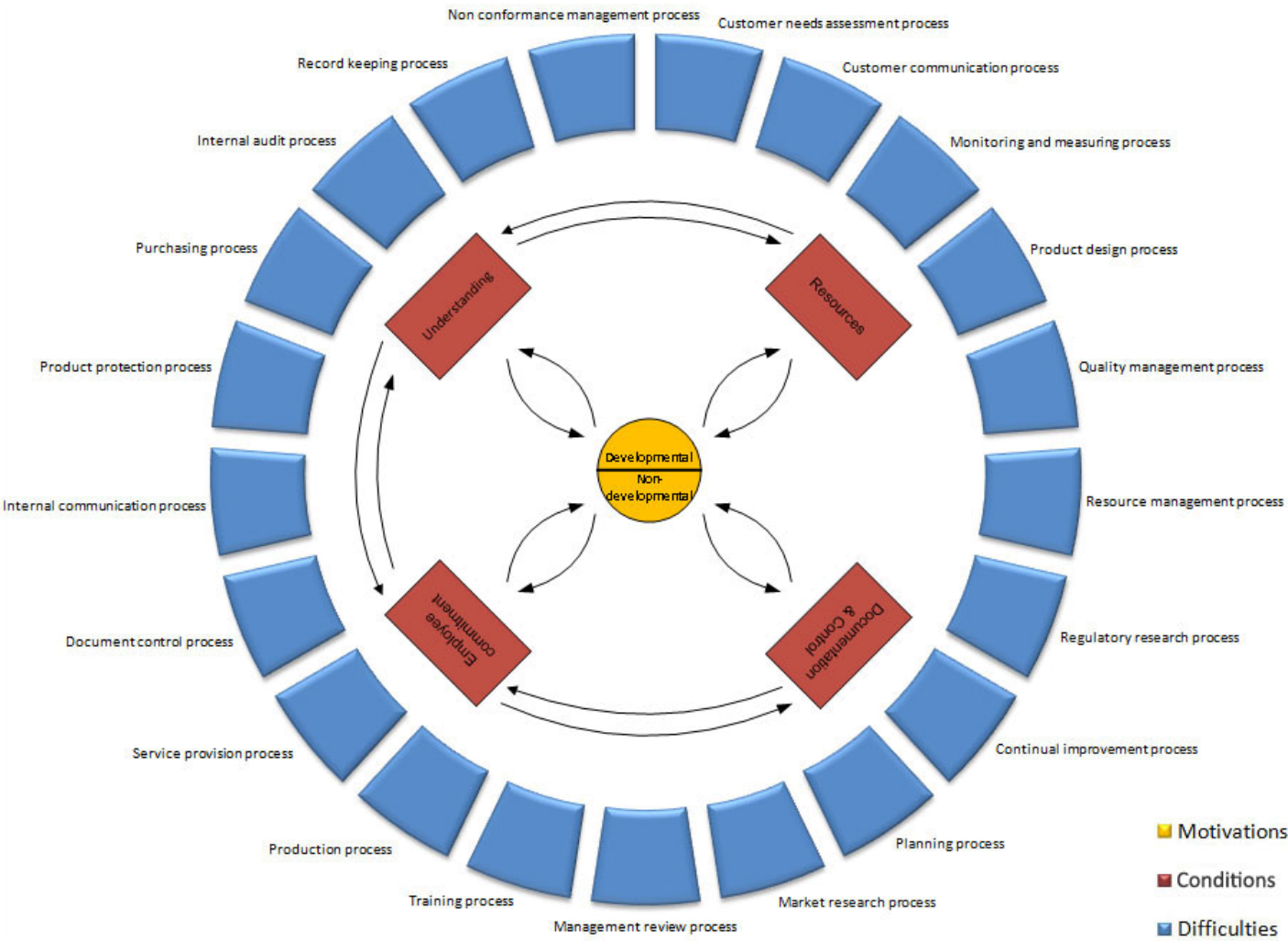


**ISO 9000: Motivations and Difficulties do they relate?**  
*Relating the motivations of an SME to apply for ISO 9000 certification to the challenges encountered during the implementation process.*



**Jochem Jansen s0048704**

Jochem Jansen

## **ISO 9000: Motivations and Challenges do they relate?**

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Supervisor Anonymous Entity:  
Mr. Robbie Franks

Supervisors University of Twente:  
ir. S.J. Maathuis  
prof.dr.ir. O.A.M. Fisscher

## Summary

This research paper will discuss the motivations of Small or Medium Size enterprises (SMEs) to pursue ISO 9001:2000 certification, the difficulties these organisations encounter during the implementation of an ISO 9001:2000 system and the conditions influencing the implementation environment. The theory formulated here within is the result of a thorough literature study complemented with personal insights and direct observations in an empirical setting. Based on the literature study, presented in chapters 1, 2 and 3, a model was formulated in chapter four. This model separates organisations based on their motivation to implement ISO 9001:2000 and highlights the most likely difficulties and conditions these organisations will face. In chapter five a case study at Anonymous Entity, the company, is presented, which is used to test the validity of the model in an empirical setting and allowed for further refinement of the theory.

Based on an elaborate review of literature related to ISO 9000 implementation within SMEs, it was found that the motivations of SMEs can be divided in three main categories:

- Developmental;
- Non-developmental; and
- Mixed-motivations.

Developmental companies are mainly focussed on internal reasons for ISO implementation, such as improvement of internal process or competitiveness, while non-developmental companies focus on external reasons, such as customer pressure or marketing. To allow for a more comprehensive spectrum, the mixed category was later split in two mixed categories, with one category describing mixed companies focussed on developmental aspects and one on non-developmental aspects.

To measure the degree of perceived difficulty with ISO 9001:2000 implementation, ISO 9000 was subdivided in 21 distinct processes (for a list of the processes and their contents please refer to appendix 1). For the 3 initial categories of motivations the degree of difficulty perceived with the implementation of these processes was reviewed. Surveys found in literature showed that generally organisations did not find ISO hard to implement, however, the ease with which an organisation tackles this process shows signs of decline the more the organisation is non-developmentally motivated. This observation indicates the existence of a relationship between motivations and the perceived degree of difficulty. In order to make this relationship explicit, this research investigated the conditions leading to the difficulties SMEs encountered while implementing the 21 ISO processes.

It was found that the perceived degree of difficulty with the implementation of the ISO 9001:2000 processes is caused by five implementation conditions. These five implementation conditions form an interrelated set of underlying factors which influence the organisations ability to implement ISO 9000. The implementation conditions consist of:

- Constraints on resources;
- Lack of top management commitment;
- Lack of understanding of the standards requirements;
- Lack of employee commitment; and
- Documentation and control.

Here top management commitment should be interpreted as a dummy variable representing the motivations with which organisations initiate the ISO implementation process. A truly developmental motivation is the result of committed top management, driving the ISO implementation process. Higher top management commitment lowers the severity of the other implementation conditions, resulting in a lower perceived degree of difficulty with the implementation of ISO.

In contrast non-developmental motivations are derived from external condition forcing management to act and thereby resulting in a lower commitment. Lacking serious committed, management provides less of a stimulus to the other implementation conditions, causing a higher degree of perceived degree of difficulty.

The relations between these 5 conditions were captured in a simple model. This model was subsequently used to identify the relations between the implementation conditions and the 4 motivation categories (Companies with a developmental motivation, companies with a mixed motivation, focussed on quality management, companies with a mixed motivation, focussed on certification and companies with a non-developmental motivation). Awareness of these relations allows an SME, who considers ISO implementation, to predict those areas in which it is likely to perceive most problems. As the expression goes: For warned is for armed. Applying the lesson learned and the tools presented throughout this thesis, should facilitate the ISO implementation process in a small or medium size organisation.

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## List of abbreviations

<b>D</b>	Developmental
<b>IDV</b>	Individualism
<b>ISO</b>	International Organisation for Standardisation
<b>ND</b>	Non-developmental
<b>MAS</b>	masculinity
<b>PDCA</b>	Plan-Do-Check-Act
<b>PDI</b>	Power distance
<b>SME</b>	Small and Medium size Enterprise
<b>TQM</b>	Total Quality Management
<b>UAI</b>	Uncertainty avoidance



## Preface

The thesis now lying before you is the result of a project set out to meet the requirements set for a Bachelor Thesis on at the University of Twente, Enschede. This thesis came about in three stages which consisted of a thorough literature study and a case study performed in South Africa.

The first stage was mainly focussed on the preparation for an internship in South Africa and consisted of a literature study related to ISO and resource management. The second stage was executed in South Africa where an attempt was made to implement ISO 9001:2000 in an SME. During this stage the process an SME has to undergo in order to become ISO certified was observed. This process was documented and provided an interesting insight in the difficulties SMEs might encounter with the implementation of all the ISO requirements. Back in the Netherlands the third and final step to complete this thesis was undertaken. After a careful review of the observations made in South Africa, it was decided to change the focus of the thesis. Instead of researching the requirements related to resource management in ISO, which proved to be a minor aspect, the research would aim at identifying the motivations, difficulties and conditions surrounding the implementation of ISO 9001:2000 in SMEs. In the end, I believe that it was a wise move to change course and I am happy with the final results.

It goes without saying that these results would never have materialised without the help and support of my friends, family and professors of the University of Twente. I would especially like to thank ir. S.J. Maathuis for his assistance and patience shown during the process of writing this Bachelor Thesis. In addition I would like to thank prof.dr.ir. O.A.M. Fisscher for his input and review of this paper.

I am also very grateful for the opportunity provided by Mr. Frank, who allowed me to spend 5 months at his company in South Africa. Furthermore, I would like to thank my uncle for allowing me to use his network to search for an internship and bringing me in contact with Mr. Frank. Last but not least, I would like to thank all the colleagues of Anonymous Entity. Thank you all.



# Chapter 1: ISO 9000: Motivations and challenges do they relate?

## 1.1.Introduction

Some thirty years after W.E. Deming introduced the modern approach to quality management in Japan, researchers started to acknowledge the fast progress made by the Japanese industry. Quality management became the revelation of the eighties with many research papers devoted to the subject. Thereafter Quality Awards were introduced and Standards written to make quality management more accessible and acceptable for the European and North American industry.

These factors contributed to an ever increasing number of organisations opting for a quality management approach and the initiation of internal programs to reap its promised benefits. The benefits of a successful implementation can indeed be substantial: increased customer and employee satisfaction, improving performance and external relations are just a few benefits that are regularly mentioned.

The importance of these benefits is self-evident. The ability to improve in these areas should provide significant competitive advantage for a company vis-à-vis its peers.

The implementation of quality management practises, however, present significant difficulty for most organisations. These difficulties stem from the origins of quality management as a philosophy, which describes the way in which people should think, act and do business. Therefore an organisation cannot suffice with merely implementing new management tools and practises, but has to capture the hearts and minds of its members. To achieve this, organisations may find guidance in the quality awards and quality standards, like ISO 9000. However, there are no generic strategies ensuring that these benefits will be reaped.

In order to facilitate the implementation process, many papers have been devoted to identifying and explaining the difficulties faced by larger companies attempting to make the transition to ISO 9001:2000 practises. These difficulties sometimes result in incorrect implementation of the ISO processes and practices of quality management. The problems with ISO implementation have contributed to the already substantial criticism surrounding the standard. Nonetheless ever more organisations seek to implement this management system in to their daily routines.

## 1.2.Research objective

Quality management is no longer confined to the domain of large Western or Japanese multinationals. Increasingly non-Western corporations embark on the ISO 9001:2000 journey. Among them is a substantial number of small and medium size enterprises (SMEs) comprised of a diverse mix of nationalities and involved in wide variety of businesses. To a certain extend these SMEs will face the same difficulties faced by the larger organisation as discussed in literature (for example Chin et al. 2000; Yahya and Goh 2000), however the different nature of these organisations requires that certain adjustments have to be made.

This research will begin with a chapter devoted to the motivations of SMEs to undertake the effort to become ISO certified. Followed by a study of scientific literature related to the difficulties and conditions surrounding quality management implementation in SMEs. This study will be used to derive the most common difficulties SMEs face during this process and explain why these difficulties occur. Lastly this research will attempt to establish a relationship between the underlying motivation and the difficulties related to quality management implementation mentioned in literature. These considerations lead to the following research objectives:

*To achieve a better understanding of the motivation of SMEs for the implementation of quality management initiatives;*  
*to establish a relationship between the motivations behind the quality management system implementation decision as mentioned in literature and the difficulties encountered by SMEs during the implementation of a quality management system;*

Based on these research objectives the research problems and questions are as follows.

### 1.3. Research problems and research questions

The debate on quality management largely revolved around large and multinational organisations. Researchers focussed on Kaizen, Six Sigma, Total Quality Management and other quality fads. In both academic and practitioner circles, especially up until the 1980s, there was evidently low appreciation of the role of quality in the strategic growth of small business organisations (Small Business Research Trust, 1994).

Somewhere during the 1990s things changed. An increasing number of SMEs started to adopt a quality management philosophy and initiated the process to implement ISO 9001:2000 as a quality management system. The 1990s could be described as a decade of quality revolution, with a record number of small firms implementing systems to improve the quality of their products and services (Nwankwo 2000). The adoption of quality management systems by SMEs has been widely criticised (for examples see: Seddon 1997; Stevenson and Barnes 2001; Buttle 1996). The core of the argument revolves around the observation that ISO-like quality assurance tools limit the company's flexibility and thereby reduce their competitive advantage. In addition the uncertainty accompanying implementation and potentially large initial investments, both in time and money, should rather restrict the demand for these practises. In light of these criticisms it will be interesting to review what drives SMEs to initiate the ISO 9000 implementation process. What are the golden mountains which SMEs see at the end of the implementation process? What have the critics missed? Or are there other reasons why SMEs seek certification? Hence the first research question in this paper will address the motivation of SMEs to go through the necessary steps to become ISO certified and can be formulated as:

1. *What are, according to literature, the main motivations of small and medium size enterprises that drive them to initiate the ISO 9000 implementation process?*

ISO 9000 comes with a long list of requirements, which the organisation will have to fulfil in order to become certified. Regardless of the organisation's motivation, it will have to go through a process of change to adopt the quality assurance standard. Organisational change does not come easy. Existing procedures, practises and organisational culture ensure that most organisations are quite rigid and resistant to change. To make the transition, the organisation will first have to thaw its current norms and values, altered them such that they fit the new paradigm and have refrozen to make them stick. In the mean time, organisational procedures have to be re-established and supplemented by the requirements forthcoming from the ISO 9000 standard. During the change process, employees are likely to be resistant. They tend to stick to their present knowledge and conduct business on an "it is just the way we do things around here" basis. Change and its accompanying uncertainty are rather avoided. The process of organisational change will require substantial investments in the form of time, money and commitment from management. Not surprisingly, organisational change is toughed of as a difficult and lengthy process. The second research question will therefore address this issue:

2. *What are the main difficulties mentioned in literature that small and medium size enterprises encounter during the ISO implementation process? And which conditions form the fundamentals that lead to these difficulties?*

SMEs are bound to experience some form of difficulty while implementing ISO 9000. To a certain extent these difficulties will be organisation specific, related to the organisations nature, culture and business. However some difficulties will be more generic or innate to being an SME. An analysis of the generic difficulties perceived by SMEs should allow for the identification of a set of fundamental conditions, which form the principle factors determining the severity of the difficulties perceived during the implementation of the ISO processes. Identification of these implementation conditions and their interrelations will result in a more thorough understanding of the implementation process of in the context of an SME.

Having established both the main motivations with which organisations initiate the ISO 9000 implementation process and the difficulties they might find on their path, the next step would be to relate the two. The innate difficulties SMEs encounter will affect the implementation of the ISO 9000 processes. Logically, some processes will be stronger affected by these difficulties and conceived as being more challenging to establish than others. The degree of perceived difficulty with the implementation of a specific process might show causality with the underlying motivations to apply for ISO certification. The third research question will try to establish such a relationship based on information found in literature. The research question is formulated as follows:

3. *What is the relationship between difficulties which an organisation experiences during the implementation of ISO 9000 and the motivation with which it initiated the certification process?*

When a relationship is present, the observed relations in the theoretical study will be used to create a model which enables SMEs to predict, based on their initial motivations, those areas in which they are likely to encounter most difficulties.

To test whether this theoretical model accurately describes the circumstances which are encountered in the empirical reality, this thesis will be concluded with case study. The case study will be conducted at a South African SME during the ISO implementation process. First and foremost, this case study will be used to illustrate the process which occurs within an SME initiating the ISO implementation process. Describing the motivations of the organisation and the difficulties it perceived. In addition it will be used to see whether the relationship between the difficulties and motivations established based on the previous question, holds up in an empirical setting.

Testing the observations empirically will furthermore contribute to the practical value of this research.

Large deviations between theory and practise should result in a rejection of the model as a means for SMEs to make predictions. In contrast, small deviations should result in a further refinement of the model, such that it more accurately describes the situation as it was encountered in the empirical field, and recommendations for further research. Irrespective of the answer, the observations made during this case study will provide additional insight in the ISO implementation process in the context of an SME.

## 1.4. Research strategy

The research problems and questions formulated in the previous section will provide guidance and structure to this research, but unfortunately do not include any limitations with regards to research materials, subjects or resources. The amount of information directed at the issues under study is quite substantial. This would in theory allow for an ever more in-depth search into the organisational dynamics surrounding the ISO 9000 implementation. Without proper constraints in place the research could be endless. It is therefore important that in addressing the research problems and questions a researcher selects an appropriate research strategy, which defines the research design and activities.

Verschuren and Doorewaard (2005) indicate that designing a research project basically involves two sets of activities. The first is the conceptual design or logical design, determines why, what and how much is going to be studied. The second is the technical research design, which indicated when and where the research study is going to be performed. The conceptual phase could be divided, predominantly, into the research objective and research framework. Section 1.3 and 1.4 provided insight in the research objectives, questions and problems. In addition the first chapter gave an introduction into the subject and motivated why this research is being conducted.

According to Verschuren and Doorewaard the subsequent step in this research project should be the establishment of a research framework. A research framework is a schematic representation of the research objective and includes the approximate steps that need to be taken in order to realise the objective. A research framework is important for establishing the theoretical background (key concepts, theoretical frameworks) of the research project (Verschuren and Doorewaard 2005).

A schematic representation of this research is displayed in the figure below (figure 1.1).

In short, this research will consist of a literature study related to ISO implementation in the context of an SME. The observations based on literature study will be illustrated by means of a case study performed in a South African SME.

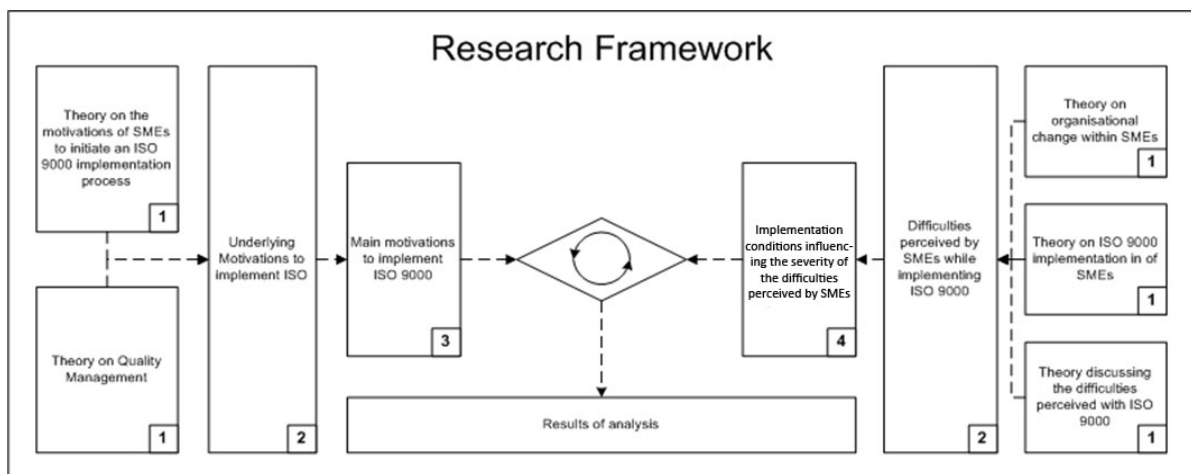


Figure 1.1: Research framework

To fulfil the research objective, the research project will commence with a literature study, the boxes on the utmost right and left of the research framework (indicated with the number 1 in figure 1.1), which focus upon the core issues relating to ISO implementation in SMEs. Based on a study of these relevant literature sources, gathered from journals and textbooks, this research should be able to give a comprehensive answer to the first two research questions, summarised in the large vertical boxes (indicated with the number 2 in figure 1.1):

- The underlying motivations are in effect a summary of the motivations provided by organisations to initiate the ISO implementation process. These motivations are sorted based on generic traits in order to prevent duplication. In a subsequent effort to reduce the variety in motivations for implementation, these underlying motivations will be condensed into a framework of main motivations (marked with a 3 in figure 1.1).
- The difficulties indicate the major barriers which organisations will have to overcome in order to successfully implement ISO 9000. The height of these barriers is the result of the severity of the

conditions, the underlying factors which lead to the difficulties the organisation experiences during the implementation of the ISO processes (indicated with a 4 in figure 1.1).

To successfully answer the third research question, the two sides of the research framework will be integrated. Organisations with similar main motivations will be studied to determine whether some generic degree of difficulty with the ISO implementation can be distilled. These results will be analysed to determine whether the perceived degree of difficulty experienced by an SME relates to the underlying motivation.

Finally, this research means to illustrate the relationship identified in literature between the motivations behind the choice for ISO 9000 and the potential difficulties with a case study in a South African SME. A single case study does not appear the most appropriate tool to empirically test the identified relationships. A case study is a research tool which focuses on depth and is very specific, best suited for qualitative research. A survey would appear to be a better fit, as it allows for a quantitative study of a limited number of factors. Nonetheless, a case study was conducted for two important reasons. First of all time and resources to perform this study were limited. The magnitude of a survey required to confirm these relations was simply outside of range. Second, a qualitative in-depth study of the relation between motivations and difficulties within an SME will provide an interesting illustration to the literature study. Even though it will not allow for generalisation, it will provide empirical evidence supporting or rejecting the conclusions based on literature.

The activities performed during this research and their relation to the research question are summarised in the figure 1.2 below.

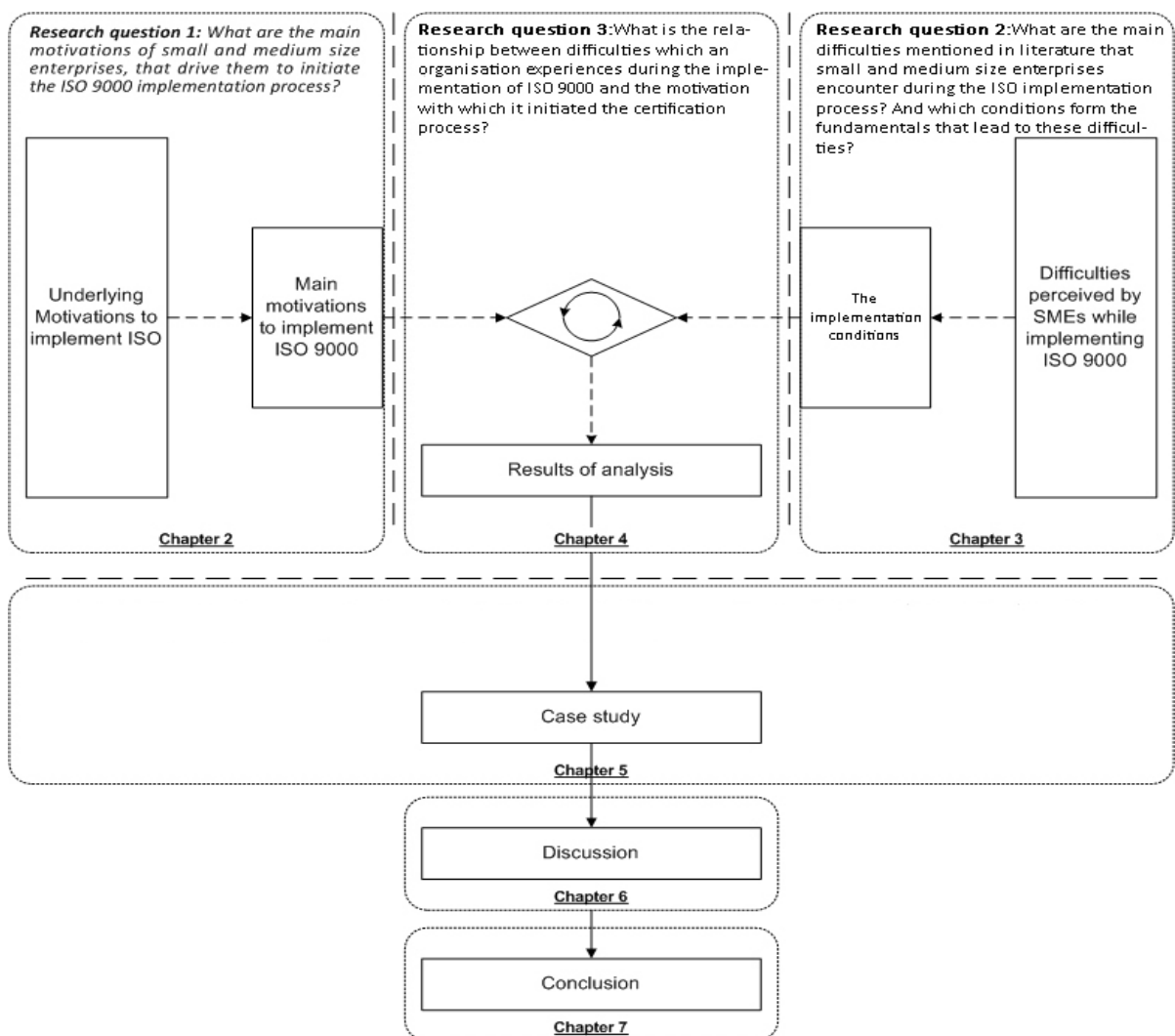


Figure 1.2: Research design and structure of this thesis

## Chapter 2: ISO 9000: the motivations

### 2.1. Introduction

Recent decades have witnessed an increasing number of small and medium size organisations, opting for ISO 9000 certification. During the same period critics of the standard have become more vocal and numerous. These two contrasting observations create an interesting dilemma. Assuming that the critics are right, why would so many SMEs implement an obviously flawed system? On the other hand, what if the critics are wrong or focus on a different issue?

The empirical observation that more SMEs do indeed implement the system indicates that these organisations will have their reasons to make this decision. The amount of resources, which need to be invested, assure that SMEs will not make this decision lightly. In this chapter, the underlying motivations of SME, driving their desire to implement ISO 9000 as a quality management system, will be reviewed. The chapter will start with an introduction related (1) to the need for quality assurance, followed by an overview of (2) quality management in SMEs, (3) ISO 9000, (4) the motivations of organisations to apply for ISO certification and (5) a conclusion providing a brief overview of the main motivations, sorted in a neat framework.

### 2.2. The need for quality assurance

The first chapter provided an introduction into the concept of quality management. During the last two decades this concept grew from a simple check at the end of a company's production process, to a philosophy encompassing the entire value chain. Companies had come to realise that in an effort to maximise quality, they would have to start with their source. Products sourced from suppliers account for 55 percent of the typical manufacturer's sales dollar and 50 percent of product related quality problems (Burt, Dobler, and Starling 2003; Monczka, Trent, and Handfield 2002; Crosby 1984). That is, approximately half of an organisation's quality outcome is in the hands of suppliers (Briscoe, Fawcett and Todd, 2005). Auditing suppliers has therefore become an important practice among buying organisations. The auditing process normally entails a series of formal processes, which should stimulate the supplier to consistently meet the buyers desired product specifications. The outcome of a successful quality audit is certification and the inclusion of the supplier in the buyers approved vendor list. The net result of supplier certification is that it shifts the responsibility for assuring quality back to the source-the supplier (Briscoe, Fawcett and Todd, 2005). When effectively carried out, supplier certification will provide a relief for the buying organisation due to the elimination of the need for inspection of purchased parts.

Most suppliers will have more than one important customer who expects the supplier to meet the buyer's certification standards. Because most companies are reluctant to accept the standards established by their competitors, a supplier may have to go through multiple certification efforts, each of which is time and resource intensive. The duplication of effort can be draining and discouraging. The pressure to comply with restrictions imposed by the buying organisations is nevertheless high and suppliers feel forced to comply. This feeling is even more prevalent in situations in which there is a large deviation in power. For example: between a large buyer purchasing from a number of small suppliers.

Many (small) suppliers believe that they can circumvent the multiple certification challenge by obtaining ISO 9000 certification (Skrabec and Ragu-Nathan, 1997). Many buying organisations at least tacitly promote this belief by giving preference to ISO-certified suppliers (Fawcett 2000). As a result quality management implementing strategies in small businesses largely revolve around quality accreditation schemes, that is, ISO 9000-type implementation (Nwankwo et al. 1998).

### 2.3. Quality management in SMEs

The debate on quality management has largely revolved around large and multinational organisations. Lately, however, an increasing number of SMEs has adopted the quality management philosophy and started to implement ISO 9001:2000 as a quality management system.

Small and medium size businesses, here within defined as a manufacturing organisation with fewer than 500 employees or a service oriented organisation with less than 100 employees (Lee and Palmer 1999; Van Der Wiele and Brown, 1997), are different from large businesses in many fundamental ways (Berg and Harral, 1998):

1. Top management of small businesses typically enjoy greater control, are more involved in daily operations, know all employees and their capabilities, know the whole company operations end-to-end,



- have high contact and knowledge of customer requirements, and have good knowledge of the firm's working environment of customers, competitors and suppliers.
2. The scope of small businesses is usually limited in terms of products/services, geographic location, market/customer base, and technology.
  3. Every employee, especially at the supervisory/managerial level, counts. Their departure often causes a great deal of disruption.
  4. There are typically no employees or departments with the exclusive responsibility for quality activities. Therefore, quality responsibilities are included among other responsibilities in the job description of selected employees.

Because of their limited resources, small-firm manufacturers face unique challenges as they evaluate whether to adopt quality management practises like ISO 9000. They do not have the wherewithal to dedicate the time and money to resource-intensive programs that can be hard to implement and may not deliver sought-after benefits. In addition, ISO 9000 has gained a reputation for being resource intensive and at least somewhat difficult to implement (Lee and Palmer 1999; Simmons and White 1999; Van Der Wiele and Brown 1997). Furthermore, it is possible to question whether a system, originally intended to provide quality by conformance to specifications, fits the profile of an SME. SMEs generally derive their competitive edge to large organisations on the basis of their ability to be innovative and dynamic. The implementation of a rigid framework of procedures assuring conformity of output could hinder the companies flexibility and thereby its exploratory abilities. And according to the ISO 9000 critics, indeed it should.

## 2.4.ISO 9000

The International Organisation for Standardisation 9000 registration program, commonly called ISO 9000, is a family of "generic management system standards" concerned with managing a company's quality systems. The ISO 9000 standards are based on the concept that certain minimum characteristics of a quality management system could be usefully standardised, giving mutual benefits to suppliers and customers, and they focus on process rather than on product quality (Van der Wiele et al. 2000; Withers and Ebrahimpour 1998). As a management system standard, ISO 9000 provides companies with a generalised model to follow as they establish and operate their quality management systems. Companies that adopt the ISO 9000 standard can be assured that their quality programs are built on a firm foundation of state-of-the art quality practices (International Organisation for Standardisation 2008). The notion that ISO 9000 is a generic standard implies that the same standards can be applied to any organisation, regardless of company size, product line, and economic sector. Thus, in theory, small firm manufacturers can effectively implement the ISO 9000 program to help them systematise their quality practices. In the ISO 9000 context, the "standardised definition of quality refers to all those features of a product or service which are required by the customer." (International Organisation for Standardisation, 2008).

### 2.4.1.ISO 9000: Benefits & Criticism

For many organisations adaptation of ISO 9000 is a first step in becoming a total quality oriented organisation (Douglas, Coleman and Oddy, 2003; Oakland and Porter, 1994). By choosing ISO 9000 as a starting point, organisations benefit from the directives forthcoming from the standard which should provide guidance during the implementation process.

In addition to guidance the most cited benefits in literature obtained by companies implementing ISO 9000 are (Douglas, Coleman and Oddy, 2003):

- increased market opportunities, as customers will see you are more effective and better organised;
- reduced costs;
- stronger reputation in the eyes of stakeholders;
- reduced waste (time and materials);
- win more business through complying with an internationally recognised and respected standard;
- compete more effectively through increased customer satisfaction;
- improved management control; and
- higher profit margins, sales per employee and a higher profit per employee than the industry average.

These are largely in agreement with the benefits mentioned by the British Standards Institute (BSI), which relates benefits to stakeholder groups (table 2.1):

<p>Customers and users benefit by receiving the products that are:</p> <ul style="list-style-type: none"> <li>• Conforming to the requirements</li> <li>• Dependable and reliable</li> <li>• Available when needed</li> <li>• Maintainable</li> </ul>	<p>People in the organisation benefit by:</p> <ul style="list-style-type: none"> <li>• Better working conditions</li> <li>• Increased job satisfaction</li> <li>• Improved health and safety</li> <li>• Improved morale</li> </ul>
<p>Owners and investors benefit by:</p> <ul style="list-style-type: none"> <li>• Increased return on investment</li> <li>• Improved operational results</li> <li>• Increased market share</li> <li>• Increased profits</li> </ul>	<p>Society benefits by:</p> <ul style="list-style-type: none"> <li>• Fulfilment of legal and regulatory requirements</li> <li>• Improved health and safety</li> <li>• Reduced environmental impact</li> <li>• Increased security</li> </ul>

Table 2.1: Benefits of ISO 9000 as mentioned by BSI

The appeal of these benefits has contributed to the rapid expansion of the newest ISO 9000 standard, ISO 9001:2000. With over one hundred thousand new applicants annually, ISO 9001:2000 has become a truly global standard for quality assurance. As at December 2006, the standard had been adopted by close to nine hundred thousand companies residing in 170 countries. The numbers are summarised in figure 2.1 below.

World results	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	Dec. 2006
World total	167 124	497 919	660 132	773 867	897 866
World growth	122 736	330 795	162 213	113 735	123 999
Number of countries/ economies	133	149	154	161	170

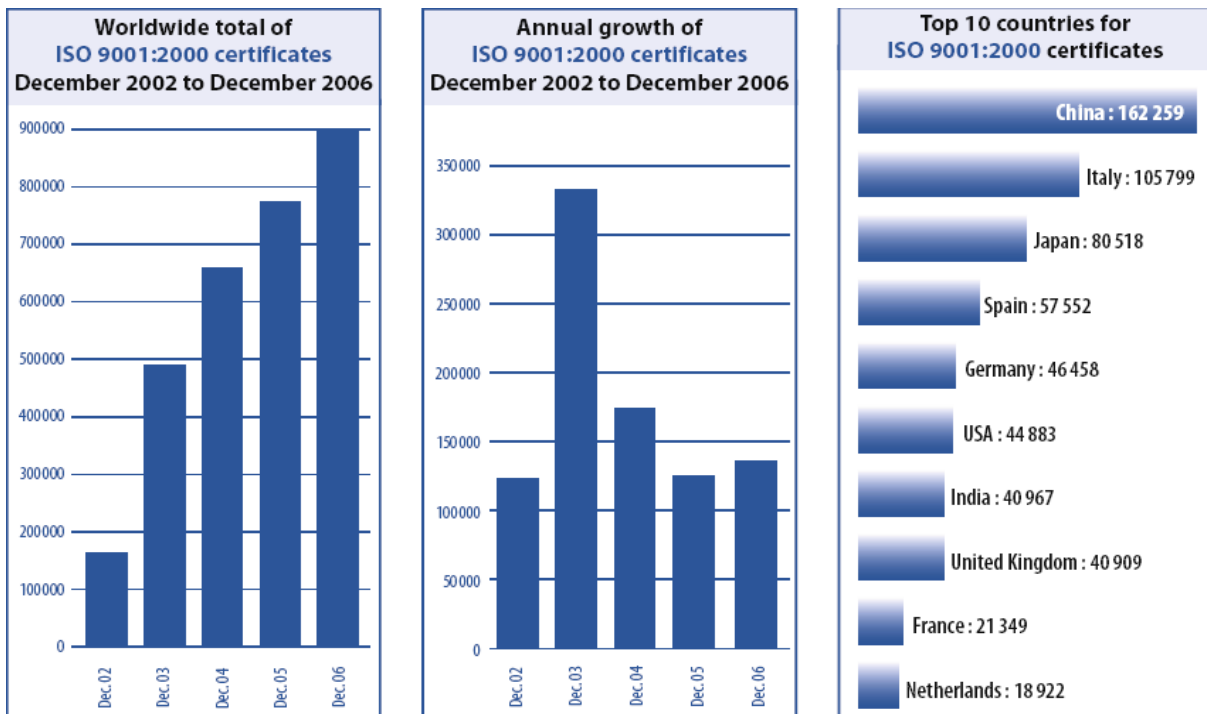


Figure 2.1: Statistics indicating the impressive growth of ISO 9000 (source ISO.org)

Despite the impressive ongoing growth of ISO has been the subject of severe criticism by a wide range of experts (for examples see Seddon 1997; Stevenson and Barnes 2001; Buttle 1996).

The main criticisms on ISO 9000 focus on the procedural nature of the standard and the investment required for its implementation. While the latter is based on a straight forward, but not less important, trade off between the costs and the achieved benefits, the criticism on the prior needs some further elaboration. Starting out as a quality assurance standards, ISO 9000 requires the formalisation and codification of procedures. It is reasoned that formal procedures enable an organisation to increase quality by “conformance to specifications”. Seddon (1997), as one of the more vocal critics, argues that ISO 9000 is therefore merely a tool that reinforces current management wisdom, which is the very thing that held competitive performance, determined by a company’s ability to distinguish itself from its peers, back. Adapting improved process management in routines is expected to improve the organisational dynamic capability, which will affect the balance between exploitative and exploratory innovation (Benner and Tushman 2003). The more organisational routines develop, increasing uniformity of outputs and exploitative practises, the more the exploratory nature of an organisation diminishes and the less susceptible it becomes to change and innovation. The new and improved version of ISO 9000, ISO 9001:2000, provides a way around some of the criticism on earlier versions of the standard as it is more oriented towards continuous improvement and thereby less focussed on quality assurance.

#### **2.4.2. The new ISO 9000 Standard**

The new version of the ISO 9000 series of standards was published in December 2000 and in its formulation took account of standard customer needs. In 1997 a global user/customer survey was undertaken by ISO involving 1120 users and customers worldwide. This covered attitudes towards the existing standards, requirements for the revised standards and relationship to environmental management. A validation programme also took place but, typically, received little participation from the small business community. Customer needs identified by this process included (Tricker 2005):

- Revised standards should have increased compatibility with the ISO 14000 series of Environmental Management System Standards.
- The revised standards should have common structure based on a process model.
- Provision should be made for the tailoring of ISO 9001 requirements to omit requirements that do not apply to an organisation.
- ISO 9001 requirements should include demonstration of continuous improvement and prevention of non-conformity.
- ISO 9001 should address effectiveness while ISO 9004 would address both efficiency and effectiveness.
- ISO 9004 should help achieve benefits for all interested parties, i.e. customers, owners, employees, suppliers and society.
- The revised standards should be simple to use, easy to understand, and use clear language and terminology.
- The revised standards should facilitate self-evaluation.
- The revised standards should be suitable for all sizes of organisations, operating in any economic or industrial sector, and the ‘manufacturing orientation’ of the previous version of the standards should be removed.

In ISO 9001:2000 (and ISO 9004) a new process-based five clause structure replaces the previous 20 clause structure. This covers respectively (figure 2.2):

- Document Control (not depicted in the model)
- Management responsibility
- Resource Management
- Product realisation
- Measurement, analysis and improvement

A detailed analysis of the Standard reveals that an ISO 9001:2000 Quality Management System is made up of at least 21 processes. These 21 processes are listed below, for an elaborate description, please see Appendix 1:

1. Continual improvement process
2. Customer communication process
3. Customer needs assessment process
4. Document control process
5. Internal audit process
6. Internal communication process
7. Management review process
8. Market research process
9. Monitoring and measuring process
10. Non conformance management process
11. Planning process
12. Product design process
13. Product protection process
14. Production process
15. Purchasing process
16. Quality management process
17. Record keeping process
18. Regulatory research process
19. Resource management process
20. Service provision process
21. Training process

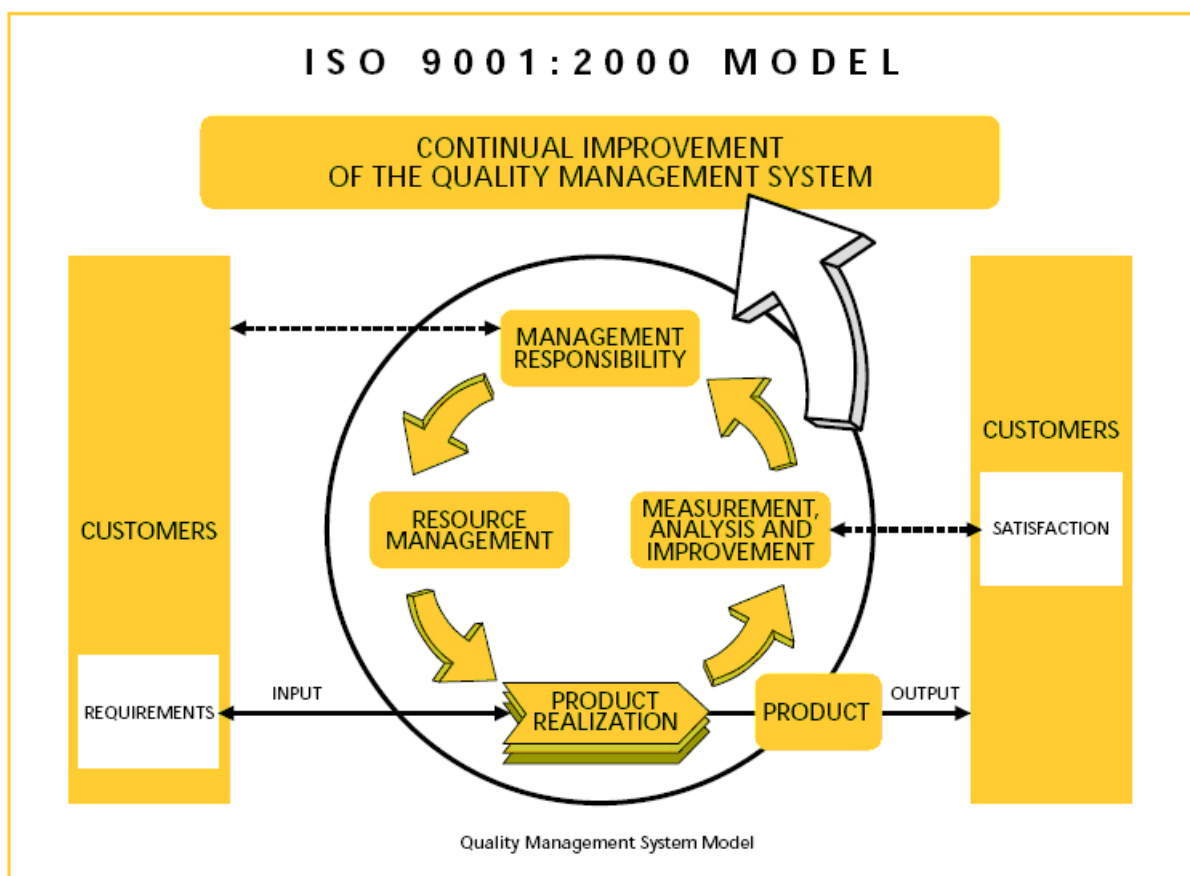


Figure 2.2: The ISO 9001:2000 Model (source ISO)

The major update to the standard in December 2000 brought it closer in line with the TQM philosophy, with stronger emphasis on customer satisfaction and an effective process-orientated approach focusing on the continual performance improvement. In addition, the use of the plan-do-check-act (PDCA) improvement circle, which places greater emphasis on the results driving continuous improvement, suggests an approach which goes beyond quality assurance.

Even so, it is important to note that ISO 9000 is not a product standard and does not guarantee improved product quality. The focus is on managing core value-added processes to deliver quality. ISO 9000 establishes the requirements for what the company must do to manage its quality-related processes. This fact has led many managers to talk about ISO 9000 in terms of the documentation of their companies' quality management practices. By documenting existing processes and comparing them to "consensus" best practices, companies can begin the journey toward improved quality practice and results.

**2.5.Motivation**

So far this research paper has addressed the origin of quality management, the need for quality assurance, quality management in the context of an SME and the surge of ISO during the last two decades. It has only briefly touched upon the motivation of small and medium size organisations driving them to implement a quality management system. In this section the two right squares of the research framework will be addressed, figure 2.3.

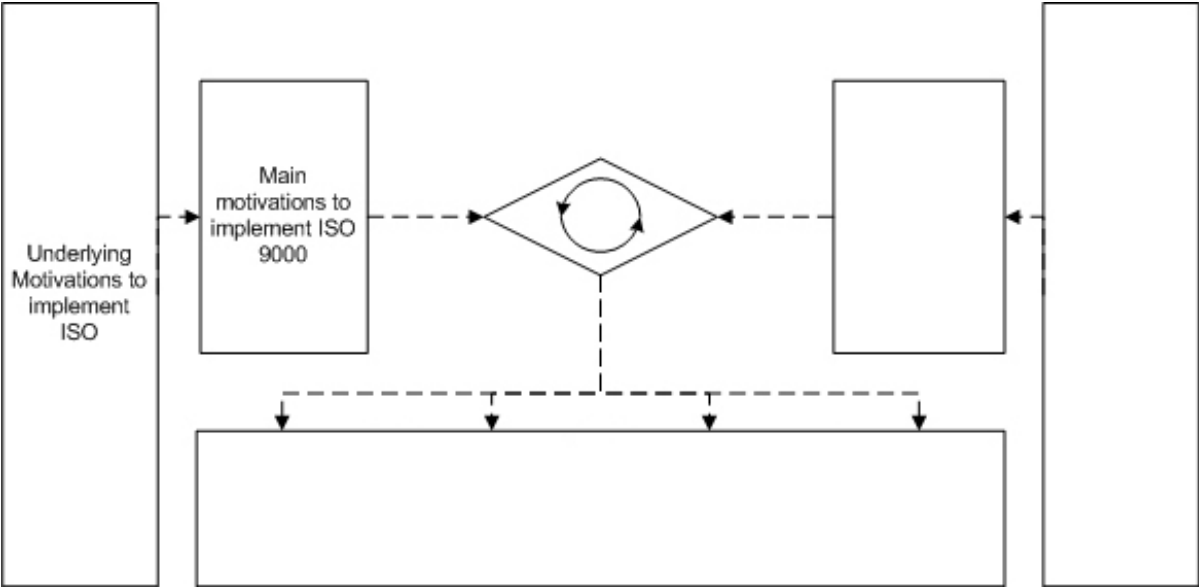


Figure 2.3: Research framework

For a large part, organisations are attracted to the standard by its promised benefits. For these organisations, the chance to gain these benefits outweighs the risks accommodating the implementation process. Some of these organisations are looking for a higher level of effectiveness across all functions and processes and are choosing, ISO as a first step towards TQM, as a strategy to stay in business (Baidoun, 2003).

Total quality management holds many sources for value creation. Sila and Ebrahimpour (2002) reviewed 347 published research articles between 1989 and 2000 in relation to these possible sources of value creation and found that issues related to customer focus and satisfaction had the highest coverage (285) followed by issues related to employee training (260), leadership and top management commitment (244), teamwork (231), employee involvement (220), continuous improvement and innovation (216) and quality information and performance measurement (213). These numbers are in agreement with what many authors consider to be major elements of TQM.

The pursuit of these sources of value creation is driven by the internal or developmental motivation for the implementation of quality management. Or put differently: the driving force behind the implementation is based on the internal desire to develop a quality management system enhancing the company's competitiveness.

In contrast, many other companies find themselves in a position in which they face external pressure from major customers and the prospect of being excluded from major (public) tenders. These companies feel that

they are being forced to partake in the quality management hype to remain competitive in their respective business environment. The external factors become even more prevalent in situation in, which there is a huge power difference between the supplier (low power) and the customer (high power).

In consideration of these observations Jones et al. (1997) created a framework identifying three main reasons for ISO certification:

- developmental or internal;
- non-developmental or external; and
- mixed reason.

The distinction made by Jones et al. is reasonably straightforward and a relationship between the various motivations in the context of large and multinational organisation is relatively easily derived from the large quantities of literature addressing this issue. While not specifically adapted to the context of the SME, for which considerably less literature is present, this distinction does make an interesting and comprehensive starting point. Empirical evidence provides further validation for this usage of this separation in the context of an SME. For example Brown and Van der Wiele (1997), some of the leading researchers in this field, identified two dominant factors with regards to ISO implementation in SMEs, namely, internal reasons related to quality and efficiency improvement (mean value 3.01 on a five point scale) and external or marketing reasons (mean value 3.64). The inclusion of the mixed reason in the framework seems a logical addition in light of the probability that organisations might have diverse, both internal and external, reason for certification.

The framework distinguishes the main motivations on a high and abstract level, which requires further refinement in order to be useful within the context of an individual organisation. Companies embark on a journey towards ISO certification to achieve one or multiple goals, not from an developmental or non-developmental orientation. These individual goals allow for a further subdivided of these main motivations into underlying reasons as to why organisations apply for certification.

In their research Jones et al. (1997) proposed the following condensed subdivision, where the first 4 reasons are non-developmental (ND) and the 5<sup>th</sup> and 6<sup>th</sup> reason are developmental(D):

- 1) *Requirement of major customer(s).* (ND) The immediate and pressing demands of a current major customer or customers.
- 2) *Desire not to be locked out of future tendering processes or markets.* (ND) This reason has less to do with the immediate demands of a current customer than the realisation that customers may adopt such a requirement in the future (or are currently contemplating it), or the company in the future may wish to enter into markets where ISO certification requirements are already prevalent (e.g. export markets, sales to government).
- 3) *Realisation that it is progressively becoming a requirement of doing business.*(ND) The realisation that ISO certification has assumed the status of a “fashion” and that the company will progressively find itself in a situation where survival becomes more difficult unless it is seen to have embraced the fad. In effect, certification becomes a “licence to operate”.
- 4) *Useful marketing or public relations tool.*(ND) The belief that customers will be impressed by the fact that a company has achieved ISO certification, and will be more likely to channel business in its direction.
- 5) *Desire to improve the company’s internal processes.* (D) The realisation that deficiencies currently exist in the company’s internal processes and that better quality products can be supplied to customers through improvements in the discipline, co-ordination and standardisation of operational procedures.
- 6) *Desire to enhance the overall competitive performance of the company.*(D) The desire to improve the competitive edge of the company in comparison with its rivals, by lowering costs, increasing productivity, enhancing customer focus and, in general, constantly striving to improve the manner in which it conducts its operations.

Bhuiyan and Alam (2005) survey results show that the top five reasons for implementing ISO 9000 systems are:

- Customer demand/expectations;
- Improved quality management practices;
- Improved quality of products;
- Cultured or disciplined organisations; and
- Market advantage.

Where the first and last are external reasons, while the remaining three are internal reasons.

In a different research Douglas, Coleman and Oddy (2003) listed nine reasons why organisations implement ISO (table 2.2). In their survey, consisting for 65% of SMEs, they found that the majority of the organisations apply for ISO certification for the external reason.

Reasons for implementation	Per cent responding
To help improve customer service	57
Anticipating future customer requirements	47
To maintain/increase market share	47
To be considered for tenders that otherwise might not have been achievable	69
To improve organisational efficiency	54
To provide a head start in international markets	9
To bring together various QM systems within the organisation	21
Marketing benefits	46
No specific reason	2

Table 2.2: Reason for implementation (source: Douglas, Coleman and Oddy (2003))

A number of other studies have been launched in an effort to determine the underlying motivations of organisations to apply for ISO certification. Bendell and Boulter (2003), for example, found that 72 per cent stated that improvement of product quality was a key factor and that marketing was a secondary issue in the decision to adopt ISO, after conducting a large survey in the United Kingdom among all small and medium-sized firms currently registered to the ISO 9000 standard with the two major certification bodies, Lloyds Register Quality Assurance and SGS Yarsley.

Based on a survey conducted among 146 SMEs in Australia, Brown and Van der Wiele (1997) found that market related factors, customer service, efficiency and as a ‘kick start’ for quality improvement all feature as strong motivating forces.

These findings seem to support the segmentation as proposed by Jones et al (1997) into a framework of developmental, non-developmental and mixed reason for ISO implementation. An interesting observation based on these results is the significant impact of the non-developmental motivation in the decision to obtain ISO certification. The high scores on marketing, improving market share and customer requirements all support this finding. Furthermore the reason: “to be considered for tenders that otherwise might not have been achieved” provides strong evidence in support of the observation that many SMEs feel pressured into the implementation of ISO. The chapters “discussion” and “conclusion” from this research will further elaborate on these issues and will explain the logic behind these findings. This section will limit itself to the discussion of the motivations, a comparison of the various literature sources and the establishment of a framework integrating the results.

### 2.6.Conclusion

Each organisation applying for ISO 9000 certification has its own specific (underlying) motivation to do so. These are derived from either internal or external reason or a combination of the two. The critics mentioned in the introduction and through this chapter, may be right in their observation that ISO is not an optimal system, but many organisation seem to find it suitable for their purpose.

When the various researches related to motivations mentioned by small and medium size organisations, and most notably the surveys mentioned above, are compared, it can seem that most underlying motivations are a recurring theme. In this regard the proposed subdivision by Jones et al. (1997) provides a comprehensive frame of reference, under condition that the reason “as a first step towards TQM” is included.

When integrating the underlying motivations in the original framework the following picture appear (figure 2.4):

Developmental	Mixed reason	Non-developmental
desire to improve the company’s internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 2.4: Framework condensing the motivations of SMEs to apply for ISO 9000 certification  
ISO 9000: Motivations and challenges do they relate?



## Chapter 3: ISO 9000: the difficulties and conditions

### 3.1. Introduction

The 1997 ISO survey identified many customer needs. Adopting these needs into ISO 9000 made ISO a more comprehensive management system, which shows strong resemblance to TQM. As a result of these changes ISO is no longer solely a quality assurance standard, but portrays the image of a standard for quality management. These improvements increased the potential benefits and negated some of the criticism faced by the prior version of ISO 9000. However, they also imply that some of the difficulties faced by organisations implementing TQM will now be faced by organisations applying for ISO certification.

In this chapter, the difficulties SMEs encounter during the implementation of the 21 ISO processes will be analysed. Subsequently the main conditions causing the difficulties with the implementation process will be identified. The identification of these conditions contributes to the understanding as to why organisations perceive a higher degree of difficulty with the implementation of a limited number of ISO processes. Having established the difficulties and conditions, the relation between the main motivations to apply for ISO certification and the conditions which organisations face during the ISO 9000 implementation process will be described.

In summary this chapter will discuss (1) the difficulties with implementing ISO (figure 3.1), (2) the conditions influencing the implementation process (figure 3.1) and (3) the relation between conditions and motivations (figure 3.4). This chapter will be concluded with a short conclusion, summarising the main findings.

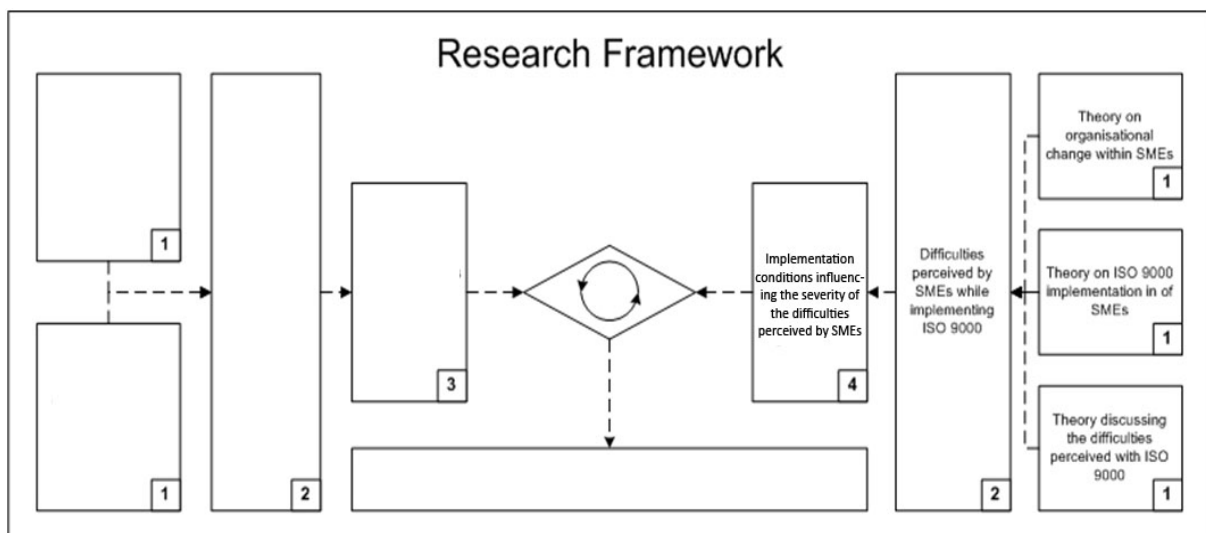


Figure 3.1: Research framework

### 3.2. Difficulties with implementing ISO 9000

When ISO is studied in the context of TQM, ISO implementation could be regarded as a process of organisational change. To maximise the possible benefits the company needs to undergo a process in which both its operational processes and culture are adjusted. The organisation should focus its resources on building a quality-conscious culture. Briscoe, Fawcett and Todd (2005) argue that a company should establish quality as a clear priority, inculcating a continuous improvement attitude and striving to eliminate quality problems at their source in order to implement ISO 9000 in a meaningful way. The established routines, as a result of the adoption of the standard, need to be internalised and monitored. The objective of this type of implementation process is focussed on long term benefits and the nourishment of a total quality environment.

A contradictory perspective is illustrated by the observation that many SMEs view ISO as a necessary evil and conceive certification as the final goal of the process. This view is further supported by the observation that an organisation is able to win a quality accreditation without being truly committed to quality (Denton, 1993).

The different perceptions of ISO will inevitably result in a difference in the difficulties encountered during the adoption process. However, to a certain extent the first perception will merely be an extension to the second.



A not unreasonable argument might therefore be that indeed ISO 9000 implementation ends with certification and that from then on maintenance takes over. Irrespective of whether ISO is seen as part of some larger quality management program or a process to become certified, in both instances an organisation will have to fulfil the requirements forthcoming from the standard. As outlined in the research questions, this is what this research will focus upon.

### 3.2.1. The difficulties with ISO implementation

The requirements forthcoming from the standard are derived from the ISO processes. In section 2.4 ISO 9001:2000 was separated in 21 distinct processes which an organisation has to implement in order to become ISO certified (a description of these processes can be found in appendix 1). To get an impression of the perceived degree of difficulties small and medium size organisations face while implementing these processes, various surveys found in literature were consulted which measured this variable. The most insightful surveys conducted to measure the perceived degree of difficulty were executed by Bhuiyan and Alam (2005) and Yahya and Goh (2001).

Based on a survey among 138 randomly selected Canadian companies, Bhuiyan and Alam (2005) found that in general most companies do not conceive these processes very difficult to implement, see table 3.1. The table shows the 21 processes of ISO 9001:2000 for which a mean value of 1 is the highest score, which represents the highest level of difficulty, while a mean value of 0.2 indicates that the item was not difficult to implement. A mean value of 0.6 therefore indicates that the responses were between the highest and lowest scores, in other words, the response is that the difficulty an organisation faces with the implementation of this process is neutral.

These results furthermore show that, whether companies were registered for internal reasons (IR) or external reasons (ER), the perceived degree of difficulty was only significant for some of the 21 processes found under the new version.

ISO Processes	Mean				t	One tail	Two tails
	All	IR	ER	IR-ER		p	p
Customer Needs assessment process	0,63	0,20	0,43	-0,23	-1,32	0,13	0,26
Customer Communication process	0,61	0,19	0,42	-0,23	-1,48	0,11	0,21
Monitoring and measuring process	0,61	0,21	0,39	-0,18	-1,79	0,07	0,15
Product Design process	0,61	0,19	0,42	-0,23	-2,06	0,05	0,11
Quality Management process	0,6	0,19	0,41	-0,22	-1,37	0,12	0,24
Resource Management process	0,59	0,19	0,39	-0,2	-1,66	0,09	0,17
Regulatory Research process	0,59	0,21	0,39	-0,18	-1,7	0,08	0,16
Continual Improvement process	0,58	0,20	0,38	-0,18	-2,35	0,04*	0,08
Planning process	0,58	0,19	0,38	-0,19	-1,96	0,06	0,12
Market Research process	0,56	0,18	0,38	-0,2	-1,81	0,07	0,14
Management Review process	0,54	0,17	0,37	-0,2	-2,48	0,03*	0,07
Training process	0,54	0,17	0,37	-0,2	-0,93	0,2	0,41
Production process	0,54	0,17	0,37	-0,2	-1,19	0,15	0,3
Service Provision process	0,53	0,18	0,35	-0,17	-0,92	0,21	0,41
Document Control process	0,53	0,19	0,34	-0,15	-1,4	0,12	0,23
Internal Communication process	0,53	0,16	0,37	-0,21	-1,93	0,06	0,13
Product Protection process	0,52	0,19	0,33	-0,14	-2,44	0,04*	0,07
Purchasing process	0,52	0,15	0,37	-0,22	-1,32	0,13	0,26
Internal Audit process	0,52	0,16	0,36	-0,2	-1,76	0,08	0,15
Record Keeping process	0,49	0,17	0,32	-0,15	-4,69	0*	0,01*
Non-conformance Management process	0,47	0,16	0,31	-0,15	-1,5	0,1	0,21

Table 3.1: List of ISO processes, including perceived degree of difficulty (source: Bhuiyan and Alam, 2005)

	Mean		Pair DF-MF			Pair DF-NF			Pair MF-NF				
	All	DF	NF	MF	DF-MF	t-value	p-value	DF-NF	t-value	p-value	MF-NF	t-value	p-value
Corrective and preventive action	3.04	2.90	3.12	3.18	-0.28	-1.76	0.08*	-0.19	-1.22	0.23	0.09	0.54	0.59
Design control	2.85	2.81	2.90	2.85	-0.01	-0.05	0.96	-0.04	-0.17	0.86	-0.03	-0.11	0.91
Management responsibility	2.67	2.46	2.77	2.76	-0.32	-1.85	0.07*	-0.31	-1.91	0.06*	0.01	0.03	0.97
Process control	2.66	2.54	2.84	2.61	-0.06	-0.38	0.70	-0.28	-1.90	0.06*	-0.22	-1.37	0.17
Statistical techniques	2.66	2.58	2.60	2.74	-0.19	-1.19	0.23	-0.04	-0.27	0.79	0.15	0.96	0.34
Document and data control	2.65	2.69	2.70	2.62	0.09	0.60	0.55	-0.01	-0.07	0.94	-0.11	-0.66	0.51
Quality system	2.64	2.61	2.69	2.67	-0.04	-0.26	0.80	-0.09	-0.59	0.56	-0.05	-0.31	0.76
Control of nonconforming product	2.56	2.44	2.67	2.61	-0.19	-1.21	0.23	-0.23	-1.61	0.11	-0.04	-0.27	0.79
Training	2.55	2.44	2.70	2.54	-0.09	-0.60	0.55	-0.26	-1.70	0.09*	-0.17	-1.03	0.30
Internal quality audits	2.52	2.40	2.65	2.59	-0.17	-1.08	0.28	-0.25	-1.68	0.09*	-0.08	-0.50	0.62
Control of customer-supplied product	2.44	2.45	2.52	2.29	0.16	0.69	0.49	-0.07	-0.36	0.72	-0.22	-1.02	0.31
Contract review	2.42	2.32	2.41	2.63	-0.34	-2.12	0.04**	-0.11	-0.75	0.46	0.24	1.42	0.16
Servicing	2.39	2.36	2.53	2.30	0.02	0.12	0.90	-0.15	-0.75	0.46	-0.18	-0.82	0.41
Purchasing	2.38	2.28	2.52	2.30	-0.04	-0.23	0.82	-0.24	-1.67	0.10	-0.20	-1.32	0.19
Product identification and traceability	2.37	2.25	2.44	2.45	-0.21	-1.30	0.20	-0.19	-1.25	0.21	0.02	0.13	0.90
Control of inspection, measuring and test equipment	2.36	2.34	2.40	2.36	-0.01	-0.03	0.97	-0.04	-0.30	0.77	-0.04	-0.24	0.81
Control of quality records	2.35	2.26	2.45	2.33	-0.09	-0.51	0.61	-0.20	-1.22	0.22	-0.11	-0.65	0.52
Inspection and testing	2.32	2.23	2.39	2.35	-0.10	-0.67	0.50	-0.14	-1.01	0.32	-0.04	-0.24	0.81
Handling, storage, packaging, preservation and delivery	2.29	2.23	2.33	2.35	-0.11	-0.78	0.44	-0.10	-0.70	0.48	0.02	0.11	0.91
Inspection and test status	2.22	2.24	2.24	2.16	0.07	0.47	0.64	0.01	0.03	0.97	-0.07	-0.44	0.66

**Notes:** \*\* Statistically different at 5 percent; \* Statistically different at 10 percent; DF = developmental reason company; MF = mixed reason company; NF = non-developmental reason company; DF-MF = mean difference for DF minus MF; DF-NF = mean difference for DF minus NF; MF-NF = mean difference for MF minus NF; all figures are rounded to two decimal points

Table 3.2 Results survey Yahya & Goh (2001) describing the perceived degree of difficulty organisations experienced with the implementation of the ISO 9000:1994 implementation

### 3.3. How the conditions influence the implementation of ISO in SMEs

The difficulties presented in the previous section indicate the major barriers which organisations will have to overcome in order to successfully implement ISO 9000. Knowledge of these difficulties will provide organisations with an opportunity to take measures to lower their severity, making them easier to overcome and thereby reducing the degree of difficulty perceived with the implementation of ISO 9000. Unfortunately the conditions causing these difficulties are not very explicit, nor visible. Organisations might not even be aware of the fact that these conditions are playing within their organisation; resources tend not to be a problem, until you run out of them! The conditions should be seen as the cause or roots of the difficulties which organisations will face during the implementation of ISO 9000. The organisation will find it hindered while implementing certain processes, rather than others. These difficulties could be seen as the visible symptoms of the underlying conditions. And even though an organisation could overcome some difficulties at an ad hoc and short term basis, this will not serve its long term interest, as is merely fighting symptoms instead of curing the disease. In the long run, the organisation will be better off when it addresses the difficulties themselves.

The conditions influencing organisations during the implementation process have been examined in various articles. Chin et al. (2000) point out that findings by Dzus and Skyes (1993), Olsen (1994), and McCullough and Laurie (1995) have identified lack of top management support and understanding of ISO requirements as the root cause of failures in surveillance audits. Nwankwo (2000) states that: "there are critical issues which must be resolved (e.g. clear strategic intent, leadership commitment, supportive organisational arrangement) for systematic quality assurance to work in an optimal manner".

Calingo et al. (1995) and Quazi&Padibjo (1998) argue that companies run into the following barriers while implementing ISO:

- Lack of top management support and commitment;
- Employee resistance to change;
- Lack of understanding of ISO 9000 system;
- Constraints on resources (manpower, time and finance);
- Lack of training and education of employees; and
- Unclear benefits of obtaining certification.

Kim (1994) claims that the four following barriers form the major roadblocks towards ISO 9000 certification:

- Misinterpretation of the ISO 9000's requirements;
- Over-development of the quality system;
- Excessive documentation and control; and
- Underestimation of the efforts and resources needed in certification.

When these conditions are placed within the context of an SME, it seems likely that SMEs will struggle with the investments required for a successful implementation. SMEs simply do not have the deep pockets needed to invest in programs that promise only "potential" returns somewhere in the future. These companies should therefore ensure that they prepare for implementation by having adequate resources and plan for the effort required on the part of their employees (Bhuiyan and Alam 2005). In order to do so, managers at small-firm manufacturers need to gain greater insight into the practices that enable successful ISO 9000 implementation (Nwankwo, 2000). This observation is unfortunately in contrast with the findings indicated above, which identify the lack of a thorough understanding of the ISO 9000 system as one of the main difficulties companies experience while implementing the system. Brown and Van der Wiele (1997) confirm that 35 out of the 146 SMEs in their survey encountered problems with the interpretation of the standards.

Many SMEs seem to depend on the knowledge of external consultants for the implementation of the system. While the use of consultants might increase the chance of a successful and speedy certification, it could seriously harm the benefits obtained in the long run. The organisation is likely to end up with a generalised ISO model, not specifically tailored to its needs, and with less understanding of its functioning and requirements.

Lack of understanding and the substantial investments required for the implementation of ISO 9000 are likely to reduce top management commitment. When managerial commitments wane, the commitment of lower level employees, who already have a natural tendency to resist change, suffers. In SMEs this effect is likely to be even more profound due to the natural balance of power within the organisation. Within SMEs generally more emphasis is placed on the role of top management and its performance strongly depends on the influence of its leader on daily operations. 50 out of the 146 organisations indicated that the most severe

problem encountered during ISO 9000 implementation related to a lack employee commitment. (Brown and Van der Wiele, 1997). Lower employee support in favour of the proposed change will in turn temper the enthusiasm and support of management, entering a dangerous spiral towards failure.

Other problems are related to paperwork and documentation. Lee and Palmer (1999) found that not only is it difficult to keep documentation updated, but it is also a difficulty to monitor people's day-to-day adherence to the standards. This reflects the core of the criticism on ISO 9000, as indicated in chapter 2. The increased need for documentation and standardisation significantly increases bureaucracy limiting the company's flexibility and exploratory options. Lipovatz et al. (1999) reported that increased paperwork is positively correlated with negative reactions of employees towards ISO. In addition, the increased focus on monitoring increases the amount of time management has to spend on fulfilling this requirement. With time and energy not being superfluous, managerial commitment to ISO 9000 often decreases over time.

### 3.4. Explaining the relations between the conditions

To summarise: the implementation process of ISO 9000 can roughly be viewed through 2 types of lenses. One type is focused on the developmental aspects of ISO and approaches ISO as long term project with the final objective being TQM. The second view is much narrower in scope and has as sole objective the achievement of certification.

The first section of chapter 3 provided a short argument to determine which view seemed most relevant in an effort to determine the difficulties SMEs perceive during the implementation process. It was concluded that the ISO 9000 implementation ends with certification and that from then on maintenance takes over. Irrespective of whether ISO is seen as part of TQM or a process to become certified, in both instances an organisation will have to fulfil the requirements forthcoming from the standard. By using this definition of the implementation process of ISO 9000, the results obtained from the subsequent analysis would be applicable to the largest number of organisations. And more importantly for this paper, it could safely be applied to all organisations irrelevant of their motivation.

When the definition of the implementation process, as mentioned above, is applied to literature (Calingo et al. 1995; Quazi&Padibjo 1998; Brown and Van der Wiele 1997 and Chin et al. 2000) it appears that most of the difficulties SMEs encountered are caused by a small number of underlying conditions. The conditions faced by SMEs relate to:

- Constraints on resources;
- Lack of top management commitment;
- Lack of understanding of the standards requirements;
- Lack of employee commitment; and
- Documentation and control.

Where top management commitment should be interpreted as a dummy variable representing the motivations with which organisations initiate the ISO implementation process. A stronger focus on developmental factors will result in strong commitment from top management to the ISO implementation process. In contrast, the more an organisation is motivated by non-developmental reasons to implement ISO, the lower the top management commitment is expected to be (Yahya and Goh, 2001). The identification of top management commitment as one of the key condition which determines whether an organisation is able to successfully implement ISO 9000, emphasises the importance of the organisation's motivations to opt for ISO certification. Awareness of this relationship provides an important initial insight with regard to the difficulties SMEs can expect to face during the implementation of ISO.

To deepen the understanding of the conditions and their relation to the organisations motivation, the conditions which an organisations influence the implementation process will be modelled as a product of the organisations motivation, within this section denoted by the managerial commitment (figure 3.2).

This figure displays how these conditions relate in the context of an SME. Management commitment is displayed in the centre of the 4 other conditions identified in literature, as it shares a direct relation with each of the conditions. The other conditions are placed in the 4 corners and their relations are indicated by arrows. Each SME implementing ISO 9000 will have to cope with these conditions; however, the significance of the individual condition will differ. Within figure 3.2 the conditions can attain 3 levels of severity: minor, more and most. Related to the level of severity of a condition is the influence of this difficulty on the other conditions. If for example and organisation expects to have most difficulty with employee commitment, employee commitment can only have an inhibiting effect on the other conditions it is related to. This inhibiting effect is

indicated by the minus sign (-) above or under the arrow. In contrast, when an organisation expects minor difficulty related employee commitment, it could have a stimulating (+), neutral (N) or inhibiting (-) effect on the related conditions.

The following stipulation defines the 4 difficulties, excluding managerial commitment, and describes their relations.

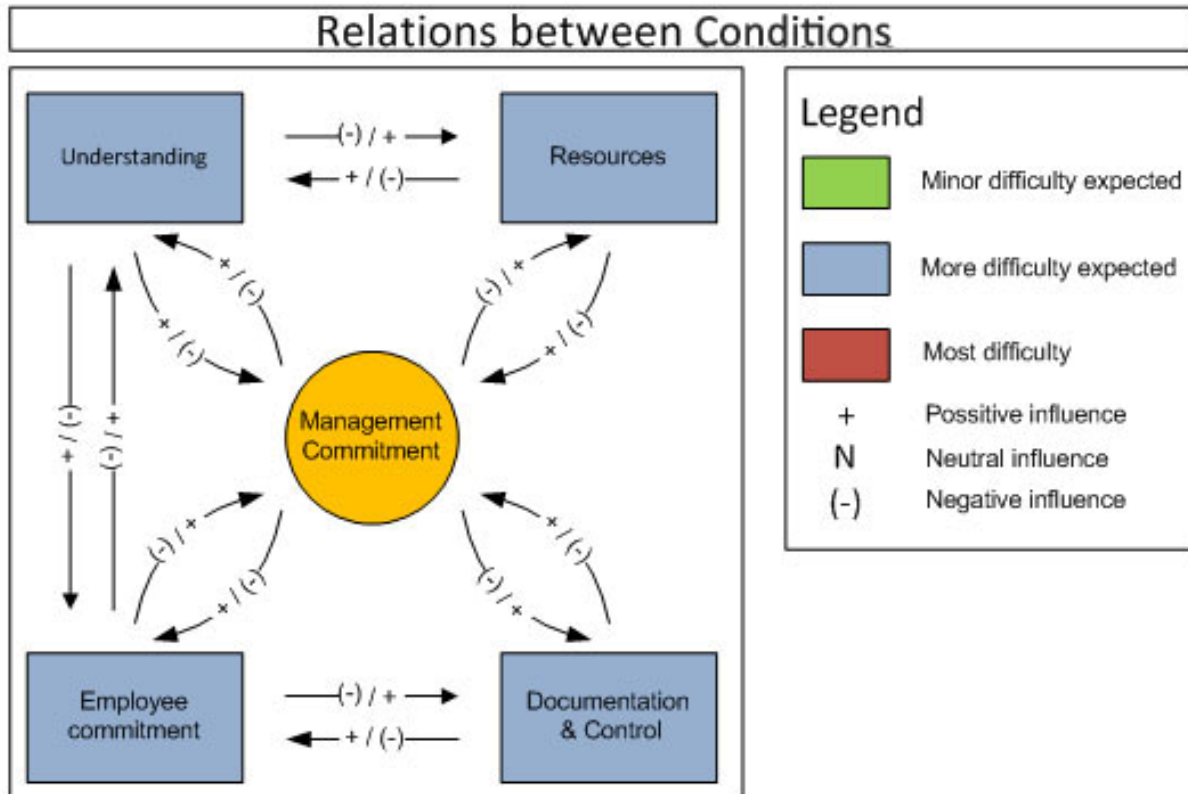


Figure 3.2: Conditions and their relations

- **Resources:** defined as the amount of money and time available for the implementation process, have a direct influence on the understanding of the standard by management and on top management commitment. More resources allow for better training, more thorough study of the standard, both contributing to a deeper understanding of the standard. If management possesses sufficient resources available for the implementation process, this will have a positive effect on its commitment. As there is little need to make difficult tradeoffs during the implementation process. The inverse also applies. When management is committed to the implementation process, it is likely to commit sufficient resources to the implementation process.
- **Understanding:** defined as the organisations comprehension of the standard, influences both the amount of recourses required for the implementation, the employee commitment as well as top management commitment. A lack of understanding means that the organisation might be confronted with unexpected requirements, demanding additional investments both in time and money. In addition employee commitment might suffer, as people tend to resist change they do not comprehend. Top management commitment will also be declining as a consequence of the additional demands it is facing and the fact that its planned approach needs to be altered. Again the inverse applies as well: when management is committed to the process, it is likely to comprehend the ISO requirements, as it will have taken the time to study the standards requirements.
- **Documentation & control:** defined as the written instructions used by an organisation to establish its quality management system and the monitoring and measuring of its processes. The ISO 9000 standard requires, as a means to assure quality, that the organisation codifies its procedures and increase its monitoring and measuring. Increased monitoring and measuring will increase the administrative burden placed on employees and management. When this becomes excessive, it will temper both employee and management commitment. While the reverse relation might not be as powerful as with the previous two difficulties, it is a fact that with increased management

commitment the company will find the barrier of an increase in documentation easier to bare. In addition management is more likely to be aware of the need for monitoring and measuring, which makes it easier to overcome this barrier.

- Employee commitment: Here within defined as the appreciation of the standard by employees. People have a natural tendency to resist change. Employees, being ordinary people, show a strong preference to stick to their current routines and practises. Low employee commitment will negatively influence the commitment of management as well as the progress made with regards to documentation and control and understanding. In turn, higher management commitment will definitely increase employee commitment. When management is truly committed to the standards, it should be able to convince its employees of its importance and raise awareness of its benefits.

Obviously, it is arguable if the relations as they are presented above are valid or the only manner in which these could be defined. A reasonable argument would be that additional resources will facilitate the documentation related process. Atomisation of record keeping or sophisticated IT systems will indeed make this difficulty easier to overcome, however the application of technology is above all an accelerant or facilitator with regards to internalisation. It is not an enabler of ISO 9000; the organisations could easily go without. The creation of technology to support documentation and control would not be the solely resource based. It would require a deep comprehension of ISO – Understanding – substantial commitment of management and employee commitment to create and test this application of technology. Therefore it is argued that resources will have an influence on documentation and control, but do so indirectly, through their influence on the other difficulties. A similar argument could be applied to the relation between documentation & control and employee commitment. It is not the amount of resources spent on the implementation which increase employee commitment - even though bonuses could provide an incentive for quicker adoption, although research has shown that additional monetary rewards only go so far - it is how the resources are spent. Resources spent on training are likely to increase commitment. Employees will have the feeling that they are part of the implementation process and gain comprehension. Increased comprehension will reduce the fear of the proposed change and increase the probability of a successful adoption and internalisation. Comprehension, however, is synonymous to understanding; hence increased resources could increase employee commitment but only indirectly and through understanding. Following this line of reasoning lead to the creation of the figure displayed above (figure 3.2).

### **3.5. How do the conditions result in the implementation difficulties**

The framework established in the previous section provides an interesting insight into the conditions influencing the implementation process of ISO in an SME. But even though awareness of these conditions might be beneficial, it is not instantly clear how these factors influence the perceived degree of difficulty with the implementation of the ISO processes. This section will explain the relation between the 5 conditions and the difficulties found by Bhuiyan and Alam (2005) (table 3.1). In consideration of the scope of this research, these relations have only be qualified for the top 5 most challenging ISO processes: customer needs assessment process, customer communication process, monitoring and measuring process, product design process and quality management process. For the other processes the relationship between the conditions and difficulties will be addressed on a higher level.

Due to restrictions on time and other resources, an in-depth, quantitative, analysis of the relationship between the conditions and the difficulties will have to be left for follow-up research. To fulfil the objectives set for this research a thorough study of available literature was conducted to identify a qualitative relation between the conditions and difficulties. The qualitative relation between the conditions and difficulties, for the five most challenging process to implement, is presented below. This relationship provides further evidence in support of the importance of top management commitment to the implementation process.

1. The customer needs assessment process involves such tasks as identifying and reviewing customer requirements and the statutory and regulatory requirements to produce a desired product. In terms of ISO 9000 this process requires a company to document the steps taken and methods used to identify these customer needs. In most organisations knowledge about customer needs mainly resides with marketing and sales personnel, whom gather information based on formal or informal exchanges with the customers. Especially in SMEs, knowledge of customer needs is based on personal relations and informal exchanges with the clients. On rare occasions does an organisation make the effort to instigate a specific process aimed at customer needs assessment, as is required by ISO. As a



consequence organisations might not even be aware of the way how they know the specific demand of their customers and therefore find it challenging to create a document outlining more than just the crude steps taking to achieve this goal. In addition, the lack of experience with formal documenting and recordkeeping will increase the level of difficulty an organisations experiences will implementing this process

2. The customer communication process involves disseminating information related to product information, company or customer enquiries, customer orders or contracts or amendments related to these, or order handling and customer feedback. Companies that are not used to documenting and recording such information formally may find it difficult to organise and determine how to implement this process effectively.
3. Organisations are required to monitor and measure the quality processes, customer satisfaction, and product characteristics. They are also required to plan and hold regular internal audits. It is suggested that the possible difficulty associated with this process is due to reasons such as determining how to measure customer satisfaction, use customer satisfaction information, conduct internal audits effectively and regularly, use appropriate methods of measuring processes, and verify product characteristics.
4. The product design process involves activities such as: design and development planning, defining inputs, generating outputs, carrying out reviews, performing verifications, conducting validations, and managing amendments. Yahya & Goh (2001) have found the same result for the previous version of the standard. Lee et al. (1999) also pointed out that the lack of attention placed on design control is the main reason as to why this process is difficult.
5. A poor understanding of the quality management system as a process model would likely make this process difficult, but also affects the processes associated with the quality management system. Furthermore, this process involves a large number of tasks, including a process for management activities, provision of resources, product realisation and measurement process.

Based on the description above it seems that the condition documentation and control and understanding play a prominent part in the implementation of ISO 9000, however Yahya & Goh (2001) point out that the difficulty an organisation perceives with the implementation of a specific processes and the level of managerial commitment show strong signs of inter-relatedness. It appears that when management encountered difficulties in fulfilling their responsibility during the implementation of these processes three consequences can occur:

- Failure of quality system requirements;
- Failure in identifying quality records and developing procedures to control documentation within the company; both are essential elements of documentation control; and
- Failure to fulfil design control requirements.

This is in agreement with the analysis of the conditions provided in the previous section.

### **3.6.Challenges & motivations; how do they relate?**

Evidence hinting on this relationship between the motivations with which an organisation initiates the ISO implementation process and the perceived degree of difficulty was found in section 3.2 in the analysis of Bhuiyan and Alam (2005). Who observed that companies that seek registration for internal reasons perceive a significantly (Statistically different at 5%) lower degree of difficulty in only the following items: continual improvement process, management review process, product protection process and record-keeping process (Bhuiyan & Alam 2005). It appears that generally organisations with a developmental motivation experience less difficulty with the implementation of ISO 9001:2000 than organisations with a non-developmental motivation. This observation is supported by the findings of Gotzamani and Tsiotras (2001, P1329), who state that:

*Those companies limiting their efforts to the satisfaction of the minimum necessary requirements for certification,[...organisations motivated by non-developmental reasons] will not be able to realise the full potential of the standards and are likely to fail. On the contrary, companies can really benefit from the process if they see the standards as an opportunity to organise and improve their internal operation and quality by creating a dynamic an ever-improving quality system that may evolve in TQM system [developmental reasons].*

A likely cause for this distinction between categories of motivations can be found in the observation that organisations that embark on the journey towards ISO certification based on an internal motivations show a stronger focus on implementing a continual improvement process, a regular improvement system through the use of a quality policy, objectives, audit results, analysis of data, corrective and preventive actions, and management reviews (Bhuiyan and Alam 2005; Fuentes et al. 2000; Yahya & Goh 2001; and Chin et al. 2000).

Top management may be more likely to take an active part in the implementation process in an internally motivated organisation, whereas, if it is imposed on a company for external reasons, management might be less willing to participate, or may feel forced to do so (Bhuiyan and Alam 2005). Without this essential element, implementation would generally lead to unsatisfactory results Yahya and Goh (2001).

Interestingly, these authors knowingly or unknowingly provide a link between the conditions influencing the implementation of ISO within an SME and the organisation's motivations. In their attempt to explain their observations, they looked for common factor which explains their findings. This common factor was found in the implementation condition "top management commitment". The amount of top management commitment appears to be correlated with the motivation of an SME.

The direction of this causality between managerial commitment and the organisation's motivation, however, remains vague. Does a developmental motivation lead to higher top management commitment or is top management commitment a prerequisite for a developmental motivation? In this thesis it is assumed that a truly developmental motivation is the result of committed top management, driving the ISO implementation process. Top management commitment allows the organisation to focus on developmental factors, predominately the desire to improve internal processes. Many of the ISO processes focussed on internal development require significant commitment from management to be implemented correctly and executed effectively. In addition, management plays a key role within any process of organisational change, especially in SMEs.

Au contraire, when managerial commitment is absent or minimal, it will be almost impossible to get the implementation process up and running. Without management support the resources for the implementation are likely to be minimal. Without sufficient resources, the organisation is unlikely to be able to take the long term view required to maximise the internal benefits of the implementation of ISO.

Using the model developed in section 3.4 it can be show how top management commitment influences the perceived degree of difficulty experienced by an SME; higher top management commitment provides a stimulus to the other conditions and thereby lowers the severity of the other implementation conditions. In contrast non-developmental motivations are derived from external condition forcing management to act and thereby resulting in a lower commitment. Lacking serious committed, management provides less of a stimulus to the other implementation conditions, causing a higher degree of perceived degree of difficulty.

The relationship between the difficulties, conditions and motivations based on the analysis set out above, is depicted in figure 3.3.



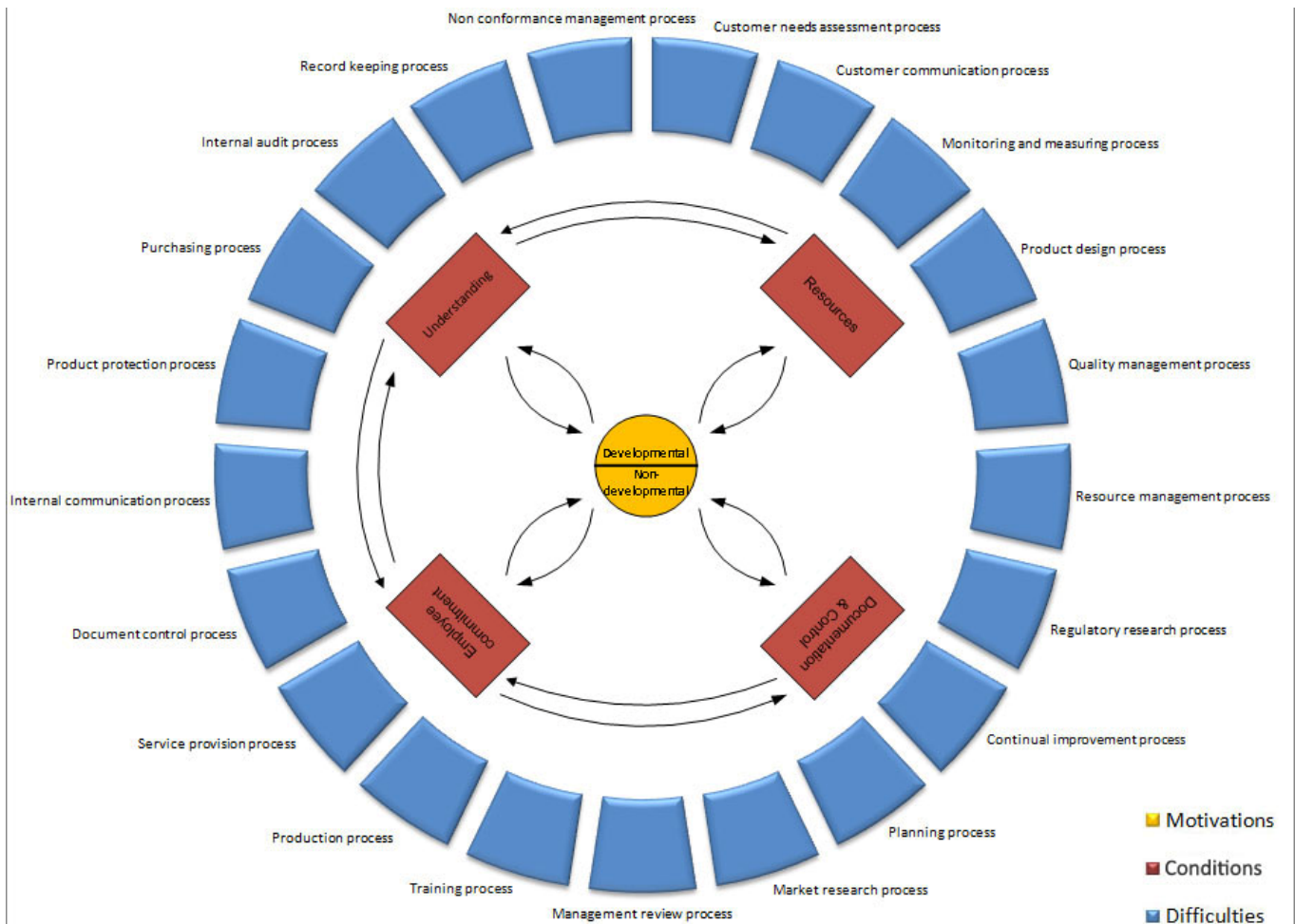


Figure 3.3: Relation between the variables

### 3.7.Conclusion

The literature study performed in section 3.4 provided the interesting insight that the main barriers which organisations face during the ISO implementation process relate to only 5 conditions:

- Constraints on resources;
- Lack of top management commitment;
- Lack of understanding of the standards requirements;
- Lack of employee commitment; and
- Documentation and control.

Where top management commitment was interpreted as a dummy variable representing the motivation of the organisation top apply for ISO certification. A stronger focus on developmental factors requires a strong commitment from top management to the ISO implementation process. In contrast, the more an organisation is motivated by non-developmental reasons to implement ISO, the lower the top management commitment is expected to be (Yahya and Goh, 2001). The identification of top management commitment as one of the key difficulties which an organisation has to overcome in order to successfully implement ISO 9000, emphasises the importance of the organisation's motivations to opt for ISO certification. The relationship between these conditions was modelled in figure 3.3.

While the conditions within the organisations may not become visible, they influence the perceived degree of difficulty which organisations encounter during the implementation process. Using an appealing analogy, the conditions could be seen as the disease which the organisation suffers and the difficulties as the symptoms.

The top five processes that are perceived as being most challenging to satisfy are: customer needs assessment process, customer communication process, monitoring and measuring process, product design process and quality management process.

Section 3.5 concluded that while most organisations do not find these difficulties hard to overcome, there is a difference in the perceived degree of difficulty between organisations with different main motivations. Generally developmentally motivated organisations perceive a lesser degree of difficulty than those organisations motivated by either mixed or non-developmental reasons.

## Chapter 4: Difficulties and motivation: a framework

### 4.1. Introduction

So far this paper has identified the main motivations with which organisations initiate their quest to obtain certification. These motivations were condensed into a framework of 3 main motivations that drive most organisations: Developmental, Non-developmental and mixed reasons.

Next the degree of perceived difficulty of each of these groups with the implementation of the ISO 9000 processes was identified. Based on these findings the ordinary organisation will be able to determine, looking at its main motivations, where it is likely to encounter any difficulties. Forewarned is fore armed, hence the organisation should be able to address these issues well before the difficulties occur.

This chapter will introduce a slightly different separation between the underlying motivations based on a typology introduced by Brown and Van der Wiele. In addition the difficulties identified in section 3.2 will be linked to these subsets of organisations to indicate which point should be emphasised or closely watched during the implementation process.

### 4.2. Categorising organisations

Brown and Van der Wiele (1996) developed a typology describing the different ways companies take on the road to quality based on their underlying motivation. They identified the following five types of companies: minimalists (purely non-developmental), converts (non-developmental), Committed/Wider view of quality (purely developmental), Simultaneous ISO and TQM (mixed reasons with regards to ISO) and TQM first (interestingly this group appears to be mostly non-developmental as they apply for ISO certifications based on external motives). These 5 types of organisations will be used a starting point, however, for the purpose of this research organisation who already consider themselves as applying TQM will be disregarded. The reason for this is twofold. The number of SMEs who truly apply TQM will be limited, according to Brown and Van der Wiele most are larger organisations, but more important, when an organisation which considers applying TQM the motivation for adopting ISO will be captured within the non-developmental group. Following the reasoning of Brown and Van der Wiele, TQM first companies opt for certification based on external reason, predominantly customer demand or to gain market entry, hence could be classified as approaching ISO certification with a non-developmental motivation.

As a result we obtain the following 4 types of organisations named after their motivations for ISO certification (figure 4.1): (1) Companies with a developmental motivation, (2) companies with a mixed motivation, focussed on quality management, (3) companies with a mixed motivation, focussed on certification and (4) companies with a non-developmental motivation. For each of these categories the characteristic features of the organisations are identified, including the severity of the conditions and the processes which it is likely to find challenging to implement. *Please note that each time the next section refers to the perceived degree of difficulty with the implementation of a certain process found by Yahya and Goh (2001), this perceived degree of difficulty is attributed to the ISO 9001:2000 equivalent of the ISO 9000:1994 process.*

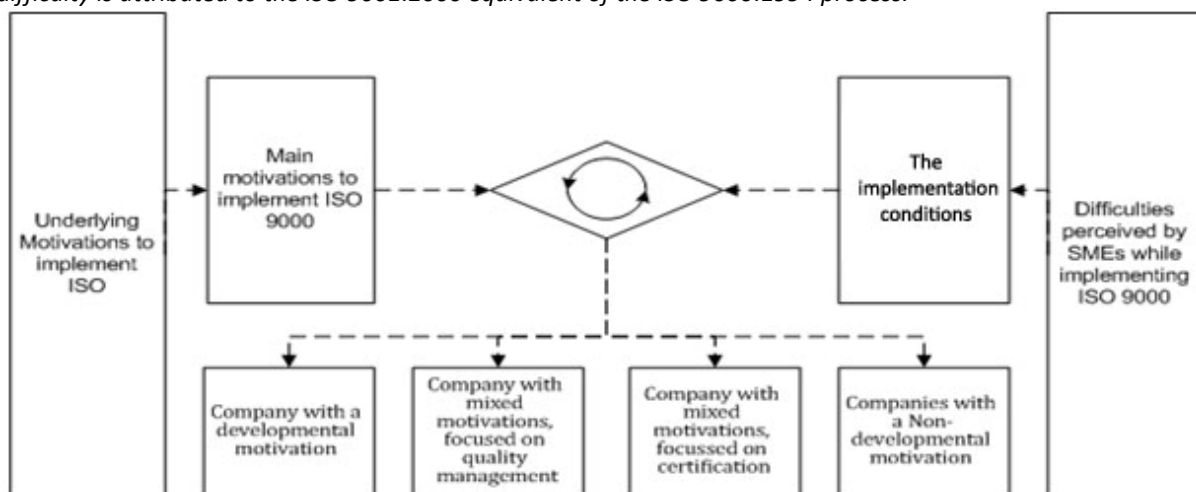


figure 4.1: Research framework

#### 4.2.1. Company with a developmental motivation

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 4.2: Company with a developmental motivation

An organisation with a developmental motivation applies for ISO 9000 certification because it sees it as a means of improving business operations and efficiency rather than being purely market driven. ISO 9000 might be considered as a part of TQM (Magd and Curry, 2003) or as an essential first step in moving into TQM (Douglas, Coleman and Oddy, 2003). Figure 4.2 summarises the main motivations of organisations in this category. Its motivations are displayed in blue. Features of an organisation may include a number of the following elements:

- have some aspects of a quality system in place prior to seeking certification;
- see ISO certification as a small part of the total quality drive;
- don't see ISO 9000 as a major contributor to business success. It is not a recipe for customer satisfaction or expanding market shares; and
- possible first step for developing a TQM culture in the organisation.

#### Conditions

Truly developmental companies are likely to encounter the least difficulties implementing ISO 9000. When a company is driven by internal motivations management is likely to be committed to this process. With management commitment in place, the company should be able to overcome the main conditions identified in chapter 3. In addition, as the company is likely to have some form of quality managements system in place, it is likely to have some experience in this area. Therefore it should have less problems obtaining commitment from employees, minor difficulty with understanding the specific requirements from ISO and less trouble documenting its processes and keeping records. The most significant condition it is likely to encounter is the amount of resources which are required to successfully implement the standard. This is innate to the fact that the company is an SME. Figure 4.3 describes the relationship between the difficulties within a company in this category.

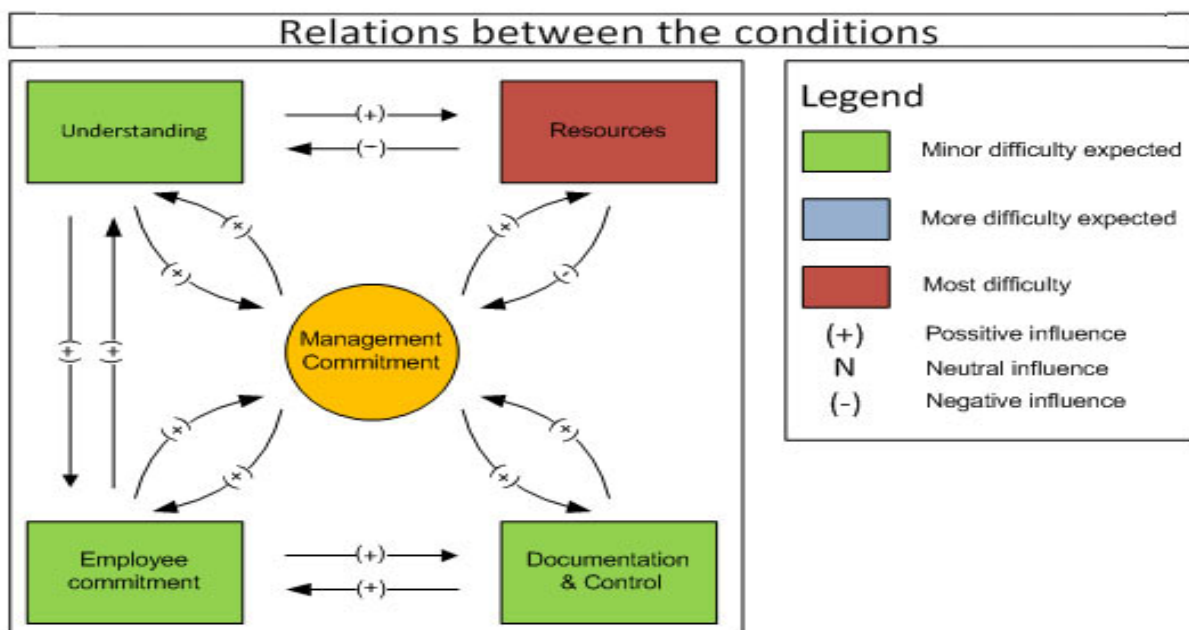


Figure 4.3: Conditions and relation between these conditions as experienced by organisation within this category

### *Difficulties*

Based on the analysis performed by Bhuiyan & Alam (2005) and Yahya & Goh (2001) internally motivated companies will experience few problems implementing the ISO 9001:2000 processes. These organisations will encounter most difficulties with the implementation of (number between the brackets indicates the degree of perceived difficulty as found by Bhuiyan & Alam (2005), 1 is the highest possible score. A score of 0.20 indicates that a company experiences just a minor challenge when implementing the specific process):

- Regulatory research process (0.21)
- Monitoring and measuring process (0.21)
- Customer needs assessment process (0.20)
- Continual improvement process (0.20)

For a more elaborate description of the processes, please see appendix 1. The expected difficulties with the processes related to monitoring and measuring, customer needs assessment and continuous improvement are also describe in section 3.2.

#### 4.2.2. Company with mixed motivations, focussed on quality management

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 4.4 Company with mixed motivations, focused on quality management

The company has a favourable impression of ISO 9000 as a means to optimise its internal processes. It has been considering ISO 9000 implementation for developmental reasons, but the certification process never materialised. The organisation might have struggled with the significant investment required to make the transformation or with the other difficulties accompanying major organisational change. Recent changes in its business environment, possibly relating to marketing or future requirements, provided the additional incentive needed to initiate the certification processes. The possibility of additional benefits due to favourable external changes stimulates the organisation to embark on the ISO journey. For this organisation it is the combination of these factors that tipped the balance in favour of ISO certification (figure 4.4).

Features include:

- the goal of the organisation is to develop a useful quality system;
- employees are involved in developing the procedures and work instructions;
- attention is placed on making employees aware of the importance and use of the system;
- from the outset and during the development of the system there is a positive perception of the benefits for the organisation of a quality system;
- spots the opportunity to realise competitive benefits of the implementation by means of marketing and possible future requirements; and
- consider it to be a costly exercise.

#### Conditions

The favourable attitude towards ISO 9000 will facilitate the implementation process and is likely to reduce the amount of difficulties perceived by the organisation. The commitment from the management team will evoke a more positive attitude from the employees, whom will therefore show less resistance to the proposed change. Nevertheless, the organisation lacks experience in documenting and record keeping, which will hinder the ease with which the ISO process can be implemented. In addition, the codification of processes will increase bureaucracy within the organisation, which might inhibit employee commitment. The financial hurdle which held the organisation back is lowered by the changes in its business environment, however, will still be a factor to be reckoned with.

But even though the implementation of ISO is not likely to be as easy as for an organisation in the pure developmental category, minor problems are expected. In addition the organisation should be motivated by the prospect of possible short term wins, in the sense that it can gain additional business after certification, and obtain a competitive edge vis-à-vis its peers.

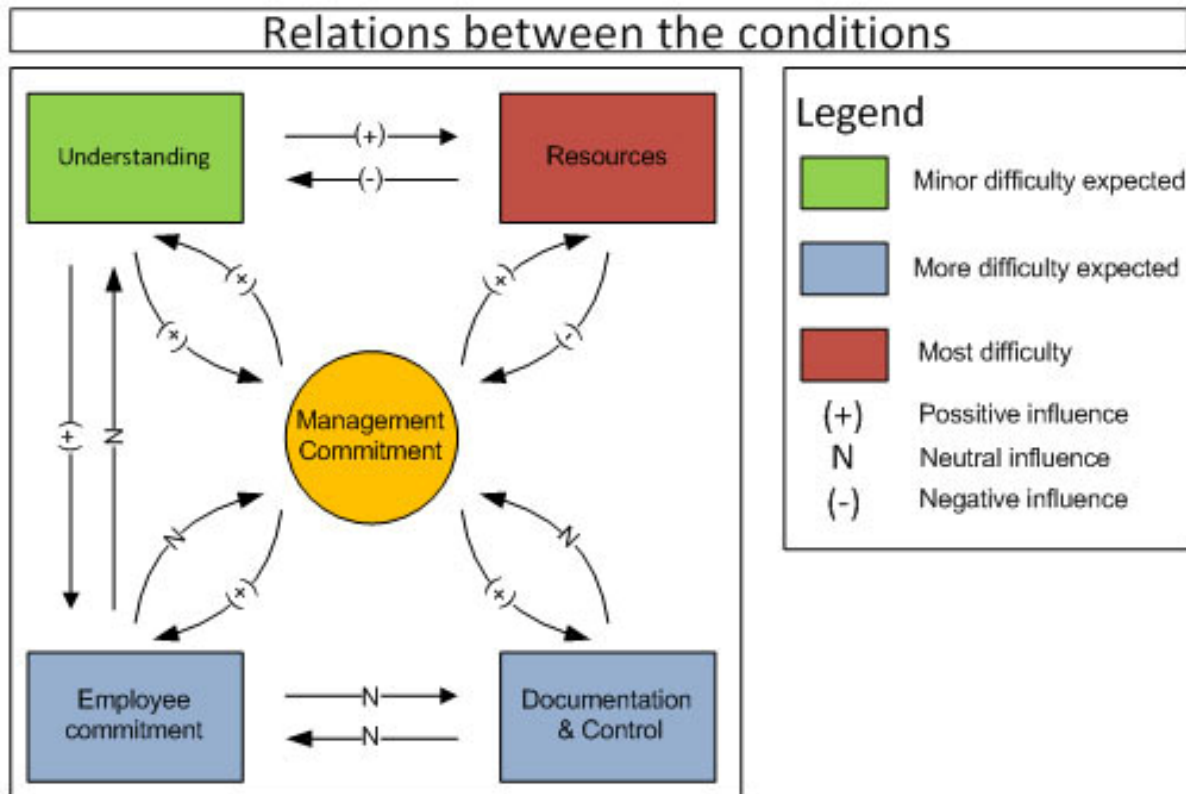


Figure 4.5: Conditions and relation between these conditions as experienced by organisation within this category

Due to its mixed perception of ISO, the organisation is likely to have slightly more difficulties with the certification process, show in figure 4.5. Therefore it will encounter bigger challenges with the quality management system implementation. This specific group of organisations does not fulfil the description of a mixed organisation as provided by Yahya and Goh (2001), as it shows stronger resembles to the developmental than non-developmental organisations. It could be argued that, following the research of Jones *at al.*(1997), organisations in this category are likely to face similar difficulties as organisations in the purely developmental category. However this argument does not credit the difference severity of the difficulties observed in this category. Based on these observations, it is not possible to directly indicate which difficulties will provide the biggest hurdles; however it is seems reasonable to allocate those difficulties that top the list for mixed motivated companies as found by Yahya & Goh (2001) and those of the purely developmental category will emerge. Hence the most likely difficulties will related to this category of organisations are indicated below.

For these processes a range for the expected difficulty is indicated as no definitive data is available. To create this range, the score found by Bhuiyan and Alam (2005) for developmental companies was used as a lower bound, while the score found for non-developmental companies marked the upper bound. This range ranges from 0 to 1, where 1 is the most challenging. The severity of these difficulties is assumed to be skewed to the left of the mean of this range, the level of the developmental motivated organisations.

- Customer needs assessment process(0,20 – 0,43)
- Customer communication process(0,19 – 0,42)
- Product design process (0,19 – 0,42)
- Monitoring and measuring process (0,21 – 0,39)

For a more elaborate description of the process, please see appendix 1. The expected difficulties with the processes related to monitoring and measuring, customer needs assessment and continuous improvement are also describe in section 3.2.

### 4.2.3. Company with mixed motivations, focussed on certification

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 4.6: Company with mixed motivations, focussed on certification

The organisation might initially be sceptical about certification, and is usually forced to become certified, but in the process of doing so discover beneficial outcomes, mainly of an internal nature such as forcing people to think quality or improve systems. Many find that the process of involving employees in the ISO process prepares the way for further progress down the quality maturity path. They, are unlikely to have had TQM prior to moving down the ISO 9000 path.

Characteristics of this approach to ISO and TQM are:

- considered that it is forced to become certified, either by Government policies or customers;
- the goal is to remain competitive in its respective business environment;
- during the development of the system there is a positive perception of the benefits for the organisation of a quality system; and
- attention is placed on making employees aware of the importance of the system and how to use the system.

#### Conditions

At the start of the application process the organisation shows limited interest in ISO 9000. Partly due to the substantial investment required to obtain the certificate, management commitment is just sufficient to keep the process going. During the implementation, when the organisations gets more accustomed to the standard and gains a deeper understanding of its purpose, management commitment grows, providing a stronger stimuli towards the other critical factors in the implementation process. Lack of experience with quality management does result in more difficulty with understanding the ISO requirements. In addition this will hinder the organisations ability to document its procedures and its appetite to keep detailed records. Lower understanding and limited experience with documentation and control will not provide a positive influence on employee commitment. Graphically displayed the situation within the organisation would look something similar to (figure 4.7):



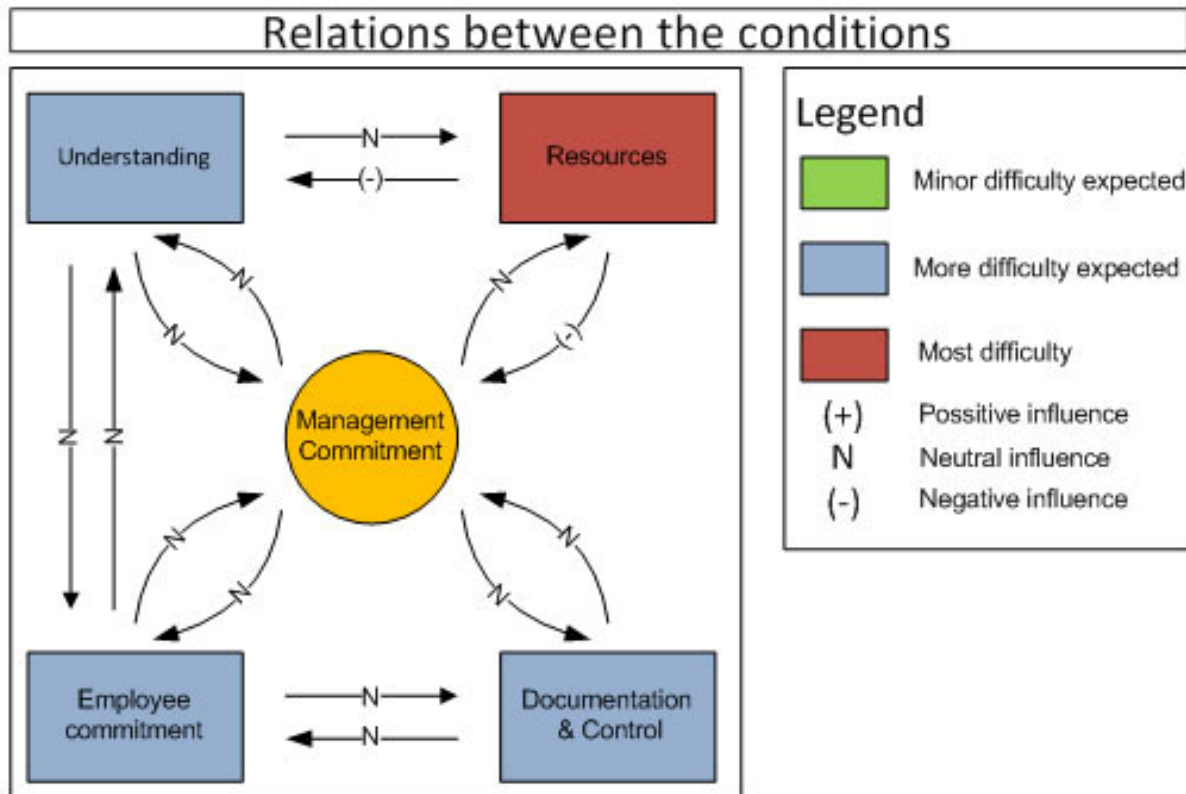


Figure 4.7: Conditions and relation between these conditions as experienced by organisation within this category

Yahya and Goh (2001), based on their survey, indicated that mixed motivated companies show quite similar characteristics in regards to ISO 9000 implementation as non-developmental companies. Hence these organisations are likely to encounter most difficulties with the implementation of the processes described below.

Please note that: The first number between the brackets indicates the range of degree of perceived difficulty as found by Bhuiyan & Alam (2005) for the 9001:2000 equivalent, where 1 is the highest possible score. The lower bound of the range consist of the score found for companies with a developmental motivations to implement ISO 9000. Equivalently, the upper bound in the score found for non-developmental motivated companies. The second number indicates the score found by Yahya & Goh (2001) for the ISO 9001:1994 process, 5 point likert-scale:

- Continuous improvement - as the 9001:2000 equivalent of Corrective and preventive action 9001:1994 - (0.20-0.38, 3.18)
- Product design process - as the 9001:2000 equivalent of design control 9001:1994 - (0.19-0.42, 2.85)
- Quality management process - as the 9001:2000 equivalent of quality system 9001:1994 (0.19-0.42, 2.67)
- No direct equivalent exists for the ISO 9000:1994 process Management responsibility, however management responsibility is best captured in the ISO 9001:2000 process management review - (0.17-0.37, 2.76)

For a more elaborate description of the process, please see appendix 1. The expected difficulties with the processes related to monitoring and measuring, customer needs assessment and continuous improvement are also describe in section 3.2.



#### 4.2.4. Company with a non-developmental motivation

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 4.8: Company with a non-developmental motivation

The organisation did not move towards ISO 9000 on its own terms. It is likely to be pressured into applying for ISO 9000 certification by a major customer or required to so to remain or become eligible for specific tenders. The organisation is unlikely to have had TQM in place prior to ISO 9000 and is unlikely to move to a TQM approach as a consequence of gaining certification.

Features of organisations in this group include:

- considered that it is forced to become certified, either by government policies or customers;
- find few benefits from certification and consider it to be a costly exercise;
- often use outside consultants to assist in certification;
- usually smaller organisations; and
- there hasn't been much involvement of employees at all levels during the development of procedures and manuals.

#### Conditions

For organisations with this motivation there is one simple goal: maximum results with the minimum amount of resources spend on the application. Management is unlikely to show much commitment to the implementation process, which in turn reflects on the motivation of employees, the understanding of the system, the resources. The organisation has little experience with quality management or does not fully appreciate its current formal quality management principles. The lack of experience will increase the severity of the condition documentation and control. ISO 9000 implementation requires from the organisation that it closely documents its steps taken to achieve a certain goal. Organisations with little experience will perceive a higher degree of difficulty meeting this demand. In addition lower appreciation of the current practises will limit the appetite of employees for yet another management fad. Without a real sense of urgency the employees will be reluctant to accept the proposed change. Both Yahya and Goh (2001) and Bhuiyan & Alam (2005) mention that these companies encounter bigger difficulties with ISO implementation and are less likely to succeed (figure 4.9).

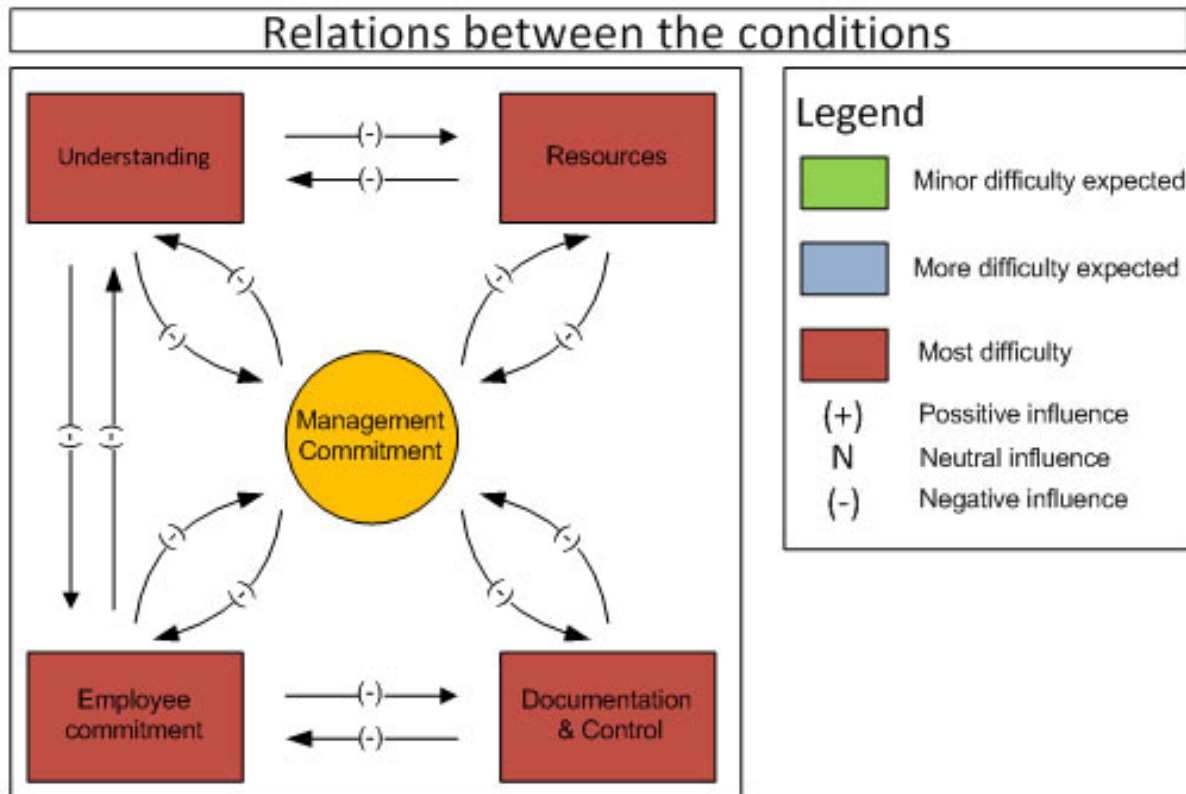


Figure 4.9: Conditions and relation between these conditions as experienced by organisation within this category

### Difficulties

Based on the survey of Bhuiyan and Alam (2005), these organisations will encounter most difficulties with the implementation the processes stipulated below. The number between the brackets indicates the degree of perceived difficulty, where 1 is the highest possible score:

- Customer needs assessment process (0.43)
- Customer communication process (0.42)
- Product design process (0.42)
- Quality management process (0.41)

For a more elaborate description of the process, please see appendix 1. The expected difficulties with the processes related to monitoring and measuring, customer needs assessment and continuous improvement are also describe in section 3.2.

### 4.3.Conclusion

In this chapter the small and medium size organisations were subdivided into 4 categories of organisations based on their motivation to implement ISO 9001:2000: Company with a developmental motivation, Company with mixed motivations, focussed on quality management, Company with mixed motivations, focussed on certification and Companies with a Non-developmental motivation. Each of these categories constitutes a group of organisations with similar motivations for ISO certification and, based on the findings presented in chapter 3, a distinct level of severity of the conditions and difficulties. The categorisation presented in this chapter allows organisations to predict, based on their motivation, those processes they are likely to find most challenging to implement and find the causes, the difficulties, contributing to this difficulty.

After carefully reviewing the relations between motivations, difficulties and difficulties, the general conclusion could be formulated as: *"the more an organisation is motivated by the internal benefits of ISO implementation, the easier it will perceive the implementation process"*.

The next chapter will present a case study in which the findings of this chapter will be illustrated in an empirical setting.

## Chapter 5: Case Study in South Africa

### 5.1. Introduction

This chapter will describe a case study conducted in South Africa at a small organisation in the industrial area of Johannesburg. The case study was executed in the second and third quarter in 2005 and lasted for a period of 5 months. During this period the organisation under study initiated an ISO 9000 implementation process, based on the newly released ISO 9001:2000 standard.

The case study will be used as an illustration to the analysis made based on the literature study conducted in the previous chapters and to investigate whether the proposed relations occur within small organisation.

The case study will start with an overview of the company (including its operations, products, markets and organisation), followed by a discussion relating to its motivations to initiate the ISO 9000 implementation process, the difficulties encountered during this process and conclude with a section describing the current state of the system.

The information in this case study is based on a 5 month period of direct observations within the company, Anonymous Entity. The information obtained by these observations was complemented by data derived from a variety of sources, predominantly: documentation, archival records, interviews with both management and personnel, and surveys. The scrutiny of existing documents and records provided the necessary background knowledge about the company's existing operations, markets and financial status. Unfortunately a substantial part of the existing documentation appeared to be out of date. In addition the company had not been to careful with regards to maintaining its files and records.

The interviews with the employees and management, first conducted in a informal open-ended fashion and later in a more formal setting, revealed some interesting fact with respect to the way the business was currently operated, the internal culture and feelings, and the planned future direction. Especially during the many conversations held with the management team (consisting of the managing director and sales director) provided insight in the motivations of the company to apply for ISO certification and at a later stage the difficulties and challenges which were encountered during its implementation.

This considerable source of knowledge was further supplemented with data captured in two surveys. The first survey was anonymously conducted among Anonymous Entity Employees and management. This survey provided quantitative data with respect to the company's culture, understanding of ISO and motivation to implement the standard. The second survey focussed on the outsider's perspective of Anonymous Entity and was held among its most important customers. The answers received, provided an indication of the need for ISO 9000 for external reasons as well as important information required for the completion of the ISO procedures and opportunities for improvement. The two have been included as an appendix at the end of this paper.

The combination of the information of these various sources resulted in a clear and objective picture of Anonymous Entity. This picture will be presented in the following sections of this chapter.

### 5.2. Anonymous Entity

Anonymous Entity is a small privately owned South African company, employing twelve full time employees. The company was established in 2004 on a management buy-out. Prior to this buy-out Anonymous Entity was know under the name Point Analytics and served as a division of the multinational Set Point.

Anonymous Entity is composed of two divisions: Anonymous Entity and Anonymous Entity Safety. The Anonymous Entity Safety division was recently founded and had yet to be fully established. The Safety division will act as a separate body operating independent from Anonymous Entity, aiming at other markets than the main (mother) company. Therefore it is excluded from the ISO accreditation process and will be excluded from this research.

The core business of Anonymous Entity involves the (re)sale of analysers and analyser equipment. Analysers (and equipment) are bought from multinational corporations - like: Servomex, Dopac or ATAC - configured, calibrated and sold to the locale customers for the analysis of gases and coolants to determine their

composition. These local customers range from corporate giants like Sasol<sup>1</sup> to the small and/or rural manufactures. Anonymous Entity aims to deliver high quality and top-notch service on all products sold in order to meet and exceeds its customer’s demands.

The main products sold by Elemental are basic Analysers and Systems (projects):

- An Analyser is a product specifically developed to measure the compounds of either gasses or fluids. Analysers are used by companies to for example measure pollution or optimise mixtures for combustion.
- A system is an elaboration on an Analyser. A system can consist of one or multiple analysers, together with panels to guide the gasses or fluids to and through the analyser(s). All systems are developed for a specific function and customised to the wishes of the customer.

### 5.2.1. Culture and Organisation

The culture and organisation of Anonymous Entity were analysed using the framework established by Trompenaars et al.(1997). Within this framework, Anonymous Entity would best fit the profile of a Family Culture (Trompenaars et al., 1997).

Trompenaars uses: *the metaphor of family for the culture which is at the same time personal, with close face-to-face relationships, but also hierarchical, in the sense that the “father” of a family has experience and authority greatly exceeding those of his “children”, especially where these are young.*

The description fits the situation as it was encountered at Anonymous Entity in May 2005. Since the buy-out in 2004, the company was slightly reconstructed. The core function and activities remained the same. Most employees stayed loyal to the company when it became an independent entity. These employees have been with the company for many years creating mutual trust and loyalty, but also dependency and complacency. As a consequence of the management buy-out additional employees had to be hired to fill the functions which were no longer executed by Point Analytic’s employees. These vacancies were filled with family members, close friends or relatives, constituting to a culture largely revolving around trust and companionship.

The Managing Director (and owner) is the leading figure and care taker, or the father figure in Trompenaars’ terminology. He is the centre piece of the corporation and his knowledge and expertise are vital to the survival of the company. The Managing Director is responsible for the strategic decisions within the organisation and determines the future direction. Due to its limited size and culture the company is flexible and easily adaptable to its surroundings. The organigram below displays the current functions and responsibilities within the organisation.

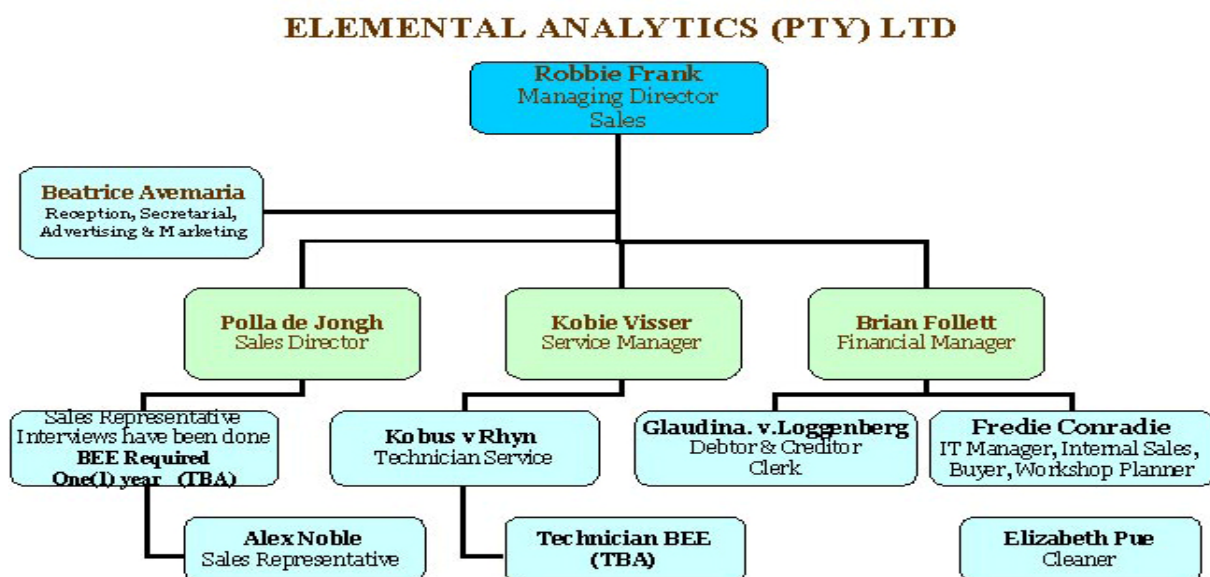


Figure 5.1: Organigram (source: Anonymous Entity)

<sup>1</sup> Sasol is a South African oil giant, one of the 500 biggest companies of the world; annual revenue close to 10 billion US dollars (2004)

The corporate culture of Anonymous Entity further showed strong similarities with the culture of South Africa as a whole. Hofstede (2001) found South Africans to have a predominately individual (IDV) and masculine (MAS) culture, see the figure (5.2). These characteristics were expressed in the way people interacted, show of force (verbally) and male dominance were frequent. In addition, while people were generally friendly and loyal, most seemed to be concerned with their own activities and field of expertise. The I-person played a central role in significant part of the conversations and decisions were mostly based on what was considered best of the individual.

The other two aspects included in the research of Hofstede relate to the power distance (PDI) and uncertainty avoidance (UAI). The medium score on uncertainty avoidance expressed itself through the strong loyalty displayed by the employees and the hiring of family members. In contrast the Managing Director showed great courage and created quite some uncertainty by buying out the company. In their daily routine the avoidance of uncertainty came about in the neck of the employees to stay to their routines, instead of opting for the new approach or instigate change. The power distance within the company was rather high in comparison to the findings of Hofstede. While the Managing Director was approachable, offices were open and openness was encouraged, it was clear who was in charge.

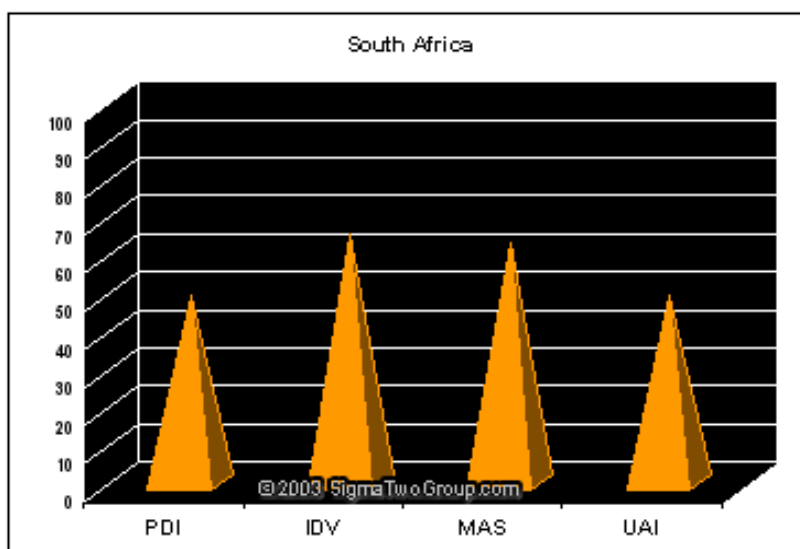


Figure 5.2: South African culture (source: [www.geert-hofstede.com](http://www.geert-hofstede.com))

### 5.3.Motivations

Back in the days when Anonymous Entity was still part of Point Analytic, the company used to be ISO 9000 certified. For some reason the system was badly maintained, which resulted in a loss of the certificate. When asked, management indicated that this happened amid the turbulence of transition during which Point Analytics struggled and was later bought out to become Anonymous Entity.

The change of ownership, as a consequence of the management buy-out, meant that Anonymous Entity would from now on be an independent operating entity. It needed to reassure current customers that the organisation would be able to continue to deliver high quality products and convince its suppliers that it was still the organisation of choice for foreign representation. Among Elemental Analytic's customers are large, multinational companies and governmental organisation, for these organisations doing business with a small organisation post a considerable risk. To limit their exposure, these organisation post strict rules and regulations, which need to be fulfilled by their potential supply before business can be conducted. Even though ISO 9000 certification was not a formal condition to remain a supplier, the ability to show proof of quality, audited by an external party, is deemed an advantage. In addition, chances are that it will become a condition in the near future. The same rational could be applied to the relation of Anonymous Entity and its suppliers.

A further consequence of the buy-out was that Anonymous Entity had to become self-sufficient in the sense that it had to generate enough income to support current and future operations, without the support of its parent. Current customers and outstanding order were sufficient to guaranty the survival of the company in the short term, but in the medium and long term new clients had to be gained. These potential new clients of Anonymous Entity are likely to be other large, multinational organisations, with similar requirements with regards to quality as its current clients. For these organisations the ISO 9000 certification will provide proof that

Anonymous Entity' quality is assured. This is expected play a signification role in their decision for their future supplier.

Besides the external benefits which ISO 9000 would offer, management had a keen eye on improving the company's internal processes. The consequences of the management buy-out had not limited itself to only the external environment of the company. During the transition period and shortly after the management buy-out was finalised, Anonymous Entity' management found that some of the organisations internal processes were struggling. A lack of documentation and control meant that files, which should accompany certain equipment, were not in place or hard to trace. This was especially concerning when the organisation was faced with a repair or addition to an existing project. The search for files caused for an higher workload and lower satisfaction among employees, who felt that they were spending a lot of time on things which should have required mere minutes. In addition, if the file was deemed lost, the organisation was forced to duplicate work which had already been conducted at an earlier time. Whilst these instances were not frequent, they are draining and discouraging. Standardisation of the documentation and record keeping processes should lead to an increased tractability. Furthermore, by standardising processes management would be able to decrease the organisation dependency on its current employees. By codifying knowledge, tasks would become more transferable in case of prolonged illness or dismissal. This would negate or at least reduce one of the more severe risk faced by a SME.

In summary, not only would the ISO 9000 certification provide Anonymous Entity with a means to reassure current customers, but it could also use it as a commercial tool towards potential clients and to structure and improve internal processes. The initial motivations for this implementation could be summarised in a quote from the Managing Director:

*"We want to implement ISO 9000 for accurate traceability, conformance to perform our tasks on the same methods, stop duplication and create better support for clients, partners and our own internal divisions."*

When the framework modelling the underlying motivation is applied to Anonymous Entity, the organisation would resemble an organisation with mixed reasons for ISO implementation. Elemental Analytic motivations would graphically appear as follows (figure 5.3):

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 5.3: Motivations Anonymous Entity

### 5.4.The implementation process

The lack of a big parent meant that Anonymous Entity could no longer profit from its parents the deep pockets to initiate long term projects. The need for short term results became a necessity if it wanted to make it through its first few years. These factors were of great influence on the manner in which Anonymous Entity approached the ISO certification process.

With the need for ISO established and management keenly aware of the lack of predominately financial resources, it made a choice. Management, trusting on its own familiarity with the standards, decided to appoint a student, familiar with the materials, as a quality manager to prepare the organisation for the certification process.

For the process of the implementation the materials from the previous certification were used as a starting point. The existing procedures were reviewed by management and discussed with the employees to update them such that they described the current situation. The process was toughed to be relatively easy and not too time consuming.

During these discussions it became apparent that, even though about half the employees recalled the previous certification, it has been long time since the procedures had been updated. In addition much of the work did not conform to the way it was written down and some procedures became obsolete or required significant modification to comply with the new requirements related to the release of the ISO 9001:2000 standard. This



suggested that management had underestimated the amount of effort it would take to prepare the company for ISO certification. Furthermore it seemed that even though management had experience with ISO, it lacked sufficient in-depth knowledge with regards to the requirements forthcoming from the latest modification made to the standard, ISO 9001:2000.

Based on these early observations it was decided to radically alter the implementation plan. Before a new plan would be developed, the organisations business processes were thorough reviewed. ISO 9001:2000 considers the organisation as a tool, the process, to create inputs into outputs. When it was applied to Anonymous Entity, the following figure (figure 5.4) emerged:

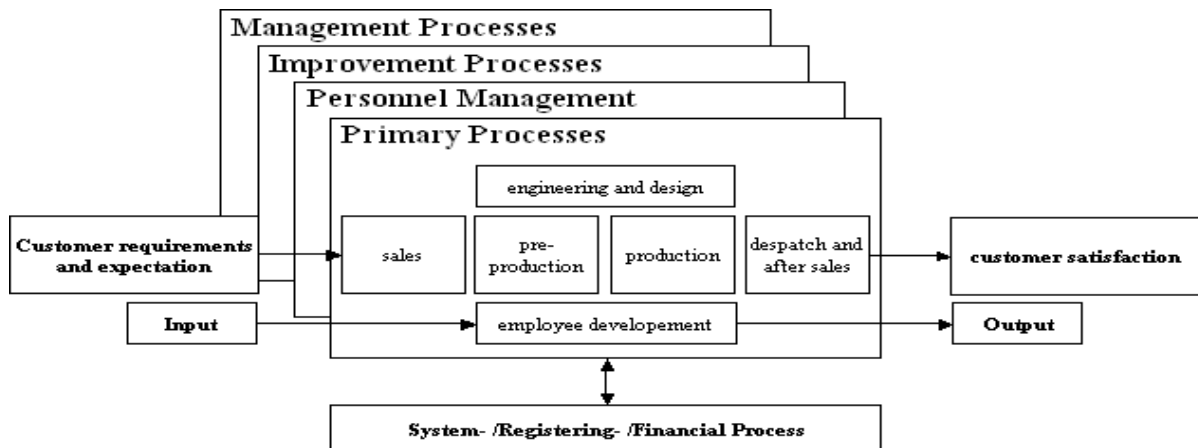


Figure 5.4: Anonymous Entity displayed as a process of inputs and outputs

This general picture was used as a basis to model the transformation of inputs received by Anonymous Entity into outputs. Flowcharts were used to describe every single operation performed in this process. From these flowcharts a picture of the company emerged encompassing the organisations as a whole. This picture in turn served as an umbrella under which the separate processes would be hung.

#### 5.4.1.A new approach: minimalist

From an initial survey among Anonymous Entity personnel it became apparent that all of the employees were aware of the fact that the organisation was preparing for the implementation of ISO 9000. About half the employees felt that they were being involved in the process even before the project was formally introduced. During interviews the more recent and younger hirelings, simultaneously being the least familiar with the system, were eager to provide assistance and ideas about ways in which they thought the organisation could improve. At the same time they seemed to use the process as a means to ventilate their personal concerns. The older and more experienced employees were less eager to get involved and conceived ISO as a burden placed on their shoulders by top management. They were aware of ISO implications: the procedural nature of the standard would ultimately limit their flexibility and freedom, while the documentation and record keeping would require them to spend more time on administrative tasks. Their loyalty and trust in management did pursue them to comply, however with limited effort. When asked, the Managing Director indicated that his biggest concern with regards to ISO 9000 implementation related to the organisations resistance to change and the requirements accompanying the standard:

*"The ISO implementation goes against how we previously worked and conflicts with our and my personal customs."*

This quote implicitly addresses the growing concern of top management with regards to the ISO 9000 implementation. The system appeared more difficult to comprehend, more time consuming to implement and in an attempt to maximise its benefits, would require fundamental change in the way business was currently conducted. With regards to the conditions in which Anonymous Entity was operating, the original plans were simply not feasible. As a consequence it was decided that the ISO would be implemented in a way that changed at little as possible. The focus of the ISO implementation process would from now on be certification. The optimisation of internal processes would remain an issue, but by disconnecting it from the implementation process this issue could be resolved at a more convenient time.

To increase the probability of a successful ISO implementation, employees were actively involved in the establishment of the ISO procedures. They received a short training in the processes which required some form

of change and were informed about the background and implications of ISO. Gradually the documentation required for ISO, quality, procedure and form manuals, began to take shape. On paper, Anonymous Entity seemed ready to become ISO certified as each individual procedure required by ISO 9001:2000 had been established. For a small organisation most procedures do not need to be very sophisticated. Furthermore, the usage of the prior ISO documents and the agreement to stick to current practises were possible, meant that the impact of the implementation - which for a large part simply equated to codification of current practises - was minor. Hence, from the 21 processes identified by Bhuiyan and Alam (2005), table 3.1, only a few were perceived as being difficult to implement.

In reality, the organisation was not yet ready to undergo a formal certification audit. Before any such audit could be performed, management had to ensure that the established procedures would be internalised in the organisation. Without internalisation, the progress made due to the implementation of ISO would quickly unwind when the sense of urgency related to and the attention of management for ISO waned. The organisations would not be able to live up to the ISO image of consistent quality, at least not quality according to its own document procedures. Table 5.1 provides an overview of the difficulties which Anonymous Entity had with the implementation of the 21 ISO processes established in appendix 1.

ISO process	Perceived degree of difficulty *
1. Customer needs assessment process	1
2. Customer communication process	1
3. Monitoring and measuring process	3
4. Product design process	2
5. Quality management process	2
6. Resource management process	3
7. Regulatory research process	3
8. Continual improvement process	4
9. Planning process	2
10. Market research process	1
11. Management review process	n/a
12. Training process	n/a
13. Production process	2
14. Service provision process	2
15. Document control process	3
16. Internal communication process	2
17. Product protection process	2
18. Purchasing process	2
19. Internal audit process	n/a
20. Record keeping process	3
21. Non conformance management process	3

**Table 5.1: Challenges of Anonymous Entity. \*(on a scale of 1 to 5, 1 being the least and 5 being the most challenging)**

As part of the internalisation process, management had to perform at least a couple management reviews and internal audits to ensure that the organisation was in compliance with the establish quality management manual and standards. It also had to make sure that the organisation complied with the new requirement forth coming from the changes made to the ISO 9000 standard in December 2000. This proved to be quite a challenge.

The challenge with the implementation of these processes was largely a consequence of the fact that management became increasingly distracted by matters relating to customer orders and projects. For the financial welfare of the company it was imminent that management was involved in the projects, even though this would hinder the progress on internal development. Without the simulating force of management, management reviews and internal audits did not materialise beyond the codification of the procedures



required to guide these processes – hence explaining the n/a in table 5.1. Management did make an attempt to execute the training procedure. On several occasions management distributed materials aimed at increasing the level of understanding of the current business and business environment among the employees. It scheduled morning meetings to discuss these materials and to provide further information. Unfortunately none of these meetings ever took place. Hence the training procedure never really made it past the document procedure in the quality manual. Besides the issues revolving around processes directly related to management, Anonymous Entity struggled with the implementation of the process related to “continues improvement”, which required the application of the plan-do-check-act cycle. Both employees and management were used to plan and do. If their plan failed or did not result in the foreseen benefits, they would simply plan and do again. In addition, these processes were seldom written down and improvements did not make it into the codified procedures.

For the welfare of ISO 9000 successful internalisation of these processes are vital. Without internal checks or trainings it is almost certain that the progress made as a consequence of the implementation process, will be gradually reversed. Internalisation is unlikely.

The description of the process which occurred at Anonymous Entity paints an interesting picture of the implementation process of ISO 9000 in an SME. It gave an impression of the motivations which lead up to the decision to initiate the implementation process and describes the challenges which the organisation perceived while making the change. The next section will elaborate on the underlying cause of the challenges perceived and explain the difficulties and their relations as they were observed in Anonymous Entity.

## 5.5. The conditions

The theoretical model developed throughout this research argues that the challenges which an organisation encounters during the ISO implementation are related to the main motivation to apply for certification. The motivation of an organisation to implement ISO 9000 influences the severity of the 5 difficulties mentioned in section 3.2, which in turn influence the perceived degree of difficulty with the implementation of the 21 ISO processes (figure 3.3).

The previous sections of this chapter provided an overview of the motivations of Anonymous Entity to apply for ISO certification. In addition, the description of the implementation process provides an indication of the main difficulties which Anonymous Entity encountered during the ISO 9001:2000 implementation process. To provide a comprehensive view of the company, this section will discuss the five difficulties causing these challenges in greater depth.

The conditions which Anonymous Entity experienced show strong similarity to those encountered at other SMEs implementing ISO 9000. The main impact related to the condition related top management commitment. Initially management was motivated, however, shortly after the implementation process was initiated, and the first clouds appeared on the horizon, management commitment began to wane. The decrease in managerial commitment eventually caused the failure to execute the vital ISO processes related to internal auditing and management reviewing. This process of decline of managerial commitment was elaborately described in the sections above.

Being a small organisation, Anonymous Entity struggled with the amount of resources required to successfully implement the ISO processes. The lack of predominately financial resources, and in a later stage time, negatively influenced the commitment of management to the ISO implementation process. Subsequently, the lack of resources negatively influenced the organisations understanding of the standard’s requirements as the organisation became reluctant to invest in materials related to the standard and time to increase its level of comprehension.

Early on in the implementation process, management had assumed that the new ISO format would be relatively simple and easy to comprehend. While the standard is far from complex, it does require some scrutiny to really work out the details. This was something which management had neglected, resulting in low understanding of the standard’s requirements. An elevation of the organisations level of understanding would require additional investments in ISO related materials and *training*. Congruently, increased understanding raised the awareness among top management that ISO certification would be accompanied by substantially higher investments related to external audits and certification. Hence: explaining the negative relation between understanding and resources.

Section 5.4 provided a description of the commitment of employees to the ISO implementation process. Recent hirelings were reasonably committed to the standard, while long term employees were hesitant to accept the newest management practise. This moderate commitment to the standard did little to raise management own commitment, nor did it have a great deal of impact on processes related to the documentation and control.

Fortunately Management of Anonymous Entity did have some experience with the implementation of quality management systems and therefore documentation and control related procedures. So did some of the older employees employed by the company. This experience came in handy during the identification of the various steps taken to complete a specific procedure. It also meant that some employees were used to keeping records. Most had done so reluctantly. By all accounts, employees showed limited appetite for the increase amount of documentation and rigidity introduced by ISO 9000. The additional effort required to follow the recently introduce procedures was rather experienced as an administrative burden, instead of a handy tool which would ultimately allow the organisation to improve its operations. While it cannot be said that this was the cause of the abundance of the previous ISO certification, it all contributed. Implementation of the new system had to overcome these feeling and install a sense of urgency and importance.

Simultaneously, it needed to overcome the reluctance felt by top management seemed for the job of monitoring, measuring and record keeping. Trusting on the experience of its employees, management had a neck to let them reign freely. With regards to the employee commitment and documentation & control, it seemed that for as long as changes were minor, the level of difficulty was limited.

Figure 5.5 shows the conditions and their relations as they were encountered within Anonymous Entity.

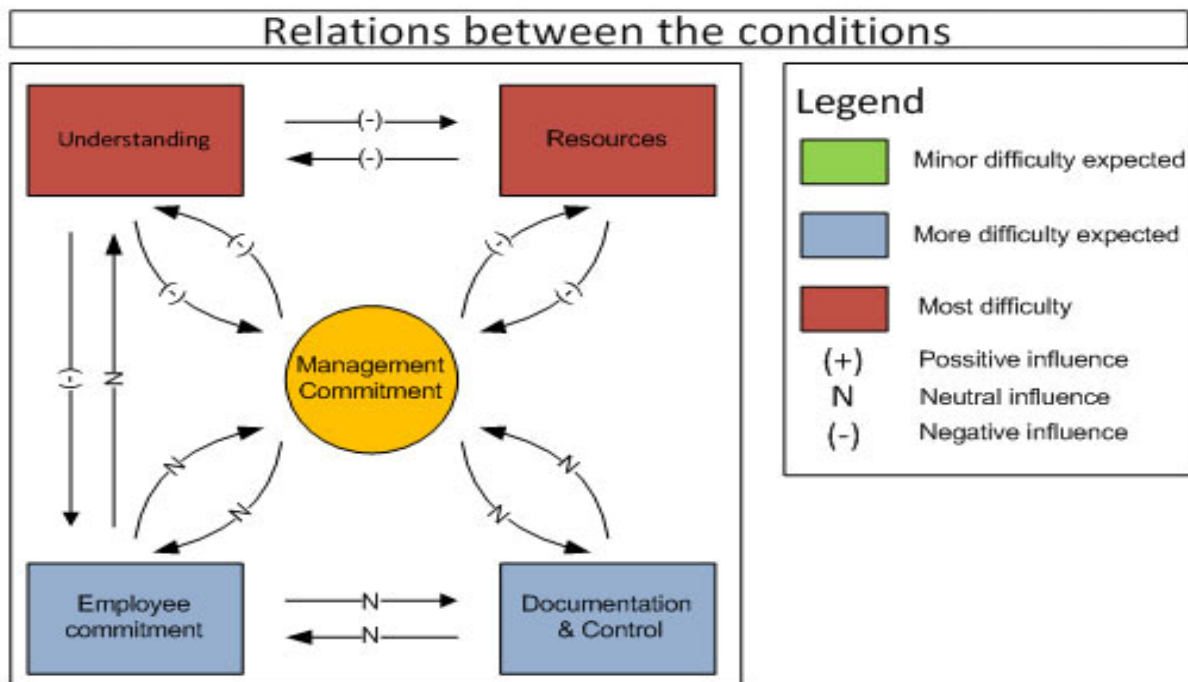


Figure 5.5: conditions experienced by Anonymous Entity

## 5.6. Conclusion

Five months after the attempt to implement ISO 9000 was initiated, the effort came to a halt. A lack of resources meant that the organisation had to go through some strategic redirections. The focus shifted, some employees were replaced and the organisation moved to a new premises. The remaining resources were put to use on more pressing issues revolving around legislative requirements, Black Economic Empowerment, and customer requirements.

ISO was not abandoned; however, additional investment would be delayed until the situation improved. Until then, the established quality management system and procedures would be maintained as an indication of ISO compliance. The organisation would indicate its ability to assure quality by self and by customer certification, the first two steps toward ISO certification.

Nonetheless the process of ISO implementation in Anonymous Entity presents an interesting case of an SME struggling with the introduction of a quality management system. Anonymous Entity seemed to have been motivated by the opportunity to improve its internal process as well as the opportunities presented in its external environment. To realise these opportunity it was eager to initiate the change, but found the proposed system more difficult to implement than it had originally assumed. It struggled with process which required significant commitment of management and resources, such as management reviews, audits and training. It was shown that these difficulties were rooted in the 5 challenges related to ISO implementation.

# Chapter 6: Discussion

## 6.1.Introduction

The previous chapter provides an interesting example of a company which struggled during the implementation of an ISO 9000 quality management system. Not only did the chapter provide information about the context of the organisation, it also included a description of the motivations and difficulties the company encountered during the implementation process.

The motivation of Anonymous Entity will be used to group the organisation into one of the four categories of the framework developed in chapter 4. Subsequently, there will be a comparison between the conditions and difficulties Anonymous Entity encountered and those which are shown by its reference group. This discussion will provide further insight into the ability to use motivations to predict the difficulties which an organisation will experience during ISO implementation.

## 6.2.Classifying Anonymous Entity

The motivations of Anonymous Entity, as shown by figure 6.1, show a mixed motivated organisation. When this figure is compared to the motivations of both categories of mixed organisations, Anonymous Entity' motivations show strong similarities with organisations with *mixed reasons, focussed on certification*.

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 6.1: Motivations Anonymous Entity

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 6.2: Company with mixed motivations, focussed on certification

Even though the original motivation of the Anonymous Entity is mixed, it seemed to focus on the external reasons. Management never explicitly mentioned their priorities among their main motivation, but actions speak louder than words. When the organisation faced substantial difficulties during the implementation of the standard, management easily discarded the effort directed to obtain internal benefits, giving preference to the external ones. Also, Management of Anonymous Entity did not regard the ISO 9000 standard as a first step towards TQM, which is one of the key characteristics of organisations in the *Company with mixed motivations, focussed on quality management* category.

The only significant distinction between the *mixed reasons, focussed on certification* category and Anonymous Entity is the fact that Anonymous Entity was not directly forced by any of its clients to obtain the standard. It did, however, feel a strong urge to assure quality. These findings justify the classification of Anonymous Entity as an organisation with mixed motivations focussed on certification when the process of implementation was initiated.

## 6.3. Motivation, conditions and difficulties; are they related?

### 6.3.1. The conditions

Organisation with mixed motivations, focussed on certification, generally perceive a reasonable amount of difficulty with the implementation of ISO 9000, see section 4.3.3. The conditions Anonymous Entity encountered during the ISO implementation process, section 5.5, are reasonably similar to the ordinary problems faced by SMEs during a similar process.

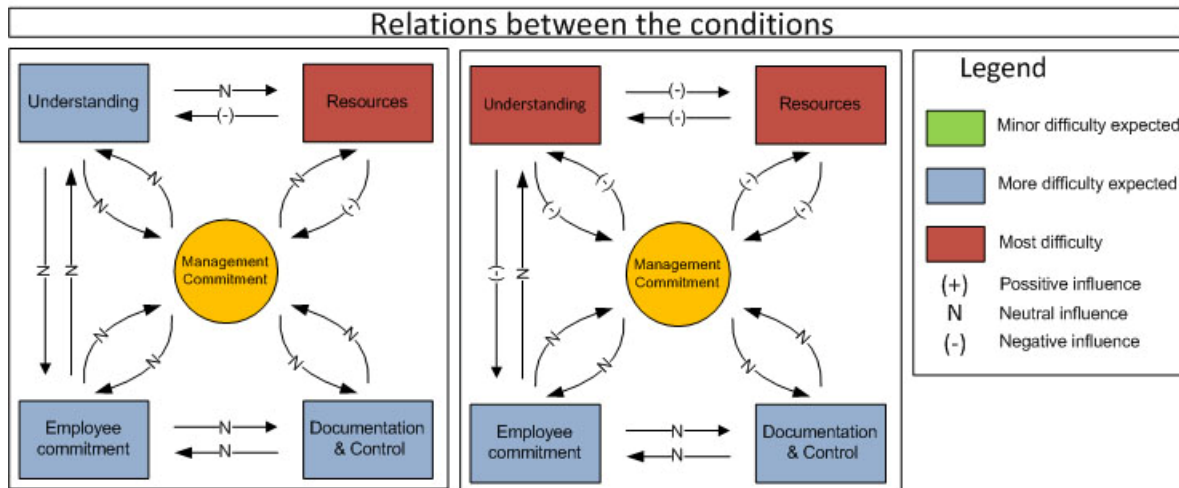


Figure 6.3: conditions of the reference group (left) compared to Anonymous Entity(right)

The most apparent is the difference in the understanding of the ISO 9001:2000 standard. Where most organisations within this category show a reasonable understanding of the standard, Anonymous Entity seemed to struggle with this issue. The theory presented in section 4.3.3 states that management of organisation in the reference group is originally sceptic toward the standard, but commitment increases with exposure. This is in sharp contrast to the findings at Anonymous Entity. At the outset, management seemed to lack a thorough knowledge of the system; however, it was eager to start the implementation process. Additional knowledge made it clear that the implementation would require a substantial larger investment, which had a negative impact on management motivation. A reasonable explanation for this difference could be found in the angle from which Anonymous Entity approached the ISO implementation. Where most organisations in this category are forced to become compliant by a major customer, Anonymous Entity was not. It was familiar with the system and considered it an appropriate manner to show that quality was assured. If possible, it could improve some internal processes along the way. Anonymous Entity approached ISO with a strong bias and high confidence. The process was being conceived as easy and short. Things turned out differently and management commitment waned under the increase of understanding.

### 6.3.2. The difficulties

The observation that management commitment waned, while organisations within the same category witnessed an increase, marks an important and probably crucial difference. Section 3.2 explained the importance of management commitment during the implementation process of ISO 9000. This factor is the cause of the fact that the implementation of ISO 9001:2000 at Anonymous Entity remains unfinished. It also explains why Elemental struggled with different processes than the organisation in the same category. The processes which Anonymous Entity found most difficult to implement, were those processes related to: continuous improvement, training, management review and internal audits (for elaboration on the difficulties Anonymous Entity encountered, please see to chapter 4). This is quite similar to the theory presented in section 4.3.3 based on the survey performed by Yahya& Goh (2001). As was indicated; Anonymous Entity should have experiences most challenges with the implementation of:

- Continuous improvement - as the 9001:2000 equivalent of Corrective and preventive action 9001:1994 - (0.20-0.38, 3.18)
- Product design process - as the 9001:2000 equivalent of design control 9001:1994 - (0.19-0.42, 2.85)
- Quality management process - as the 9001:2000 equivalent of quality system 9001:1994 (0.19-0.42, 2.67)

- No direct equivalent exists for the ISO 9000:1994 process Management responsibility, however management responsibility is best captured in the ISO 9001:2000 process management review - (017-0.37, 2.76)

Please note that the first number between the brackets indicates the range of degree of perceived difficulty as found by Bhuiyan & Alam (2005) for the 9001:2000 equivalent, where 1 is the highest possible score. The lower bound of the range consists of the score found for companies with a developmental motivations to implement ISO 9000. Equivalently, the upper bound in the score found for non-developmental motivated companies. The second number indicates the score found by Yahya & Goh (2001) for the ISO 9001:1994 process, 5 point likert-scale.

Anonymous Entity struggled with the implementation of the process of continuous improvement. As was mentioned in the case study, the organisations was not used to the PDCA-cycle (plan do check act), which is applied in ISO 9000. The improvements can about in an incremental fashion. For each problem a solution was found, however these solutions were not the result of formal procedures, e.g. the steps taken to solve a specific problem were not documented or approached based on formal instructions. These solutions were the result of ingenuity, market knowledge and one of approaches. Implementation of continuous improvement processes required a change of corporate culture and internalisation of this concept in the routines.

The problems with the implementation of the processes related to quality management and management reviews (or management commitment ISO 9000:1994) are directly related to the waning managerial commitment to the ISO 9000 implementation process. These processes never fully materialised due to the simple fact that the process came to a halt before this process was finalised.

Interestingly, theory and practise diverge with regards to perceived degree of difficulty implementing the product design, customer needs assessment and customer communication process. The latter two are not mentioned as the most difficult process to implement for a company within this category, however, were found to cause many headaches for companies in the other 3 categories. In addition, these processes, especially at Anonymous Entity, show a great deal of entanglement. Therefore it was chosen to shortly address these difficulties in this paragraph.

The difference in perceived degree of difficulty in relation to customer needs assessment, customer communication and product design could be found in the nature of Anonymous Entity business and in the task description of its top management.

Top management of Anonymous Entity has a dual function and fulfils the role of both manager and sales person. Being a sales person, management is frequent in direct contact with its customers, which provides it with a good feeling for its market. This provides a partial explanation for the limited degree of difficulty perceived in the customer communication and customer needs assessment.

But possibly more important is the nature of Anonymous Entity' business. Anonymous Entity sells analysers and analyser systems to multinational clients and governmental organisations. Analysers and systems are very specific products, which are mostly build according to customer specifications. Analysers can only measure the substances they are specifically designed for, hence a deep understanding of the customer's requirements is a prerequisite for doing business. This becomes even more essential when systems are involved. Not only do they require specific analyses, but also a composition of panels, tubes, meters etc. crafted in such a way that they conform to the customer's demands. For each of Anonymous Entity' products it has to have a deep and thorough knowledge of its customer. Every product needs to specifically address the needs of each individual customer. Every system and every analyser has to be specifically designed to meet these needs. The only way to obtain sufficient information is by constant communication. Hence communication and the identification of customer needs is crucial to Anonymous Entity survival and almost a second nature to the organisation.

## 6.4. Conclusion

In summary, it seems that applying the framework developed in this research to the initial motivations of Anonymous Entity provides a good indication for the difficulties and conditions the organisation encountered. The only discrepancy expressed itself in the understanding of the ISO 9000 standard and subsequently the commitment of top management to the development process. The decline of managerial motivation is, however, not factor captured within this research. Further research into the influence of a shift in motivation might provide additional insight into this topic.

Prediction of the difficulties which Anonymous Entity should encounter based on its motivations was successful. The difficulties predicted based on literature are quite similar to those encountered at Anonymous Entity. Hence it could be concluded that case study provides evidence supporting the use of motivation of an

organisation to predict individual processes which the organisation will find most challenging to implement. In addition, there appeared to be a great deal of similarity between the conditions observed within Anonymous Entity and those found in its reference group based on its motivations.

Two reservations need to be made in regards to the applicability of these observations. Firstly, the duration of the study was relatively short. A simple ISO implementation process could easily last a year, if not longer. Difficulties and conditions could emerge slowly, hence the results could be influenced by the short duration of this case study. If a longer time frame was chosen for the same experiment, different difficulties or conditions might have surfaced. Secondly, and more important, the theory is based on organisations which successfully implemented ISO 9000. Anonymous Entity never finalised its implementation process. This fact reduces the validity of results derived from the case study and surely limits the range of this study. It appears that the nature of the business and the structure of an organisation have a substantial influence on the perceived degree of difficulty with the implementation of individual processes, as explained in section 6.3. Needless to say, one case study hardly provides enough evidence to reject a theory based on multiple literature sources and surveys. Further research on this issue will be required to provide a conclusive answer whether to reject or confirm the research model.

# Chapter 7: Conclusion

## 7.1.Introduction

The recent decades witnessed an increasing number of small and medium size enterprises initiate the process to become ISO 9000 certified. Driven by a diverse mix of motivations, these organisations opted for a standard which has caused much controversy within the scientific community. ISO 9000's methods, difficulties and benefits had been the subject of many debates. Nevertheless a unifying perspective on the merits of ISO is missing. It does; however, seem that the benefits an organisation can expect from certification depend on certain organisational specific characteristics. This paper presented an attempt to categorise organisations based on one specific organisational trait: its motivation to implement ISO 9000. Based on this categorisation a model was developed to examine whether the areas in which the organisation was likely to encounter difficulties could be predicted. This brings us to the research objectives:

- o *To achieve a better understanding of the motivation of SMEs for the implementation of quality management initiatives; and*
- o *to establish a relationship between the motivations behind the quality management system implementation decision as mentioned in literature and the difficulties encountered by SMEs during the implementation of a quality management system;*

In this final chapter these research objective will be discussed based on the theory presented throughout this paper. The final section of this research will present some final recommendation and directions for further research.

## 7.2.Using motivations to predict difficulties

This research set out to achieve a better understanding of the motivation of SMEs for the implementation of quality management initiatives and to establish a relationship between the motivations behind the quality management system implementation decision as mentioned in literature and the difficulties encountered by SMEs during the implementation of a quality management system.

Literature related to the motivations of organisations which implemented ISO 9000 is quite extensive and many diverse reasons are mentioned. In an attempt to distinguish organisations based on their motivations, Jones at al. (1997) established a condensed framework which separates companies based on their main motives to implement ISO 9000. The framework makes a distinction between those companies who derive their motivation from internal reasons (developmental, external (non-developmental) reasons or a mixture of both. A thorough literature study verified that this model will provide a comprehensive overview of the motivations mentioned by SMEs to initiate the ISO implementation process given that the reason "first step towards TQM" is included. In conclusion main motivations of organisations to implement ISO 9000 can be summarised in the table below (figure 7.1):

Developmental	Mixed reason	Non-developmental
desire to improve the company's internal processes		requirement of major customer
desire to enhance the overall competitive performance of the organisation		desire not to be locked out of future tendering processes or markets
First step towards TQM		realisation that it is progressively becoming a requirement of doing business
		marketing and public relations tool

Figure 7.1: Framework condensing the motivations of SMEs to apply for ISO 9000 certification



However diverse the motivations of organisations to embark on a journey towards ISO certification might be, it appears that most of the difficulties SMEs encounter are caused by a just small number of underlying factors. The main conditions faced by SMEs relate to (Calingo et al. 1995; Quazi&Padibjo 1998; Brown and Van der Wiele 1997 and Chin et al. 2000):

- Constraints on resources;
- Lack of top management commitment;
- Lack of understanding of the standards requirements;
- Lack of employee commitment; and
- Documentation and control.

Where top management commitment could be interpreted as a dummy variable representing the motivations with which organisations initiate the ISO implementation process. Thereby it provides a direct link between the motivations and the difficulties.

The influence of these 5 conditions was indicated by the perceived difficulty which an organisation experiences with the implementation of the ISO processes. Brown and Van der Wiele (1996), Bhuiyan and Alam (2005) and Yahya and Goh (2001) found that organisations initiating the certification process based on developmental reasons experience significantly less difficulties with certain processes than non-developmental organisations. Bhuiyan and Alam (2005) found that companies that seek registration for internal reasons perceive a significantly (Statistically different at 5%) lower degree of difficulty in 5 distinctive processes: continual improvement process, management review process, product protection process and record-keeping process. Yahya and Goh's (2001), investigating the relationship between the perceived degree of difficulty organisation experienced with the implementation of ISO 9000:1994 and the motivation with which they initiated the certification processes, survey showed that there is a significant difference in the perceived degree of difficulty between organisation which are motivated by developmental reasons and those who are motivated by non-developmental reasons.

These results were used to create a theoretical model, which allows an organisation to predict the difficulties and challenges it is likely to perceive during the implementation of ISO 9000, by comparing its motivations to those of the reference groups. The model makes a distinction between 4 sets of motivations: Company with a developmental motivation, Company with mixed motivations, focussed on quality management, Company with mixed motivations, focussed on certification and Companies with a Non-developmental motivation.

To test the validity of the model, a case study was conducted in South Africa. This case study confirmed that the main motivation of an organisation to apply for certification will provide an indication for the degree of perceived difficulty of ISO implementation.

In conclusion it seems that, based on the analysis presented here within and the case study performed in South Africa, the motivations of an organisation can be used by SMEs to predict those processes which they are likely to find most difficult to implement. Awareness of these likely problems should allow an SME to take precautions and decrease the severity of the implementation conditions.

### 7.3.Lesson learnt

This thesis was written after a period of research within Anonymous Entity, the company used as subject for the case study presented in chapter 5. During this period Anonymous Entity initiated the ISO implementation process and struggled for 5 months in its attempt to meet the ISO requirements, before the process was abandoned. During the implementation process of ISO 9001:2000 Anonymous Entity perceived various problems as was explained in chapter 5. While some problems were expected, the severity and impact came as a surprise to the parties involved.

This thesis was written in an attempt to provide additional insight in the difficulties and conditions revolving around the implementation process of ISO 9001:2000 in an SME. The main objective was to provide SMEs a tool which could be used to predict the degree of difficulty which it should expect during the implementation processes. Awareness of these challenges and knowledge of the conditions influencing the ISO implementation process should allow SMEs to judge whether ISO is a realistic option.

The model created in this paper is aimed to do just that.

Based on the extensive literature study and the insights gained during the case study performed at Anonymous Entity it seems fair to state that: while most SMEs will not find ISO hard to implement, this process should not



be underestimated. A sound implementation of the standard is likely to take a significant amount of resources and will require a thorough understanding. In addition to maximise the benefits, organisation should ensure that the processes are well maintained and regularly reviewed. Organisations are well advised to ensure that it has a thorough understanding of the standard and sufficient resources to cope with unexpected problems.

The decision to initiate the ISO implementation process appears to be based on a variety of underlying motivations. Some organisations are attracted to the standard for the possible internal benefits which could be obtained by standardising and optimising processes. In contrast, other organisations feel forced to comply with the requirements of ISO 9001:2000 due to governmental regulations or customer demands.

Research showed that organisations with a developmental (or internal) motivation will perceive lesser degree of difficulty than organisations with a non-developmental motivation. The model created in chapter 4 shows that different motivations will have a different impact on the conditions and thereby the difficulties. Therefore organisation should try to accurately define what factors are driving them to initiate the implementation process. It should be taken into account which motivations have strict priority, especially during set-backs. Failure to do so might result in misinterpretation of the severity of the conditions in the organisation. This was clearly shown in the case study presented in chapter 5.

In summary, the most important lessons drawn from this research are:

- Determine your motives before you initiate the implementation process, such that you can fairly judge your options;
- Be fair about your motives and determine their priorities. If top management is not committed to the implementation process, it is very unlikely that your motivation is truly developmental;
- Make sure that you have sufficient resources to complete the implementation and that you comprehend the requirements set by the standard; and
- Last but not least plan for the worst.

### **7.3.Recommendation for further research**

The conclusions in this research are mainly founded on findings in literature, relating findings from different sources and by extrapolation of these findings into a slightly different context to create a comprehensive picture. While this research method might provide seemingly sound conclusions, these conclusion need to be confronted with the empirical reality. This paper made a first attempt to test the findings, however, the simple case study used as an illustration does not allow for generalisation of the findings.

The most interesting area on which empirical research could focus, would be the relation between the underlying motives and the challenges organisation perceived during the implementation process. In this research a variation to the division proposed by Brown and Van der Wiele (1996) was chosen to create 4 categories of organisations with a shared set of underlying motivations. By establishing a second category of mixed motivated organisations, the whole spectrum ranging from developmental towards non-developmental was covered. This additional separating might explain the results found by Yahya and Goh (2001), which indicated that mixed organisations will experience a similar degree of difficulty during the implementation of ISO 9000 as non-developmental organisations. Further research could focus on this separation based on the organisations motivation and use a quantitative means to test if it could be used to predict the challenges an organisation with ISO certification.

Other areas where further research could provide valuable insights is the difficulties organisations experience with the initiation of the certification process. The relations between the difficulties (management commitment, resources, understanding, documentation & control and employee commitment) have been addressed in this paper, however, remained qualitative. Further research might be able to provide quantitative relations between the difficulties, allowing companies to focus their resources on those areas where they can be most beneficial.

A third recommendation for further research lies outside the scope of this project and relates to the possible benefits organisations obtain from ISO implementation. The inclusion of these benefits in the proposed framework in this paper will result in a comprehensive framework, which could be of much value to small and medium size enterprises. By identifying its motivations, an organisation would be able to obtain information with regards to the benefits and problems it is likely to encounter by initiating the certification process. Based on these findings it should be able to make a more informed decision whether or not to initiate the process to become ISO 9000 certified.

## 7.4. Reflection

This short section of this thesis is dedicated to a reflection of the bachelor assignment. Here I will shortly reflect on my experiences in South Africa and how I perceived the process of writing an elaborate research paper.

The results of my Bachelor Assignment are two-fold. On the one side I believe that I did fulfil the requirements set from the educational point of view. I have applied many from the theoretical concepts in practice. I have read large quantities of literature to investigate ISO and TQM to be able to judge how and if ISO should be implemented at a small company like Anonymous Entity. Whether the task that I performed in South Africa was at an academic level is up for discussion. I believe it was and I will try to explain why below. Some, however, believe that ISO is such a basic framework that it just requires the researcher or employee to fill in the blanks. I am not sure what kind of independence level is expected from bachelor students, but I think I have over shot the mark. Starting out as one of the first student really searching for a bachelor assignment has caused me quite some problems. Real objectives had yet to be drawn up. I received much conflicting information, which required me to make some last minute adjustments and even to delay my departure. This caused much frustration and confusion. Furthermore while residing in South Africa I sometimes experienced a lack in means of communication with the Netherlands or had to wait a long time for responses. All in all I have worked on my project quite independent, which might not have led to the best results possible, but resulted in a very educational experience.

Above I did, however, mention that I only believe that I have partly fulfilled the requirements set for the bachelor assignment while I was in South Africa. This is large because of my inability to finish the project combined with the results of my project.

During the first couple of weeks and after studying large quantities of literature it became obvious that ISO might not be the most applicable system to implement in a small organization like Anonymous Entity.

Roughly stated, ISO is a system focused on process improvement by implementing incremental innovations. Anonymous Entity is a small corporation working on a project basis, where there is little room for incremental innovations relating to the production process. Furthermore, ISO-certification cost a lot of money and time, both to maintain and obtain. Lastly, Anonymous Entity was due for some thorough reorganisations. The need for this reorganisation became only apparent in a later state of my internship, when I already analysed most of the procedures and documented the flow of materials through the company. It did however emphasise the correctness of the decision made in a prior phase, scilicet that I would prepare Anonymous Entity for an ISO application, but that the decision to go through would be made in some later stage.

Until then, Anonymous Entity will claim that it works according to ISO 9001:2000 and has my documents to show for it. This is not the same as being certified, but it might be the best of both worlds for the company. It shows that special attention is paid to quality and it saves both a lot of time and money.

For me on the other hand it took away a reasonable part of my research, which was even more stripped down after a careful analysis of the procurement process of Anonymous Entity. The resource management system is hardly any part of ISO. The standard requires that a company keeps documentation concerning its ordering and procurement processes, but does not explicitly prescribe any means to do so. The procurement process within Anonymous Entity is simple. There are some large suppliers for the analytical equipment and some local suppliers delivering the necessary tubing, nuts and bolts. As a small company, Anonymous Entity maintains a small inventory, mostly consisting of fundamental spares. Orders are placed on a project basis. As the nature of these projects is quite diverse, batch ordering is hardly an option. Research in this field was limited and the later reorganisation diminished its necessity.

These setbacks required me to change the direction of my assignment. In the end I chose to be useful for the company and try to make a contribution by focussing on the implementation of ISO and forgoing most of the effort directed at the scientific aim of the bachelor assignment. Obviously much scientific sources were consulted while implementing ISO, mostly related to motivation, adaptation or simply change management. In addition sources were used to establish the various questionnaires, processes and procedures. While I considered these sources valuable, I noticed that the interest of the organisation was mainly focussed on its application. Nor management nor the employees cared about the fact that mister Kotler had said this and that, but were very interested in the directions aimed at managing organisational change.

The ISO implementation process could and should have been quite an interesting challenge for a bachelor assignment, however, at the time lacked the insight to transform it into a sensible research theme. In

retrospect it seems that this process might have fulfilled the requirements set for the bachelor assignment on its own. Therefore I decided to slightly change the direction of my research. I became increasingly interested in questions such as:

*Why had the implementation remained unfinished? Which barriers had we faced during the implementation process? And could or should we have known this in advance?*

From my experience, it seemed evident that the support of management is a decisive factor in the ISO implementation process. When management commitment waned, the implementation of the ISO processes became substantially harder. However, it is doubtful that the unfinished implementation and the barriers we faced during the implementation process were entirely due to a lack of managerial support. Which raises the question which other factors contributed to the events that happened? And, maybe more interesting, is Anonymous Entity an exception or do more small organisations struggle with the implementation of ISO?

These questions eventually made me continue the project, which led to the thesis you have just finished. With renewed energy I read numerous articles related to ISO, quality management and implementation theory. Not all of which made it into this paper. Most, however, did contribute to the background knowledge to analyse the most specific papers, to interpret the findings presented and to formulate the theory and conclusions in this thesis.

While writing this paper I had to walk a fine line between theory and practise or objectivity and subjectivity. Having already performed a case study prior to writing the theoretical background and formulating the hypothesis, I had to carefully guard my objectivity to prevent confirmation of my personal bias. It proved to be hard to find sufficient evidence in literature to allow for the inference of certain relations and lacking the data to test specific relations quantitatively, some relations had to be inferred based on qualitative observations. This is not wrong, even though people seem to place more confidence in numbers.

Looking back, I must say that I slightly underestimated the amount of time and effort required to finalise this project. The two months I had planned to devote to this writing quickly became 4. This was probably due to the fact that the scope was not narrowly enough defined. I wanted to know all, while I might have been better off researching just some. In addition, due to the further delays, I could no longer give the project strict priority over other jobs which were waiting. In the end I must say that I am glad it is finished and I am happy with the results I produced, although it goes without saying that in hindsight I would have done things differently.

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## Appendix 1: The 21 ISO processes.

<p><i>Continual improvement process:</i></p>	<p>Each organisation should continually seek to improve, rather than wait for a problem to reveal opportunities for improvement. Potential improvements can range from short projects to long-term activities. Examples are:</p> <ol style="list-style-type: none"> <li>I. Sitting down with the most important suppliers in order to increase the effectiveness of the communication and to reduce non-conformances;</li> <li>II. Making an action plan to reduce the reject from a certain type of machine;</li> <li>III. Finding opportunities to reduce the delivery time.</li> </ol> <p>Continual improvement should be based on all relevant information available. Audit results and other data should be analysed and compared with the policy and objectives so that corrective and preventive actions can be taken to ensure continual improvement. Management reviews should be used as tools for enhancing this improvement process.</p> <p>Often, it is not practical or advisable to take all needed actions at once, so it becomes necessary to prioritise improvement actions on the basis of their status and importance to determine when action should be taken. The output of the continual improvement planning process should be a list of improvement initiatives and anticipated results. The effectiveness of these actions should be reviewed as a normal part of the corrective/preventive action processes or during management reviews.</p>
<p><i>Customer communication process:</i></p>	<p>The organisation shall determine and implement effective arrangements for communicating with customers in relation to</p> <ol style="list-style-type: none"> <li>I. product information;</li> <li>II. enquiries, contracts or order handling, including amendments; and</li> <li>III. customer feedback, including customer complaints.</li> </ol>
<p><i>Customer needs assessment process:</i></p>	<p>The organisation shall determine:</p> <ol style="list-style-type: none"> <li>I. requirements specified by the customer, including the requirements for delivery and post-delivery activities;</li> <li>II. requirements not stated by the customer but necessary for specified or intended use, where known;</li> <li>III. statutory and regulatory requirements related to the product; and</li> <li>IV. any additional requirements determined by the organisation.</li> </ol>
<p><i>Document control process:</i></p>	<p>Documents required by the quality management system shall be controlled. Records are a special type of document and shall be controlled according to the record keeping process.</p> <p>A documented procedure shall be established to define the controls needed:</p> <ol style="list-style-type: none"> <li>I. to approve documents for adequacy prior to issue;</li> <li>II. to review and update as necessary and re-approve documents;</li> <li>III. to ensure that changes and the current revision status of documents are identified;</li> <li>IV. to ensure that relevant versions of applicable documents are available at points of use;</li> <li>V. to ensure that documents remain legible and readily identifiable;</li> <li>VI. to ensure that documents of external origin are identified and their distribution controlled; and</li> <li>VII. to prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose.</li> </ol>

<p><i>Internal audit process:</i></p>	<p>The organisation shall conduct internal audits at planned intervals to determine whether the quality management system:</p> <ol style="list-style-type: none"> <li>I. conforms to the planned arrangements, to the requirements of this International Standard and to the quality management system requirements established by the organisation; and</li> <li>II. is effectively implemented and maintained.</li> </ol> <p>An audit program shall be planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency and methods shall be defined. Selection of auditors and conduct of audits shall ensure objectivity and impartiality of the audit process. Auditors shall not audit their own work.</p> <p>The responsibilities and requirements for planning and conducting audits, and for reporting results and maintaining records shall be defined in a documented procedure.</p> <p>The management responsible for the area being audited shall ensure that actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities shall include the verification of the actions taken and the reporting of verification results</p>
<p><i>Internal communication process:</i></p>	<p>Top management shall ensure that appropriate communication processes are established within the organisation and that communication takes place regarding the effectiveness of the quality management system.</p> <p>Management should ensure that people have the information necessary in order to be able to do their work, and ensure that quality requirements, objectives, and achievements are communicated to all relevant personnel.</p>
<p><i>Management review process:</i></p>	<p>Top management shall review the organisation's quality management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. This review shall include assessing opportunities for improvement and the need for changes to the quality management system, including the quality policy and quality objectives.</p> <p>Records from management reviews shall be maintained .</p> <p><b>Review Input</b></p> <ol style="list-style-type: none"> <li>I. The input to management review shall include information on</li> <li>II. Results of audits;</li> <li>III. Customer feedback;</li> <li>IV. Process performance and product conformity;</li> <li>V. Status of preventative and corrective actions;</li> <li>VI. Follow-up actions from previous management reviews;</li> <li>VII. Changes that could affect the quality management system; and</li> <li>VIII. Recommendations for improvement.</li> </ol> <p><b>Review Output</b></p> <ol style="list-style-type: none"> <li>I. The output from the management review shall include any decisions and actions related to</li> <li>II. Improvement of the effectiveness of the quality management system and its processes;</li> <li>III. Improvement of product related to customer requirements; and</li> <li>IV. Resource needs.</li> </ol>
<p><i>Market research process:</i></p>	<ol style="list-style-type: none"> <li>I. Design the Market Research Process</li> <li>II. Document the Market Research Process</li> <li>III. Implement the Market Research Process</li> </ol>



<i>Market research process (cont.)</i>	<p>IV. Support the Market Research Process  V. Monitor the Market Research Process  VI. Control the Market Research Process  VII. Improve the Market Research Process</p>
<i>Monitoring and measuring process:</i>	<p>The organisation shall apply suitable methods for monitoring and, where applicable, measurement of the quality management system processes. These methods shall demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, correction and corrective action shall be taken, as appropriate, to ensure conformity of the product.</p> <p>The organisation shall monitor and measure the characteristics of the product to verify that product requirements have been met. This shall be carried out at appropriate stages of the product realisation process in accordance with the planned arrangements.  Evidence of conformity with the acceptance criteria shall be maintained. Records shall indicate the person(s) authorising release of product.</p> <p>Product release and service delivery shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.</p>
<i>Non conformance management process:</i>	<p>The organisation shall ensure that product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product shall be defined in a documented procedure. The organisation shall deal with nonconforming product by one or more of the following ways:</p> <ol style="list-style-type: none"> <li>I. by taking action to eliminate the detected nonconformity;</li> <li>II. by authorising its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer;</li> <li>III. by taking action to preclude its original intended use of application.</li> </ol> <p>Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained, shall be maintained.  When nonconforming product is corrected it shall be subject to re-verification to demonstrate conformity to the requirements.  When nonconforming product is detected after delivery or use has started, the organisation shall take action appropriate to the effects, or potential effects, or the nonconformity.</p>
<i>Planning process:</i>	<p>The organisation shall plan and develop the processes needed for product realisation. Planning of product realisation shall be consistent with the requirements of the other processes of the quality management system.</p> <p>In planning product realisation, the organisation shall determine the following, as appropriate:</p> <ol style="list-style-type: none"> <li>I. quality objectives and requirements for the product;</li> <li>II. the need to establish processes, documents and provide resources specific to the product;</li> <li>III. require verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance;</li> <li>IV. records needed to provide evidence that the realisation processes and resulting product meet requirements.</li> </ol> <p>The output of this planning shall be in a form suitable for the organisation's method of operations.</p>

<p><i>Product design process:</i></p>	<p>The organisation shall plan and control the design and development of product. During the design and development planning, the organisation shall determine</p> <ol style="list-style-type: none"> <li>I. the design and development stages;</li> <li>II. the review, verification and validation that are appropriate to each design and development stage; and</li> <li>III. the responsibilities and authorities for design and development.</li> </ol> <p>The organisation shall manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.</p> <p>Planning output shall be updated, as appropriate, as the design and development progresses.</p> <p>Inputs related to product requirements shall be determined and records maintained.</p> <p>These inputs shall include:</p> <ol style="list-style-type: none"> <li>I. functional and performance requirements;</li> <li>II. applicable statutory and regulatory requirements;</li> <li>III. where applicable, information derived from previous similar designs; and</li> <li>IV. other requirements essential for design and development.</li> </ol> <p>These inputs shall be reviewed for adequacy. Requirements shall be complete, unambiguous and not in conflict with each other.</p> <p>The outputs of design and development shall be provided in a form that enables verification against the design and development input and shall be approved prior to release.</p> <ol style="list-style-type: none"> <li>I. Design and development outputs shall</li> <li>II. meet the input requirements for design and development;</li> <li>III. provide appropriate information for purchasing, production and for service provision;</li> <li>IV. contain or reference product acceptance criteria; and</li> <li>V. specify the characteristics of the product that are essential for its safe and proper use.</li> </ol> <p>At suitable stages, systematic reviews of design and development shall be performed in accordance with planned arrangements to evaluate the ability of the results of design and development to meet requirements; and to identify any problems and propose necessary actions.</p> <p>Participants in such reviews shall include representatives of functions concerned with the design and development stage(s) being reviewed. Records of the results of the reviews and any necessary actions shall be maintained.</p>
<p><i>Product protection process:</i></p>	<ol style="list-style-type: none"> <li>I. Design the Product protection Process</li> <li>II. Document the Product protection Process</li> <li>III. Implement the Product protection Process</li> <li>IV. Support the Product protection Process</li> <li>V. Monitor the Product protection Process</li> <li>VI. Control the Product protection Process</li> <li>VII. Improve the Product protection Process</li> </ol>

<i>Production process:</i>	<p>The organisation shall plan and develop the processes needed for product realisation. Planning of product realisation shall be consistent with the requirements of the other processes of the quality management system.</p> <p>In planning product realisation, the organisation shall determine the following, as appropriate:</p> <ol style="list-style-type: none"> <li>I. quality objectives and requirements for the product;</li> <li>II. the need to establish processes, documents and provide resources specific to the product;</li> <li>III. require verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance;</li> <li>IV. records needed to provide evidence that the realisation processes and resulting product meet requirements.</li> </ol> <p>The output of this planning shall be in a form suitable for the organisation's method of operations.</p>
<i>Purchasing process:</i>	<p>The organisation shall ensure that purchased product conforms to specified purchase requirements. The type and extent of control applied to the supplier and the purchased product shall be dependent upon the effect of the purchased product on subsequent product realisation or the final product.</p> <p>The organisation shall evaluate and select suppliers based on their ability to supply product in accordance with the organisation's requirements.</p> <p>Criteria for selection, evaluation and re-evaluation shall be established. Records of the results of evaluations and any necessary actions arising from the evaluation shall be maintained .</p>
<i>Quality management process:</i>	<ol style="list-style-type: none"> <li>I. Top management shall ensure that the quality policy:</li> <li>II. is appropriate to the purpose of the organisation;</li> <li>III. includes a commitment to comply with requirements and continually improve the effectiveness of the quality management system;</li> <li>IV. provides a framework for establishing and reviewing quality objectives;</li> <li>V. is communicated and understood within the organisation; and</li> <li>VI. is reviewed for continuing suitability.</li> </ol>
<i>Record keeping process:</i>	<p>Records shall be established and maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system. Records shall remain legible, readily identifiable and retrievable. A documented procedure shall be established to define the controls needed for the identification, storage, protection, retrieval, retention time and disposition of records.</p>
<i>Regulatory research process:</i>	<p>The organisations must define how they manage achieve compliance with applicable statutory or regulatory environmental requirements, and may include a requirement for an organisation to be compliant with ISO 14001 or other environmental management system standard.</p>
<i>Resource management process:</i>	<p>This section of ISO 9001:2000 covers the specific requirements for planning and management of needed resources. These resources include human resources, facilities, equipment, and work environment. Sufficient resources must be allocated for implementing, maintaining and improving the quality management system, as well as for enhancing customer satisfaction and meeting customer requirements.</p>
<i>Service provision process:</i>	<p>The organisation must research the level of service its customers require and plan how it could consistently meet this level of service . Sufficient resources must be allocated for maintaining and improving the service provided to customers.</p>

<i>Training process:</i>	<p>Employees need to be aware of the relevance and importance of their activities and how they contribute to the achievement of quality objectives. In order for an organisation to have qualified/competent people, it should consider the following steps:</p> <ul style="list-style-type: none"><li>I. Determine competency needs. Job requirements change, so employee qualifications and training needs should be continually reviewed, not just upon employment. The mechanism for identifying needs on a regular basis is most often tied to periodic employee performance reviews but also may be the output of strategic planning.</li><li>II. Provide training to address identified needs. Once the need for training is established, the training should actually be provided.</li><li>III. Evaluate the effectiveness of training. Training is never a goal in itself. On a regular basis, organisations should ask: did the training accomplish desired results?</li></ul>
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Sources: [www.ISO.org](http://www.ISO.org), [www.paxiom.com](http://www.paxiom.com) and IsoQual inc.

# Corporate Culture Survey



## Appendix 2: Surveys

Dear Sir, Miss,

For my university I need to make an analysis of the Companies Culture. The Companies Culture is the whole of norms and values shared by all employees (or by specific departments).

The Companies Culture plays a large roll by the implementation of Change. Knowing the culture should help management to anticipate future problems and allowing smoother implementation. This in return should allow you to feel more comfortable when these transitions occur; your norms and values will be taken into account when changes are proposed.

Please, take a moment to complete this survey.

*All information provided in this survey will be strict confidential and won't be seen by anyone but me, Jochem Jansen. Only the results will be discussed with Robbie and Polla. No names will be used and no reference to positions will be made during this discussion.*

*So please don't hold back and speak freely, it is both in your and the companies best interest!*

***This is your chance to speak up anonymously!***

<b>Personal Information</b>	
<b>Name</b>	
<b>Position</b>	
<b>Years with the Company</b>	

# Corporate Culture Survey



*Why is Anonymous Entity Implementing an ISO Quality Management System?*

*Do you feel involved in the ISO implementation process?*

*What are your feelings towards ISO? How do you perceive it? (please mark all the items describing to you personal feelings)*

Feelings	
Fear of the unknown	
Lack of information	
Misinformation	
Bad experiences with earlier changes	
Threat to core skills and competence	
Threat to status	
Threat to powerbase	
No perceived benefits	
Low trust of the organisation climate	
Just another management buzz	
Fear of failure (not being able to join in the transition process)	
Fear or looking stupid	
Reluctant to experiment	
Bound to closely by tradition and customs: the ISO implementation goes against how we previously worked and conflicts with my personal customs	
Reluctant to let go the old system	

# Corporate Culture Survey



Do you think there are opportunities for improvement within this company?

If you saw an opportunity for improvement, how would you handle it and why?

And if this improvement would require you to work over time?

Or make your job less attractive?

Could you list some of the companies values? Values you think are held by all employees?

Could you list any of the companies norms? Norms you think held by all employees?

# Corporate Culture Survey



The following questions are related to your personal feelings towards Anonymous Entity. Please tell us if you strongly disagree, disagree, neutral, agree or strongly agree with the following statements. (For analytic purposes we would like to emphasize that the difference between the various answers is equally distributed. For example the difference between neutral and agree is equal to the difference between agree and strongly agree etc.)

Statement/Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I know companies mission					
I know the companies policies and regulations					
I'm familiar with the products this company sells					
I have confidence in the leadership of this company					
Management doesn't play favourites					
Management is consistent: doesn't say one thing and does the next					
Quality is the companies top priority					
Communication in the company is frequent and clear					
Do you feel free in the way you can execute your job?					
I am satisfied with my current job					
I feel encouraged to develop myself at the company (company provides training etc)					
I know what others expect from me					
I feel empowered to make decisions					
I have all the materials I need for my job					
My salary is fair for my job					
I feel committed to the company					
My job performance is good					
My colleges could perform better at their current jobs					

What is the first thing coming to mind if you could change one thing in the company?

Thanks you for completing this survey! Your opinions are highly valued!



## 9.1.Survey 2: Customer satisfaction

Dear Customer,

You have recently conducted business with the company Anonymous Entity. Anonymous Entity is looking for ways to improve the quality of the services delivered to you, our customer. We would kindly request you to join in our short survey.

Please take a few minutes to complete this survey. All answers are confidential and will be used within Anonymous Entity only. Thanks you!

<b>General information</b>	
Company Name	
Your Name	
First Name	
Position within Company	

# Corporate Culture Survey



## Customer Satisfaction

The following questions are related to the service you received from Anonymous Entity. Please tell us if you strongly agree, agree, neutral, disagree or strongly disagree with the following statements. (For analytic purposes we would like to emphasise that the difference between the various answers is equally distributed. For example the difference between neutral and agree is equal to the difference between agree and strongly agree etc.)

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The overall service delivered by Anonymous Entity met my expectations					
<b>Pre-sales support:</b>					
The company of Anonymous Entity provided enough information about the product I was about to purchase.					
I was informed throughout the entire purchase process.					
The information provided by the Anonymous Entity complete and understandable.					
The Sales Person was aware of my requirements.					
The Sales Person was available for my questions and enquires.					
The Sales Person provided quick and correct answers on my questions and enquiries.					
<i>Overall I am satisfied by the service provided by the Sales Person</i>					

<b>Statement</b>	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>Ongoing Support and Customer Service</b>					
The product bought at Anonymous Entity met my expectations					
The product was delivered on time, according to schedule.					
The product was delivered complete, with the necessary documentation					
I know where to go when I have questions concerning products I purchased at Anonymous Entity					
My questions are answered quickly and correct					
The responses on questions are friendly and polite (both on email as on phone).					
Anonymous Entity is easily reachable for After Sales service (Repairs, information, advice, etc.)					
After Sales service meets my expectations					
<i>The next three questions are only applicable if you have a history in repairs or defects</i>					
The service delivered on repairs is sufficient					
Spares are available in a timely fashion					
Problems with Anonymous Entity products are dealt with swiftly and solved correctly					

# Corporate Culture Survey



## Customer Requirements/Importance

Please choose the four items from the list below you find most important when selecting a vendor:  
(Please mark the items of choice with an X in the left column)

Choice	Items
	On-time delivery
	Product traceability
	Wide product range
	Customized product
	On-site repair service
	On-site installation service
	Long warranty period
	Availability of spares
	24/7 service on questions
	Personal contact with a Sales Person
	Expert advice
	Quick answers on questions

## Customer Loyalty

Please encircle one answer.

<p><b>Would you buy again at Anonymous Entity?</b></p> <p>a. Very likely b. Likely c. Maybe d. Probably not e. Never</p>
<p><b>Would you advise Anonymous Entity services to friend or other associates?</b></p> <p>a. Very likely b. Likely c. Maybe d. Probably not e. Never</p>

## Suggestions for Improvement

Sadly it's not possible to cover all aspects of customer satisfaction in this brief Survey. Some aspects, highly valued by our customer, might not get the attention they deserve. If you feel that any part of our service needs improvement, if you have any suggestions for further enhancement of our service level, please bring them to our attention and list them below: