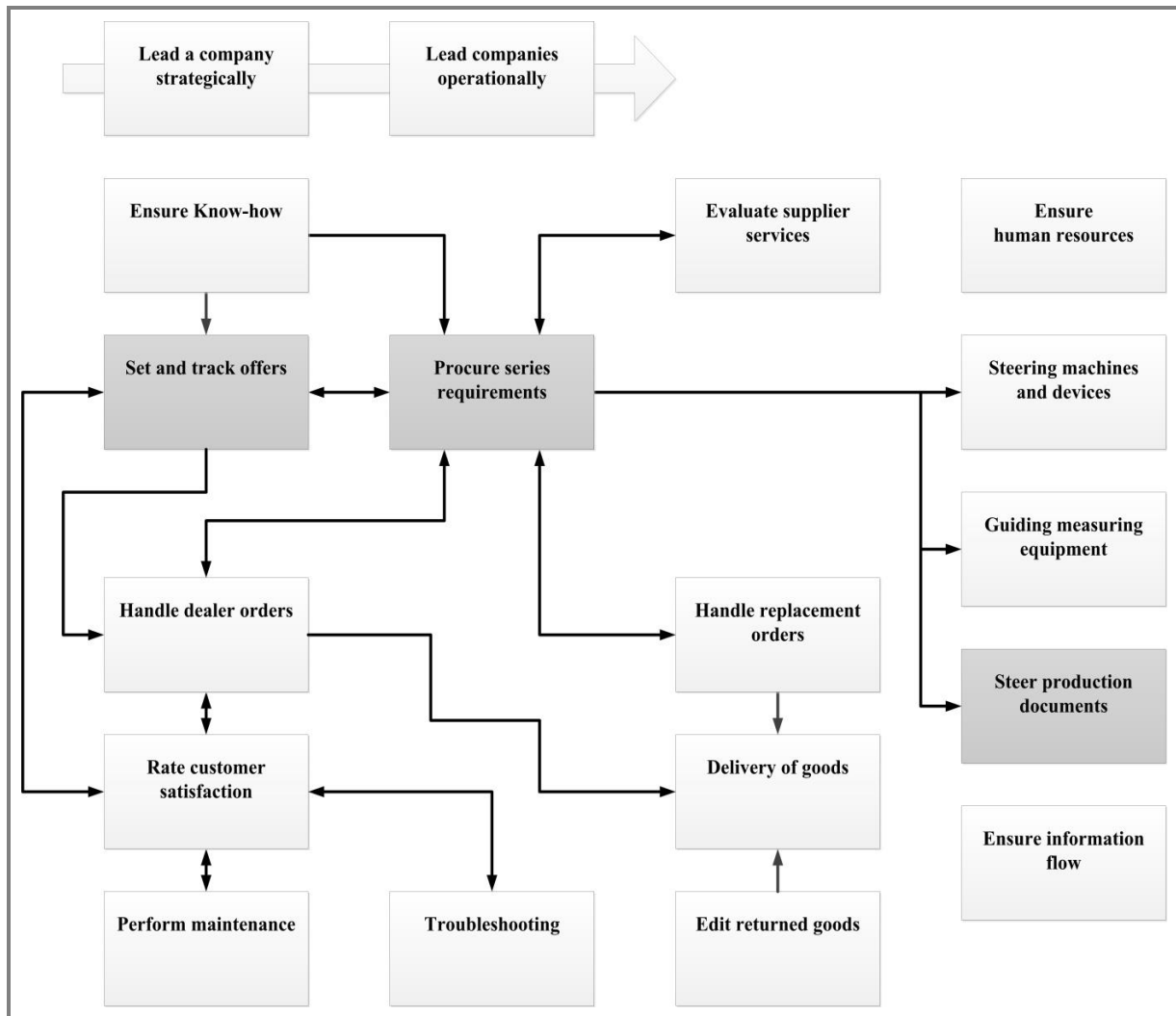


Figure 5: An established example of a process landscape

Source: Author's figure

The illustrated process outline plan shown in Figure 4 illustrates how the processes are interrelated and how they interact. Furthermore, it can be seen which processes only represent a general influence on the process-oriented QM-system and are not in direct context with certain other processes. The arrows illustrate whether it is a mutual or a one-sided influence of two methods. The key processes are visually framed accordingly.

Those processes that are particularly important for the company's success are called key processes. Every company has to identify these processes, formulate them as independent processes and, above all, focus management's attention on them. Before identifying the key processes, all processes that run in the company must first be identified. Which processes are critical to success depends significantly on the organization and the focus of the organization's interests. One possibility for identifying the key processes is the Balanced Score Card. Here, the focus is on those processes that are crucial for realizing the financial and customer goals. It closes a gap between short-term corporate success and long-term visions and strategies. If one disagrees with the identification of key processes, it can also be instrumentalized. Furthermore, key processes can be identified by deriving the critical success factors of the company (Wheaton–Schrott, 1999).

The critical success factors are understood as the factors that determine the purchase from the customer's point of view. Their mastery is a prerequisite for steering an organization

into a more competitive and performance-related future. For example, the following key processes could be identified from the process landscape presented in *Figure 5*:

- Set and track offers
- Procure series requirements
- Steer production documents

In principle, process descriptions should be kept as short and concise as possible. The required level of detail is based on criteria such as completeness, clarity, traceability, recognizability of critical activities, interfaces to other processes, clear assignment of responsibilities, etc.

The following notes help in the design of process descriptions:

- Use flowcharts
- Use standardized symbols
- Describe activities with noun and verb
- Define responsibilities
- Make interface agreements

The following structure is recommended, as it provides a reasonable level of detail and gives an encompassing overview of the important and needed topics and contents (Jung, 2006:50-51.):

- 1) Purpose and objectives
- 2) Scope
- 3) Abbreviations and terms
- 4) Other applicable documents
- 5) Process Description
 - a. Flow chart
 - b. Explanations of the flowchart
- 6) Further specifications
- 7) Change directory

Based on a developed overall process of the respective company, the framework processes must first be defined with the aid of the ideal process breakdown plan. After the division into main and sub-processes, all relevant process descriptions are developed in close cooperation with the respective departments via interviews. Special importance must be paid to the simple formulation and a comprehensible process.

Forms primarily help to improve internal processes and facilitate the documentation of important data. They provide effective support but it should not be used as a substitute for the continuous improvement of processes.

Corporate Policy	<ul style="list-style-type: none"> ▪ Group documents ▪ Maintenance by Group QM ▪ Definition of minimum requirements ▪ Common language (English)
Corporate Manual Group Procedures	
Plants SOP's work & operating instructions other documents (data sheets, records, forms, test methods...)	<ul style="list-style-type: none"> ▪ Plant specific documents ▪ Maintenance by Plant ▪ No involvement of Group (as long as minimum standards are respected) ▪ Local language

Figure 6: Example of a Group Management System

Source: Author's figure

Figure 6 shows a summary of an example of a Group Management System and its related tools and documentation. As part of the implementation of a QM-system, for example, a bilingual customer satisfaction analysis for sales can be created. This analysis is intended to determine customer satisfaction with the company's products. As a result, the needs and expectations of customers and distributors can be better understood and problems may be identified sooner. Not only has the objective quality of a product played a role, but also the subjectively perceived performance, such as the skills or friendliness of the employees. Corporate goals are for example the increase in customer satisfaction, the fulfillment of the requirements of ISO 9001, the increase in the company's success through better knowledge of customer requirements and customer expectations, and a strengthening of customer loyalty (Garengo–Biazzo, 2013).

Supplier evaluations serve to evaluate the performance of suppliers based on defined characteristics. Subsequently, the rated suppliers are classified and measures derived. By combining different characteristics, a statement can be made about the performance of the respective suppliers. In addition to a form for supplier evaluation, a report for the management, which is generated automatically after entering the required data in the spreadsheet software, has been developed. Furthermore, the development of a uniform form for the management of returned goods is recommended. In addition to directing the return goods (repair requests, customer complaints, etc.), returns processing should also regulate, document and make comprehensible all the necessary responsibilities (Prahinski–Fan, 2007:16–28.).

Conclusion

The definition of the respective processes is the mainstay for the implementation of a process-oriented Quality Management System. In order to be able to measure the performance of the defined processes, it is necessary to establish a connection to the process-specific objectives by means of suitable key figures. A key figure is characterized by a measurand, a dimension of the measurand and any reference bases to the measurand. Key figures generally indicate which status a process has achieved with regards to its goals. These are measured variables for predefined objectives and indicators for the efficiency and effectiveness of processes. Changes can be visualized by them and a quick and targeted intervention is made possible. As already explained, processes have to be continuously steered and improved in order to be able to ensure a continuous improvement process (CIP). Due to the ever-present competition, companies are under the pressure to constantly evolve. Therefore the process management and improvement must be organizationally anchored in the minds of the entire workforce (Jung, 2006:91.).

In the face of ever-changing market and customer demands, it becomes increasingly important to systematically and in detail study and compare with the best. The analysis tools presented in this work have a poorly developed outward orientation. Often, looking closer at the improvements achieved, the radical breakthrough is missing. Process benchmarking means a systematic observation of the business environment. IT tools offer the following advantages in terms of electronic presentation and management of all relevant documents and information of a QM-system.

- Direct access to the documentation of the QM-system
- Direct search of processes and related documents
- Simple and clear distribution of documents
- Time-saving maintenance of all documents
- High user comfort

Every IT tool has advantages and disadvantages with regards to the often very different requirements from the respective view of an organization. When selecting the software, it

should be noted that those systems that are already available in the company are also known to the employees. Familiar operation and appearance are advantages that can positively support the acceptance of the employees for the QM-system.

The usage of an IT tool is recommended, but not mandatory. It is important to investigate if and where software can be helpful and to select the respective tool based on the identified needs. Criteria for the software selection can be (Pfeifer–Schmitt, 2014:73-74.):

- Multilingualism (if required today or in the future)
- Sustainable programming base
- Future viability of the provider
- Ease of use
- Required training effort
- Method support
- Support offerings
- Integration possibilities into the existing software landscape

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