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## Defining strategic quality directions based on organisational context identification; case study in a software company

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### Abstract

In a dynamic business environment, the organizational approach on quality should include its ability to adapt to the continuously changing requests of this environment. The changes brought by ISO 9001-2015 international standard require, from the companies that want to implement it, an effort of knowing and integrating the new philosophy promoted by this version in the organization's business processes and in its quality management system. The present work aims to identify and establish quality related development strategies in a software development company, based on a detailed analysis of the organizational context. Quality related strategic plans and the specific actions necessary for implementing these strategies are identified based on the results of this analysis and using techniques such as PEST and McKinsey 7S. The goals related to quality development are also being configured as a result of the previously mentioned analysis and techniques.

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### 1. Introduction

Quality and the organizational approach related to it is a mandatory subject for any company that wishes to survive in today's economic environment. ISO 9000 standards aim to help the companies in the process of implementing them. An ISO survey (ISO, 2016) mentions, for 2015 only, a number of more than 1.5 million organizations which certified their Quality Management Systems according to ISO 9001, the annual rate of these certifications being in a constant growth.

The ISO 9001 reference standards for QMS inside companies are constantly being updated by ISO to make them relevant for the always changing economic realities. The updated standards may lead to minor changes of the previous versions' requirements or rarely, to major changes of the philosophy that they are based on. The last 2015 update brings up a few new ideas which if implemented may lead to significant difficulties for the companies, especially if their level of experience in this field is low.

One of the major issues brought up by the 2015 version of the previously mentioned standards is related to the

request that the companies positively identify, understand and implement the internal and external contexts. The understanding of the company's context determines the top management to get more involved than before in the configuration and development of the QMS and its processes or, in other words, the QMS becomes part of the business's development.

Harnessing the vast experience of the authors dealing with the implementation and sustainment of the QMS in various fields, this work offers a methodology of identification, description and integration of the company's internal and external context in its strategic quality development process. Stages are being listed and their content defined, techniques and support tools and their use are being identified and described, quality management strategic processes and specific actions necessary in these processes for the critical stages in the pursue of success are being identified. The exemplification and validation of the methodology is made on a case study- a software development company.

## 2. Background

### 2.1 ISO 9001:2015 and its implementation

A simple search on the internet for ISO 9001:2015 will return over 2.5 million references and on Google academic on this search, on research published since the appearance of this version of the standard, it appears in the titles of approximately 3000 articles and scientific works that have it as a subject.

ISO 9000 is a system of standards that establishes aspects regarding quality in companies' management such as: the base principles, concepts and terminology, structure and quality management, the verification, measurement and documentation conditions, the supplier-client interface, warranty and service.

The first version of the standards of ISO 9000 family (Barrie G Dale, 2016) was implemented in 1987 as three models of quality management systems, applicable according to the company's field of activity, namely design, development production and service, the second model for production, installation and service and the third one for companies specialised in final inspections and testing. The 1994 and 2008 revisions brought minor changes while the 2000 and 2015 revisions brought significant changes in philosophy and content. ISO 9001:2015 emphasises the identification of the company's contexts, the risks and opportunities' analysis, the skills (Csaba Balint Illes, 2017), the top management's involvement in QMS and the fulfillment of the requirements and expectations of the interested parties.

The implementation and certification of a QMS is a management strategy that improves the business relationships of any company. This process brings a series of benefits (Mark Hammar, 2017) already known in the business world.

If the previous versions of ISO 9000, focused on the processes, had an impact at the operational level, the standards' new version, requiring to draw the quality processes on the organisational context and on controlling the risks, moves the major impact on the business's strategic development level. At this point implementing a QMS becomes part of the business's development.

The study (Adalia Martin, 2016) points out that the success in implementing a QMS according to the new ISO 9001 standards and by default the business's performance depend on the extent to which the standard's philosophy is properly integrated the QMS's planning, on the training and involvement of the employees and on the management's commitment at all levels within the organization.

### 2.2 Context of the organization

In order to cope with competition and to ensure the business's success, every organization has to be well aware of its position on the market and of the way the internal and external elements may influence its development. All these are encountered under the generic term "organisational context".

The standard (ISO9000, 2015) defines the organisational context as being „, a combination of external and internal issues that are relevant to the organization's purpose and its strategic direction and that affect its ability to achieve the intended result(s) of its quality management system". The organization's results may refer to products, services, investments and behaviour towards the interested parties.

The concept of context of organization applies equally but in a different way to SMEs, state-owned

companies or multinationals.

Understanding of the organizational context (Luis Miquel Fonseca, 2015) one must also take into consideration the interested parties who have a real or potential impact on the quality of the products and services. At the operational development level, the standard (ISO9001, 2015) specifies that „understanding the external context can be facilitated by considering issues arising from legal, technological, competitive, market, cultural, social, and economic environments, whether international, national, regional or local”.

According to this standard, organizations should identify the internal and external issues (Cristinel Roncea, 2016) that may impact the QMS’s ability to deliver the intended results. These results, according to the reference standard, should be established so that the products and services delivered to at least meet customer and applicable statutory and regulatory requirements and to constantly improve customer and interested parties’ satisfaction.

Understanding the context involves the acquisition and processing of multiple and extended information. For this step it is advisable to use adequate tools for processing information (to structure, to prioritize, etc).

### 2.3 Quality strategic organizational approach

As Seneca said „if one does not know to which port one is sailing, no wind is favorable”, if an organization has no vision and no strategies to achieve it, no success is favorable.

The business’s strategic approach spreads throughout all its main dimensions including the one related to quality. Even if the new ISO 9001:2015 standard raises tolerance towards the obligativity of QMS’s documents (the quality handbook and the system procedures are no longer mandatory), it explicitly emphasises the request related to quality policy and objectives identification. In the new version of the ISO 9001 standard, quality policy should focus on identifying the context in which the organization activates, on identifying the interested parties and their relevant requirements (Drăgulănescu, Nicolae; Ciobanu, Emil; Drăgulănescu, Călin N., 2016), especially on fulfilling these requirements in a ballanced way.

The identification and description of the previously mentioned context, the identification of opportunities and risks at the organizational level are also parte of the quality stategic approach.

## 3. General presentation of the methodology

For any business, in order to acquire and implement management strategies that would bring profit, it is necessary for the managers in charge to know the environment in which they act. This way the QMS is an integrating part of the business.

Quality instruments and techniques may solve part of the quality issues and may be used for organizing and prioritizing the quality related data, for decision making based on the analysis, for controlling the stability of a process in order to achieve the imposed quality level.

In practice, there are several methodes to analyse a company’s activity, both internally and externally. One of the most commonly used methods is PEST.

PEST analysis- the analysis of the political, economic, social and technological factors (Insight, 2013), examines the external business environment and is a strategic instrument that gives an overview of the environment in which the business is run. When strategic planning is correctly performed, the analysis creates a solid ground for future development. The PEST analysis allows the company to adopt a long term perspective and to clarify the strategic opportunities and threats that it encounters.

A direction towards the understanding and the analysis of the internal context (ISO9001, 2015) is given by the identification of the issues „related to values, culture knowledge and performance of the organization”

The internal aspects of the organization can be identified with the help of “The McKinsey 7S Framework” method, developed at the beginning of 1980’s by Tom Peters and Robert Waterman, two consultants working for “McKinsey & Company” consulting firm. The basic premise of the model is that there are seven internal aspects of an organization that need to be aligned if it is to be successful. The model can be used in order to identify the needs of an organization, to improve performance and to maintain alignment throughout different types of changes (Insight, 2013)

The McKinsey 7-S model involves seven interdependent factors which are categorized as either "hard" elements: strategy, structure, systems or "soft" elements: shared value, skills, style, staff, and it may be used in a wide variety of situations to help to:

- Improve the performance of a company;
- Examine the likely effects of future changes within a company;
- Align departments and processes during a merger or acquisition;
- Determine how best to implement a proposed strategy.

For determining and understanding of the organizational context the methodology described in figure 3.1 was used

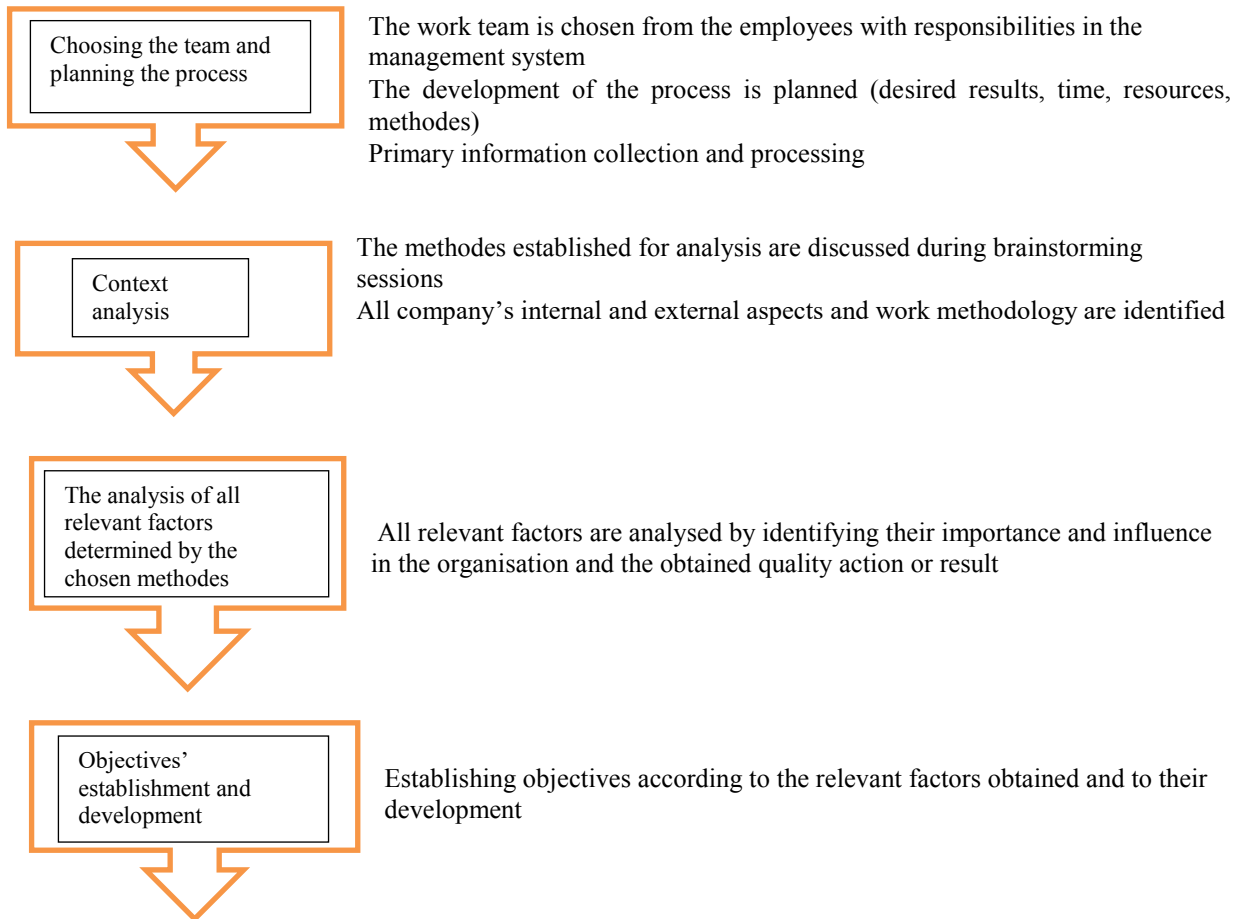


Fig. 3. 1. The methodology for determining and understanding the organizational context

#### 4. Case study

The case study for determining the internal and external context is applied within a software development organization.

Stage 1: Choosing the team and planning the process

##### 1.1 Choosing the team

The team is made up of: the IT manager, quality manager, information security responsible

The members of the team were chosen so that all important fields of the major issues to be represented: IT manager (managerial aspects), Quality manager (aspects related to quality and product development), information security responsible (aspects related to information security)

##### 1.2 Planning

Primary information collecting and processing took place separately, on every issue, according to planning

The description of the context after structuring the information

- Time: 2 months (february – march 2017)
- Resources: human, specialised in the discussed fields
- Due date: 4th of April 2017
- Specific work methods: brainstorming

1.3: Final collecting and processing of information: the selection of information according to relevance

Stage 2 Context analysis

2.1 Analysis discussion: discussion and analysis of the internal and external factors

2.2 PEST analysis: Identifying the way PEST factors are reflected in the specific aspects of the main domains established for strategic development (management related, quality related, product and information security related). Each team member analyses the factors from his specific domain.

When analysing the external environment, a series of external factors that could influence the company’s activity can be identified, and they are presented in the table 4.1.

Table 4.1 PEST analysis and discussed factors

Political and legislative factors	Economic factors
National and international legislation; Government’s political ideology; Political attitude towards the economic sectors; Environmental issues; Current legislation of the feeder market; Future legislation; International legislation; Regulatory organism and processes; Governmental policies; The change of governmental policies; Funding and grants; Internal and international influence and pressure groups; Wars and conflicts;	Trends and economic conditions on the feeder market; External conditions and economic trends; Tax generated issues; Products/services specific taxes; Industrial specific factors; Distribution trends; Determining factors for customers and end users; Interest and exchange rates; Monetary and international commerce issues; Insufficient financial resources for image advertisement; Possibilities for identifying additional budget resources
Social and cultural factors	Technological factors
Lifestyle tendencies; Demographics; Consumers’ attitudes and opinions; Media opinions; Legislative changes that affect social factors; The brand’s, company’s, technology’s image; Consumers’ buying habits; Fashion and trendsetters; Major events and influences; Buying trends; Ethnical and religious factors; Commercials and publicity; Ethical issues;	Technological development competition; Research funding; Associated and dependent technologies; Replacement solutions and technology; Technological maturity; Production maturity and capacity; Information and communication; Consumers’ buying mechanisms; Technology related legislation; Innovation potential; The ease in obtaining licences, patents; Intellectual property issues; Global communication;

The following external factors with a negative impact on the software development company have been identified in the PEST analysis:

- political and legislative: wars and conflicts, the change of the governmental policies

- economical: the exchange and interest rates, general taxation issues, products/services based taxes
- social and cultural: legislative changes that affect the social factors, ethical problems
- technological: information and communication (information threats' evolution)

### 2.3 The McKinsey 7S method analysis: The identification of the 7 Ss within the company

Filtering the factors: Using brainstorming techniques the work team was able to identify and define the PEST and 7S factors regarding the initially established aspects (management related, quality related, product and information security related).

When analyzing the internal environment, there are 7 areas that could influence the company's activity:

#### 1S - Strategy

- The development of the already existing processes and systems and their continuous improvement by adapting them to the requirements of the outsourcing market.
- The general objectives of the management system are continuously integrated and monitored in the company's strategy

#### 2S - Structure: Organizational chart, job description

#### 3S - Systems

- customer satisfaction evaluation
- personnel recruitment
- training (continuous training) on different technologies: .NET, ANDROID, iOS, C/C++, DB, DevOps, JAVA, JAVA, QA, PM
- Employees' Continuous Development Plan
- IT support
- internal audits and software development technical experts auditors trainings
- management systems certification maintainment (QMS and ISMS)

#### 4S - Style

- Personalized culture and management style, multinational
- Participative democratic management style: it is focused on reaching the company's targets without neglecting the employees problems, it easily sets and maintains human contacts, it largely delegates authority, it is characterised by responsibility, tactfulness, good will and attachment.

5S - Staff: The most important resource of a company is its employees, IT specialists passionate about applications development, proactive, ingenious and openminded.

6S – The Shared Values which define the company are:

Respect: "Respect yourself and others will respect you." (Confucius)

Quality: "Quality is not an act, it is a habit." (Aristotle)

Communication: "Communication is the key to personal and career success." (Paul J. Myer)

Teamwork: "If you want to go fast, go alone. If you want to go far, go together." (African proverb)

Innovation: "The heart and soul of the company is creativity and innovation." (Bob Iger)

#### 7S - Skills:

- Employees' aptitudes and competences are discovered during their day to day activity on the projects they were assigned on, in the recurrent Continuous Development Plans, during technical, leadership, management, communication, etc. training sessions, in their involvement in the technical cores inside CompanyUniversity, on technologies.
- All employees with special performances throughout the year are awarded on an annual basis: „Employee of the Year”

Stage 3: The analysis of the relevant factors obtained with the chosen methods

After determining all internal and external aspects, the relevant factors obtained with the help of the two methods are being analysed. All relevant factors are analysed by identifying their importance and influence in the organisation and the obtained quality action or result

3.1 In table 4.2 are presented the 7 relevant factors that were defined as a result of the analysis of the external context.

Table 4.2 External context's relevant factors analysis

<b>Crt Nr</b>	<b>Relevant Factor</b>	<b>Its importance for the company</b>	<b>Objective Action</b>
<b>External Factors (PEST Analysis)</b>			
1	Economic factor: Trends and economic conditions on the feeder market The person responsible for monitoring, Economic Manager	The outsourcing market is in a continuous growth	Abidance with the market value principle
2	Economic factor: External conditions and economic trends The person responsible for monitoring, Economic Manager	Most hypotheses are related to USD/EUR exchange rate.	FORWARD external type of action
3	Economic factor: Tax generated issues. Specific taxes The person responsible for monitoring, Economic Manager.	Unstable environment	Monitoring the legislation and obeying its requirements
4	Technical factor: Maturity and production capacity  The person responsible for monitoring, IT Manager	Business development by: developing the clientele portfolio raising the number of projects, streamlining the existing capacity and developing new ones.	Replacing the slow servers (objective)  Restructuring the data network (objective)
5	Technical factor: Information and communication (Evolution of information security threats) The person responsible for monitoring, IT Manager.	The evolution of the information security threats has to be monitored in order to minimize its impact upon the company's goods.	The control of all applications used (objective)  Securing the key employees' phones (objective)
6	Social and cultural factor: Ethical issues The person responsible for monitoring, Human Resources Manager	Romania's geo-political position in Eastern Europe may raise doubt in our customers because of our low reputation related to work ethics.	Social responsibility has to be implemented and maintained.
7	Political and legislative factor: The political attitude towards economy The person responsible for monitoring, Legal Adviser.	The political attitude towards the IT industry	Monitoring the specific legislation



3.2 In table 4.3 are presented the 5 relevant factors that were defined as a result of the analysis of the internal context.

Table 4.3 Internal context's relevant factors analysis

<b>Crt Nr</b>	<b>Relevant Factor</b>	<b>Its importance for the company</b>	<b>Objective Action</b>
<b>Internal Factors (McKinsey 7 S)</b>			
1	Monitored factor: PERSONNEL. The person responsible for monitoring, Human Resources Manager	Personnel's training is a determinant factor for the final quality of the offered products.	75% of the personnel is involved in the continuous training System (objective)
2	Monitored factor: STRATEGY – customer orientation and customer satisfaction The person responsible for monitoring, Strategy Manager.	Customers pay the salaries: every employee is responsible in front of a customer and of the issues brought in by them. Customers are the employees' partners: by gaining a customer you gain a partner.	100% customer satisfaction (Objective)
3	Monitored factor: SYSTEMS. Company University The person responsible for monitoring, University Dean.	Personnel training and professional development are determining factors for the final quality of the products.	Extending the customers portfolio by 5 compared to the previous year (Objective)
4	Monitored factor: SYSTEMS. Continuous development plan The person responsible for monitoring, Human Resources Manager	Employees' professional development by receiving continuous and recurrent feedback and support from their immediate superior.	Permanent monitoring in the personnel management tool.
5	Monitored factor: SYSTEMS. Internal audits The person responsible for monitoring, Quality Manager	Managers' involvement in the internal audit process brings value to the software development process.	100% auditing of the production processes (objective)

#### Stage 4 Objectives establishment and development

The team determines the strategic lines of action related to quality and the specific actions necessary in order to reach quality related objectives.

#### Conclusions

The analysis of the organizational context is the starting point in planning a functional management system regarding performance. This study shows a way of identifying the relevant factors for the organizational context (internal and external), factors that enforce the development of a series of actions and objectives whose accomplishment ensures the improvement of the management system's performance.

In order to obtain an adequate and efficient result one needs structured, algorithmical approaches involving specific competences in the business' line of work. The quality management specific techniques, instruments, and methods that were presented in this paper had in mind the information structuring, filtering, selection and ranking, facilitating the work of the team assigned to this process. The results need to bring value for the company through establishing lines of action, through actual actions, objectives and the measures taken.

The purpose of the case study was to determine the company's strategic actions and objectives as a result of the identification and definition of the organizational context through the already known PEST and McKinsey 7S management methods.

The ISO 9001:2015 standard does not mention the use of different methods to identify the organizational context,



just its understanding. The authors want to help companies who wish to implement the ISO 9001:2015 standard or who only want to make the transition to this international standard, through the methodology used in a software development company from Cluj-Napoca.

The final purpose of this approach is to reach the objectives set through the methodology described, objectives related to the management system's performance growth. In this respect, the present study tried to identify the main actions and strategic directions followed by the software development company in its efforts to overtake its competitors and to become leader on the software development market.

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