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**AN EXPLORATORY STUDY TO EXAMINE RELATIONSHIPS
BETWEEN THE WORK ENVIRONMENT AND SUCCESS OF
ISO 9000 IMPLEMENTATION IN THE CONTEXT OF SMEs**

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**Submitted in Partial Fulfilment of the Requirements of the
Degree of Doctor of Philosophy**

**University of Huddersfield
School of Computing and Engineering, UK**

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Abstract

The ISO 9000 standards are widely used throughout the world, and are becoming the most important quality standards. Thousands of enterprises all over the world have already adopted these standards, with many more in the process of doing so. A range of benefits can be achieved by the implementation of ISO 9000 standards, such as increased customer satisfaction, reduced defects, improved efficiency of the quality system, and improved market share. However Small and Medium-sized Enterprises (SMEs) face difficulties when implementing ISO 9000 standards. This can be due to employees' internal resistance to change, paperwork consumption, and high implementation and maintenance costs. Most SMEs are unable to cover the expenses of training and development programmes as a result of restricted financial resources.

The managers of SMEs planning to implement ISO 9000 standards and maintain the certification of ISO 9001 standard for long periods should create an empowering work environment in which continuous improvement can take place. The aim of this research is *to examine the relationships between the work environment and success of ISO 9000 implementation in the context of SMEs*. This study begins with the completion of a comprehensive literature review focused on Enterprise Strategy, ISO 9000 Standards and Organisational Development. The literature review is followed by the research methodology, which illustrates the methods and research tools used to collect data pertinent to this research. These include exploratory survey and case studies which led to the main findings of the research. The collected data have been analysed through the use of Social Package Statistical Software (SPSS) and Microsoft's Excel software.

The findings of this research show that there are critical success factors that impact the work environment. These factors are represented in terms of temperature, noise, job security, individual recognition, salary, reward systems, quality awareness, and relationships. By integrating the literature review and the research findings, a simple work environment model has been devised. This model has been designed with consideration to the combination of factors described in the motivation theories of Maslow and Herzberg, along with health and safety legislations in the work place.

This research contributes to the redefinition of the work environment in ISO 9001 standard. The researcher has designed the Work Environment Assessment Guide as a document to aid SMEs in evaluating and subsequently improving their work environment.

Dedication

Dedicated to the Memory and Soul of my father, who died many years ago, and to my mother, who always inspires me with her prayer, love and wisdom. Also to my wife, and my son, Hamza, and my daughters, Amel and Esra, and to all my brothers and sisters.

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- Maatgi, M. K. & Denton. P. D. (2011). *Understanding the Determinants of SME ISO 9000 Success: Towards a Classification of Work Environment*. In: Proceedings of 21st International Conference on Production Research ICPR21 July 31 - August 4, 2011. ICPR, Stuttgart, Germany. ISBN 978-3-8396-0293-5.
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List of Abbreviations

ASTM	American Society for Testing and Materials
BNQP	Baldrige National Quality Programme
BS	British Standards
DIN	German National Standards Organisation
EFQM	European Foundation for Quality Management
EU	European Union
GATT	General Agreement on Tariffs and Trade
HR	Human Resources
HRM	Human Resources Management
ISO	International Organisation for Standardisation
OD	Organisational Development
QA	Quality Assurance
QC	Quality Control
QMS	Quality Management System
SMEs	Small and Medium-sized Enterprises
SMME	Small and Medium-sized Manufacturing Enterprises
TQM	Total Quality Management
TPS	Toyota Production System
WCM	World Class Manufacturing
WHO	World Health Organisation
SBA	Small Business Administration
IFAC	Internal Federation of Accounts
NIST	National Institute of Standards and Technology
R&D	Research and Development
CARS	Corrective Action Requests
PARS	Preventive Action Requests
SPSS	Social Package Statistical Soft Ware
BIS	British Standard Institute
WEAG	Work Environment Assessment Guide

CSF	Critical Success Factors
°C	Degrees Celsius
Rh	Relative Humidity
dB(A)	An expression of the relative loudness of sounds in air as perceived by the human ear
LUX	Unit indicate the density of light falls on a surface
HSE	Health and Safety Executive
NIHL	Noise induced hearing loss
NOHSC	National standards for Occupation Noise
SOR/86-304	Canada Occupational Health and Safety Regulations
SM	Small Machine
MM	Medium Machine
LRF	Large rigid foundation
LSF	Large soft foundation
WEAQ	Work Environment Assessment Questionnaire
PFMS	Physical Factors Measurement Sheet

Chapter 1 : Introduction

1.0 Introduction

This chapter provides a brief background to the research topic, research problem and motivation, the significance of this study and also discusses the research aim and objectives, as well as the research methods. And finally, outline of the remaining chapters.

1.1 Background

Success within any enterprise can be influenced by its management and administrative leadership, together with the work environment within which it operates. Higher degrees of success in applying modern administrative systems can result in improved production or service efficiency, and the greater achievement of quality. At the beginning of the 20th Century—and thanks to the contributions of recognised quality pioneers, namely Crosby, Ishikawa, Feingenbaum, Juran and Deming the modern concept of ‘quality management’ was developed. The base of comprehensive Quality Management Systems (QMS) was then laid, with QMS characterised by the following key principles (adopted from Oakland, 2000):

- Giving customers the priority.
- Integrating all activities within the quality system.
- Training adopted in order to motivate and encourage personnel.
- Applying continuous development in the administration system.

Efforts of these pioneers were followed by the appearance of the ISO 9000 series for the first time in 1987. This series represents an International Standard aimed at institutional administrative systems. This compatibility certificate has become an important standard and a commercial requirement with a condition for completion within the conventions of GATT organisation. Briscoe et al. (2005) propose that, ‘quality can be viewed as being essential to customer satisfaction and competitive success, especially within Small-to-Medium-sized Enterprises (SMEs)’. In current marketplaces, enterprises now strive to integrate quality within world class manufacturing principles (Schonberger, 1986). Through recent years, little consensus has emerged on a range of different definitions for SMEs; however, typically, these are based upon turnover size or the number of employees (Yusof & Aspinwall, 2000). Levy (1993) applies the designation to ‘small and medium-sized manufacturing enterprises, which have 500

employees or less'. Furthermore, Ghobadian and Gallear (1997) sub-divided SMEs according to the number of employees into: (a) micro-enterprises, comprising 0–9 employees; (b) small enterprises, comprising 10–99 employees; and (c) medium enterprises, comprising 100–499 employees. These important classifications represent a diverse but highly important group of manufacturing enterprises, and are of particular interest because this group has had to cultivate their own unique blend of capabilities in their struggle for survival and ultimate success.

ISO 9000 has gained increasing international recognition after the release of first publication of the standard concentrated on quality assurance concepts, with later versions of ISO 9000:1994 forming a wider family of standards (ISO 9001; ISO 9002; ISO 9003). This emphasised quality assurance through preventive actions, and continues to require proof of compliance with documented procedures. The ISO 9000 family of standards was revised in 2000; and the three previous parts of the ISO 9000:1994 versions were integrated into the single standard known as ISO 9001:2000 standards, and its latest version was issued in 2008.

Ching and Woan (2008) comment that, 'the top management must always provide evidence of its commitment and ensure that quality system includes a commitment to continual improvement. The workforce is may be seen an important player, and their cooperation and personal commitment to ISO 9000 systems are essential.' It is further recognised (Ching & Woan, 2008) that every single employee in an enterprise must be fully dedicated to the actual ISO 9000 implementation process. In order to achieve this success, the management of the enterprise should be motivated, and the skills of their employees should be developed. In Hoyle (2009), it is further commented that motivation is an intrinsic part of the work environment; therefore, it is key to the successful adoption of ISO 9000 standards.

Training motivates and encourages personnel recognised as one of the bases of a quality management system—with the aim of creating a suitable work environment to support this aim, the theories of motivation, also known as 'need-based theories of motivation', focus on motivation and other factors, such as relationships and recognition, etc. Herzberg (1959) presented his research as the Motivation-Hygiene Theory, which is often also regarded as the Two-Factor Theory of Job Satisfaction and Job Dissatisfaction. According to his theory, people are influenced by motivation and hygiene factors. Herzberg's research suggests that employees struggle to achieve 'hygiene' needs (or maintenance factors), such as policy, work conditions,

salary, status, security, personal life, and relationship; however, once satisfied, the effect soon wears off, thus meaning satisfaction may be seen as temporary. Employees are not always 'motivated' by addressing 'hygiene' needs; employees are only truly motivated by enabling them to reach for and satisfy the factors identified by Herzberg—namely the key determinants of job satisfaction, such as achievement, advancement, development, recognition, work itself, and responsibility all of which represent a far deeper level of meaning and fulfilment.

Maslow's (1943) defined the motivations as, 'motivations result from satisfying personal needs and expectations of work, therefore, the motivation to accomplish quality objectives must be triggered by the expectation that achievement of objectives will lead to a reward that satisfies a need of some sort.'

Abraham Maslow's theory identifies five levels of hierarchical needs that every individual attempts to accomplish or conquer throughout one's lifetime. The needs start with the physiological (hunger, thirst, shelter) and then move upwards in a pyramid shape through safety, social and esteem needs, to the ultimate need for self-actualisation. This final need for self-actualisation is defined as one's desire towards maximum personal potential. The pyramid shape of the theory is intended to show that some needs are more important than others and must be satisfied before the other needs can serve as motivators.

The quality management system integrates all activities within the enterprise and one of these activities is the health and safety in the work place. This involves protecting employees from accidents (The Health and Safety at Work Act 1974 (c.37, s.2)). The Act places responsibilities on the shoulders of employers, people in control of premises, manufacturers and employees. These general responsibilities form the framework for all subsequent health and safety regulations. It also lays out the systems for enforcing the Act, including the penalties for breaches of law.

In Hoyle (2009), it is stated that the work environment is important in relation to employee performance and product: both product and worker are influence by physical factors and (Maslow's needs, and Herzberg Hygiene and Motivation factors). They affect individual behaviour, which has a direct influence on organisational performance and, as a result, on product quality.

From previous research elements, it is clear there is a gap in current academic studies concerning the work environment and its influence (positive or negative) on the successful implementation of ISO 9001 standard in SMEs. *The central theme of this PhD research is to examine relationships between the working environment, and success of ISO 9000 implementation in the context of SMEs.* In order to achieve this aim, academic and field study research will be conducted through the application of case studies and exploratory survey aimed at technical and administration personnel within a range of UK-based, advanced engineering and manufacturing SMEs (Small to Medium-sized Enterprises).

1.2 Research Problem and Motivation

In today's competitive business environment, enterprises can no longer afford to waste the potential of their workforce. There are key factors in the employee's workplace environment that impact greatly on their level of motivation and performance. The workplace environment impacts employee morale, productivity and engagement- both positively and negatively which in some kind of industries can be unsafe and unhealthy. These include poorly designed workstations, lack of ventilation, inappropriate lighting, excessive noise, insufficient safety measures in fire emergencies, lack of personal protective equipment, absence of recognition and achievement, lack of reward system and weak relationship between employers and their employees. People working in such environment are prone to occupational disease and mental illness which impact on employee's performance. Thus productivity decreases due to the poor workplace environment which can affect negatively the success of ISO 9000 standards implementation or any other development programs which may be adopted by the management of the enterprise to enhance its performance.

Small and Medium-sized Enterprises (SMEs) are facing difficulties when they are implementing ISO 9000 standards. This can be due to, for example; employees' internal resistance to change, paperwork consumption, high implementation and maintenance costs of ISO 9000 standards and restricted of the financial resources. The factors mentioned above are important because of their potential positive or negative impact on the performance of the employees. This research will examine the relationship between the work environment and success of ISO 9000 implementation in the context of SMEs.

1.3 Research Methods

Research methods are the tools that are used to gather data. This research includes both quantitative and qualitative processes as it would employ questionnaire and a case study for data collection. Collis and Hussey (2003) stated that the quantitative process involves collecting and analysing numerical data and applying statistical tests. Quantitative data collection involves gathering numerical data using structured questionnaire to collect primary data from individuals and this type of data may include opinions, attitudes, behaviours and lifestyle to gain demographic information of individuals (Hair et al., 2011).

Patton (2002) states that qualitative methods are recognised from three types of data collection: (1) in-depth, open ended interviews; (2) direct observation; (3) analysis of written documents. The collection of primary data in this research was carried out using three methods: exploratory survey, case study, and pilot study. More details about these methods are given in the Chapters 4.

1.4 Research Aim and Objectives

The aim of this research is to examine the relationships between the work environment and the success of ISO 9000 implementation in the context of SMEs.

In an effort to achieve the outlined aim of this research work, the following objectives are identified:

1. To review the relevant literature on enterprise strategy, ISO 9000 standards, and organisational development that are seen to be directly related to the research.
2. To conduct an assessment, analysis and prioritisation of critical success factors and barriers facing SMEs implementing the ISO 9000 standards.
3. To review the definition of the work environment in ISO 9001 standard, and redefine it.
4. To provide a revised work environment framework and make recommendations for the improved implementation of ISO 9000 standards.
5. To develop of a work environment assessment guide and use this guide to conduct a work environment pilot study within contemporary SMEs.

1.5 Significance of the Research

A majority of the previous literature studies focused only on a small range of factors such as job satisfaction, performance, salary and motivation, and dealing with them without considering of how these factors can impact on the work environment. For example, Hoyle (2009) suggests that motivation is the key to high performance, and further states that the performance of work is almost always a function of three factors: environment, ability and motivation. Leach (2000) points out that giving the employee encouragement and recognition helps them to feel more valued within the enterprise, and gives them a sense of achievement and responsibility.

From the literature review, combined with the author's experience of working for 16 years in the global steel industry, the researcher observed how the work environment can affect the implementation of ISO 9000 standards. It is recognised that there is a gap in current academic studies relating to the work environment and its influence on the successful implementation of ISO 9000 standards in SMEs. For this reason, this research came to *investigate the factors relating to the work environment, and their relationship to the success of ISO 9000 standards implementation in SMEs*. In order to achieve this aim, academic and field study research will be conducted through the application of case studies and exploratory survey aimed at technical and administration personnel within a range of UK-based, advanced engineering and manufacturing SMEs (Small to Medium-sized Enterprises).

This research explores the critical success factors and barriers facing small medium sized enterprises in the implementation of ISO 9000 standards successfully through analysis of the data collected from the exploratory survey and the case studies which were conducted in a number of SMEs.

The outcomes expected from this research will act as a reference to help industrialists to direct more care and understanding to the work environment, thereby contributing to an increase in work environment awareness.

1.6 The Structure of the Thesis

This thesis is organised into eight chapters, as shown in Figure 1.1. The following is a brief description of each chapter:

Chapter 1 provides an introduction of the thesis, which includes the research background, research problem and motivation, the significance of the research, and presented the research aim and objectives, as well as the research methods, and finally the outline of the remaining chapters

Chapter 2 presents the literature review of the thesis, which includes enterprise strategy, which is concerned with the total decisions taken by the leadership of the enterprise according to progress in technology, manufacturing systems, and competitive environments. It also includes ISO 9001 standard in general and total quality management concepts. Finally, the chapter provides details of organisational development, and its components represented in organisational culture, organisational climate and the change management approach.

Chapter 3 describes the research theoretical basis and provides explanation of how different factors were identified. It includes the definitions, classifications of these factors and the summary.

Chapter 4 describes the research methodology and explains both the qualitative and quantitative methodology employed. This chapter also introduces the instruments used to assess the influence of the work environment on the implementation of ISO 9001 standard in SMEs, the development of the survey questionnaire, ethical considerations and proposes the work environment framework approach.

Chapter 5 provides a detailed explanation of the questionnaire survey, which includes an introduction, and the analysis of the data collected, discussion and the summary.

Chapter 6 is concerned with case studies, including an introduction, the methodology of the case study, the case study protocol, data collection techniques, the analysis of the data collected, discussion and finally, the summary.

Chapter 7 describes the design and development of the work environment assessment guide, work environment classification prototype, as well as the analysis and assessment of critical

success factors. It also includes the critical success factors classification, development of the work environment framework, discussion and the summary.

Chapter 8 describes the pilot study and assessment involved in the methodology of the pilot study, as well as the pilot study protocol, data collection techniques, data analysis, discussion and the summary.

Chapter 9 presents the research conclusions and further work, and also includes the recommendations and contributions of the research.

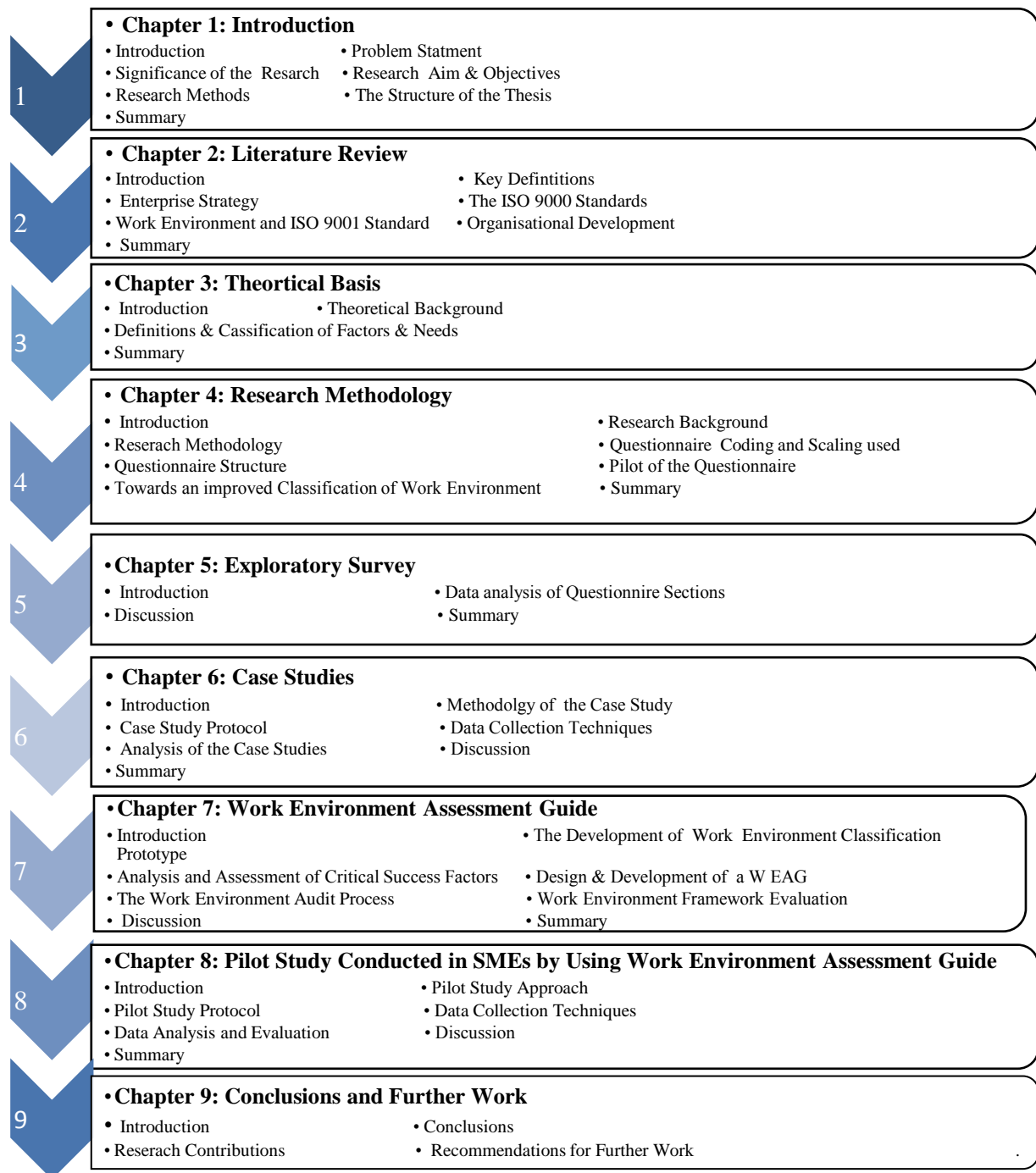


Figure 1.1: Research Thesis Overview

1.7 Summary

This chapter covered the research background of this study. It included research problem and motivation, the significance of this research, and presented the research aim and objectives, as well as the research methods, and finally the outline of the remaining chapters.

Chapter 2 : Literature Review

2.0 Introduction

The literature review of this research comprises three main parts, which are the overviews of enterprise strategy, ISO 9000 standards, and organisational development, as can be viewed in Figure 2.1. Enterprise Management includes the approaches that help in the development of the enterprise and which accordingly increase their ability to compete with similar enterprises through motivating, training and improving the culture of workers. This requires the provision of financial resources so as to create a suitable work environment that will help to successfully implement the ISO 9001 standards. The literature review process will give detailed information on the work of other researchers and scholars related to the research work.

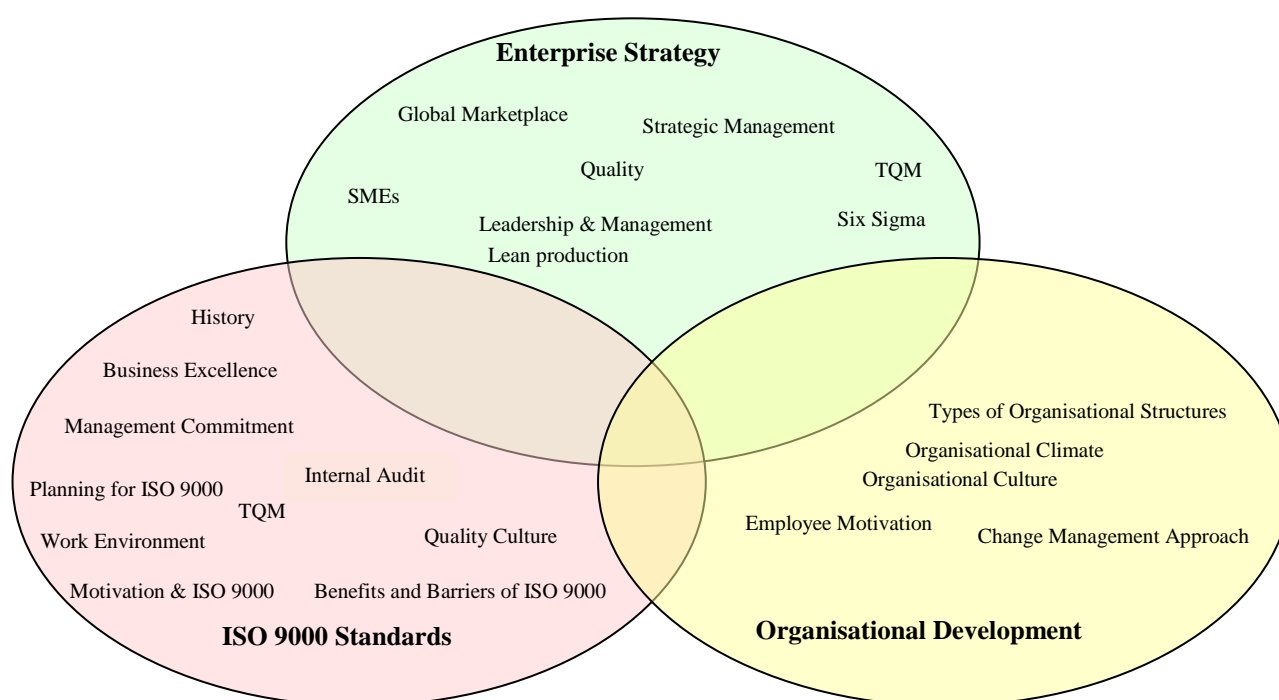


Figure 2.1: Literature Framework Scope

discussed and key research aspects that are pertinent to the foundation of this research study have been analysed.

2.1 Key Definitions

In an effort to provide improved understandings of the terms and concepts frequently used in this work for readers, with particular emphasis on the aims of this work, the following basic definitions are provided and are used throughout this research:

- 1) ***Enterprise:*** An enterprise is a socio-economic organisation created to produce products or to procure services and to make profit (Vernadat, 1996).
- 2) ***Quality:*** The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (ISO 8402, 1986).
- 3) ***Total Quality Management (TQM):*** A management philosophy that includes all activities by which the needs and expectations of the customer and the community, and the objectives of the organisation, are satisfied in the most efficient and profitable way by maximising the potential of all employees in a continuous process of improvement (BS4778: Part 2, 1991).
- 4) ***Quality Management System (QMS):*** The set of interacting processes adopted by the organisation to achieve its quality objectives (Hoyle, 2009).
- 5) ***Small-Medium-sized Enterprises (SMEs):*** A designation of enterprise that employs less than 250 employees (European Commission).
- 6) ***Strategic Management:*** The set of decisions and actions resulting in the formulation and implementation of strategies designed to achieve the objectives of an enterprise (Pearce & Robinson, 1988).
- 7) ***Work Environment Definition:*** Relating to those conditions under which work is performed, including physical, environmental and other factors (such as noise, temperature, humidity, lightning, or weather (ISO 9000, 2008).

2.2 Enterprise Strategy

The concept of strategy is defined by Slack et al. (2001) as the ‘total pattern of decisions and actions that position the organisation in its environment and that are intended to achieve its long-term goals’. Contemporary enterprises now operate complex strategies in diverse and dynamic global environments, with such environments sometimes characterised by intensified competition, time-dependence and are increasingly driven by demand for bespoke customer-focused products. Business process and technological innovations both in design and manufacturing systems have had a significant influence upon the competitive environment, with the notion of ‘quality’ as an important key. Quality is now viewed as being essential to strategy, customer satisfaction and aggressive success particularly amongst SMEs (Briscoe et al., 2005). Accordingly, in order to be successful, today’s manufacturers will need to integrate quality within world class manufacturing principles, deploying effective management practices and methodologies, with the objective to set new standards for productivity, quality and time-to-market. The term World Class Manufacturing (WCM) was first used by Hayes & Wheelwright, in 1985 with their description focusing on six practices: 1) workforce skill and capabilities; 2) management technical competence; 3) competing through quality; 4) workforce participation; 5) rebuilding manufacturing; and 6) incremental improvement approaches. The term WCM was then popularised by Schonberger (1986), who additionally defined it as a capability: ‘World-class manufacturing is gained by marshalling the resources for continual rapid improvement’. Furthermore, Schonberger (1986) extended the concept of WCM through a set of 16 interacting principles, along with supporting examples of world-class manufacturers. The 16 principles for operation's management comprise:

1. Team-up with customers; organise according to customer/product family.
2. Use customer, competitive, best-practice information.
3. Ensure continual, rapid improvement in what all customers want.
4. Workforce involvement in change and strategic planning.
5. Cut to the few best components, operations and suppliers.
6. Cut total cycle time and distance, and change-over times.
7. Operate close to customers’ rate of use or demand.
8. Continually train everybody for their new roles.
9. Expand the variety of rewards, recognition and pay.

10. Continually reduce variation and mishaps.
11. Ensure frontline team's record and own process data in the work place.
12. Control root causes to cut internal transactions and reporting.
13. Align performance metrics with universal customer requirements.
14. Improve present capacity before new equipment and automation.
15. Seek simple, movable, scalable, low-cost, focused equipment.
16. Promote/market/sell every improvement.

The strategy of the enterprise represents a total of decisions and actions which are decided by the management of the enterprise to develop or implement some of the programmes and plans. To implement this strategy successfully it should create a proper work environment.

2.2.1 The Competitive Global Marketplace

An important aspect of globalisation is the reduction in the distance between producers and consumers, which can lead to increased competition in marketplaces. Parker (1998) reflects upon the comment made by Pieterse (1995), who states that there are almost as many conceptualisations of globalisation as there are disciplines in the social sciences. This may also be true for many areas united under the umbrella of business, including marketing, management, finance, accounting and economics. Globalisation is commonly referred to as the lack of borders and barriers to trade between nations. O'Shanghness (1995) provides that enterprise competition is defined as those enterprises in the same market. Porter's concept of extended rivalry encompasses a wider system since he views competition as including the five forces industrial model. Figure 2.2 shows Porter's Five Forces industrial model.

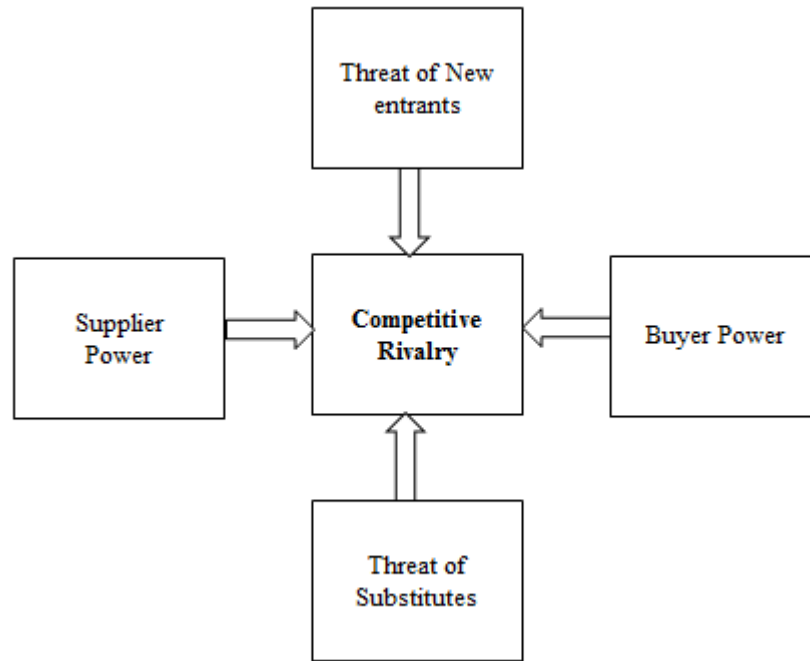


Figure 2.2: Porter's Five Forces Industrial Model

Gibson (1995) notes that Porter's Five Forces, represented in the model above, determine industry profitability because, together, they influence the prices, costs and amount of investments needed. He showed that the buyer power and the threat of substitutes both influence the price enterprises can charge for goods and services, whereas the power of a supplier influences the costs of raw materials. The intensity of competitive rivalry determines, to a large extent, pricing structure, as does the threat posed by the new entrants. New entrants to an industry can also lead to price reductions, which may, in turn, reduce profitability (Cummings & Worley, 2009). It should be noted that globalisation is changing markets and environments in which enterprises operate, as well as the way they function. New governments, leadership, markets and new countries are emerging and creating a new global economy with both opportunities and threats.

Globalisation broke the borders between countries, and allowed access to goods and services in overseas' markets, which created strong competition between enterprises who were then required to fight to keep their places in the international markets. To achieve competition in the national and international markets the enterprise management should create a good work environment

and adopt an appropriate strategy which contributes to increasing its ability to compete with other enterprises.

2.2.2 Strategic Management

Strategic management research started in the 1960s, which witnessed the beginnings of the business development as a ‘perspective where organisations need to adapt to their external environment’ (Furrer et al., 2008). Ginter et al. (2002) propose that strategic management is ‘the essential process for coping with external change; is the major philosophy guiding the management of all types of contemporary organisations, as well as is an externally-oriented philosophy of managing an organisation that links strategic thinking and analysis to organisational action’. The definition of strategic management in relation to competitors, according to Kong (2008), is ‘Strategic management can be interpreted as a set of managerial decisions and actions of an organisation that can be used to facilitate competitive advantage and superior performance over other organisations’.

The application of strategic management concepts is very important for enterprises to achieve the corporate objectives outlined. Clarke-Hill and Glaister (1995) state that the strategic management is centred on determining the future direction of the enterprise and the implementation of decisions aimed at achieving the objectives of the enterprise, strategic management is then recognised as applicable to many different types of commercial and non-commercial enterprises.

Additionally, leaders of enterprises must ensure strategic management so as to ensure enterprise success. If enterprises are likely to change, this could mean managers cannot rely on decisions based on established rules or operating procedures of long standing. In an effort to understand the strategic management, there are a number of key terms, as displayed in Table 2.1, concerned with types of strategies and other terms, all of which have a direct influence on enterprises’ activities, such as external environment, strengths, weaknesses, opportunities, and threats.

Table 2.1: Glossary of Terms (Adopted from Clark-Hill & Glaister, 1995)

Term	Concept
Corporate strategy	Defines the business in which the enterprise will compete; determines the long-term objectives of the enterprise; and identifies the course of action and the allocation of resources necessary to achieve these objectives.
Business strategy	Focuses on how to compete in a given business, determines the competitive approach of enterprises with a single product, or the strategies for each strategic business unit of a multi-product enterprise.
Functional strategy	Relates to the functional areas of a business and is concerned with the process of implementing business strategies.
External environment	Everything outside the enterprise that has an impact on its business.
Strength	An activity within an enterprise that has performed particularly well.
Weakness	An activity within an enterprise that is performing badly and limits its success.
Opportunity	Trends and events in the external environment that could benefit the enterprise.
Threat	Trends and events in the external environment that is potentially harmful to an enterprise's position.

Strategic management additionally may be viewed as a pyramid structure, comprising a series of components. This view is supported by Booth (1998) and presented in Figure 2.3.

- The mission of the enterprise is its basic function in society and is reflected in the product or service it provides for its customers or clients.
- Goals are qualitative aims for the enterprise, the purpose of which is to set criteria whereby all decisions are taken.
- Objectives are goals expressed in a manner by which they can be measured.
- Strategy is seen as how the objectives are achieved.
- Plans are the more detailed expression of future action that reflects the goals, objectives and strategies of the business.

- Actions are the manifestation of the planning processes and lead to outcomes, which can be measured and evaluated.



Figure 2.3: Measurement of Programmes (Adopted from Booth, 1998)

The management of an enterprise is responsible for adopting a sound strategy in accordance to its activities, size and other factors; before selecting this strategy, the leadership of enterprise should determine its goals and objectives, and prepare appropriate plans, all of which should help the enterprise to achieve its objectives. To achieve all of these tasks successfully the enterprise management should create a suitable work environment.

2.2.3 Small to Medium-Sized Enterprises (SMEs)

Through recent years, a range of different definitions of SMEs have emerged. These definitions are typically based upon turnover size or the number of employees. Senderovitz (2009) has examined common definitions of SMEs (Table 2.2) with regard to the US Small Business Administration (SBA), the Commission of the European Union, the Australian Bureau of Statistics, and Statistics Denmark. Such definitions are the same for all industries in European Union, Australian Bureau of Statistics and Statistics Denmark, but for the SBA of the US, the definition of small enterprises depended on the type of industry such as Manufacturing, Wholesale Trade or Agriculture, etc. All the definitions detailed in Table 2.2 define the size of

the enterprise by one or a combination of factors, such as the number of employees, yearly sales, and total assets, etc.

Table 2.2: Official Definitions of Small Firms/SMEs (Adopted from Senderovitz, 2009)

The European Commission	The Small Business Administration, US	The Australian Bureau of Statistics	Statistics Denmark
<p>Definition of SMEs:</p> <p><i>Micro firms:</i> up to 10 full-time employees and an annual turnover or balance sheet of a maximum of €2 million.</p> <p><i>Small firms:</i> up to 50 full-time employees and an annual turnover or balance sheet of a maximum of €10 million.</p> <p><i>Medium-sized firms:</i> up to 250 full-time employees and an annual turnover of a maximum of €50 million or a balance sheet of a maximum of €43 million.</p>	<p>Definition of small firms:</p> <p><i>Manufacturing firms:</i> maximum 50 employees.</p> <p><i>Wholesale trade firms:</i> maximum 100 employees.</p> <p><i>Agriculture:</i> maximum \$750,000 in average annual receipts.</p> <p><i>Retail trade and most service firms:</i> maximum \$6.5 million in average annual receipts.</p> <p><i>General and heavy construction (except dredging):</i> average annual receipts of maximum \$31 million.</p>	<p>Definition of SMEs:</p> <p><i>Micro firms:</i> less than 5 employees.</p> <p><i>Small firms:</i> between 5 and 19 employees.</p> <p><i>Medium-sized firms:</i> between 20 and 200 employees.</p> <p><i>Large firms:</i> more than 200 employees.</p>	<p>Definition of SMEs:</p> <p><i>Micro firms:</i> up to 9 full-time employees.</p> <p><i>Small firms:</i> 10–49 full-time employees.</p> <p><i>Medium-sized firms:</i> 50–100 full-time employees.</p>

International Federation of Accountants (IFAC, 2010) defines small and medium-sized enterprises (SMEs) as ‘entities considered to be of a small and medium size by reference to be quantitative (for example, assets, turnover/employees) and/or qualitative characteristics (for example, concentration of ownership and management on a small number of individuals). What constitutes an SME differs depending on the country’. Furthermore, Brown et al. (1997) highlight that the development of the quality management system within SMEs requires the training of employees and managers, and seeking the use of consultants. The most common problems facing SMEs in the implementation of ISO 9000 include employee commitment, documentation, employee’s internal resistance, and consumption of paperwork.

In the UK, 99.9% of manufacturing enterprises employ less than 100 people (National Statistics-BIS, 2011). In this regard, customers are demanding higher quality products and services. Enterprises that seek to compete and achieve success in the contemporary issues of quality speed and price or ‘better, faster, cheaper’ need to meet or exceed the demands of all the stakeholders within their business environments. The question of ‘How do SMEs go about delighting their customers and becoming effective?’ is one question that poses considerable challenges for the majority of these enterprises (Denton, 1997). Importantly, an interlinked range of factors that can be identified as barriers to sustaining growth can be recognised. In Smith (1993), the Cambridge University Small Business Centre lists the following barriers to growth, as ranked by the order of significance.

1. Inadequate overall growth of market demand.
2. Increasing competition.
3. A lack of management skills.
4. Limited availability and high-cost of overdraft or expansion finance.
5. A lack of marketing and sales skills.
6. A lack of skilled labour.
7. Difficulties in implementing new technology.
8. Access to overseas’ markets.
9. The availability of appropriate premises.

The EU Commission Recommendation 2003/361/EC reports that micro, small and medium-sized enterprises (SMEs) play a central role in the European economy: they are a major source of entrepreneurial skills, innovation and employment. In the enlarged European Union of 25 countries, some 23 million SMEs provide around 75 million jobs and represent 99% of all enterprises.

SMEs frequently experience difficulties in obtaining capital or credit, particularly in the early start-up phase. Their restricted resources may also reduce access to new technologies or innovation. Therefore, support for SMEs is one of the European Commission’s priorities for economic growth, job-creation, and economic and social cohesion.

Any enterprise, regardless of its size or type should have good management and leadership working together in a good climate to achieve the objectives of this enterprise successfully.

2.2.4 Leadership and Management

Mullins (2005) defines management as, ‘the process through which efforts of members of the organisation are co-ordinated, directed and guided towards the achievement of organisational goals. The clarification of objectives: planning, organising, directing and controlling other people’s work’. is essential for success of the organisation. Furthermore, Mullins (2005) defines *leadership* as, ‘a relationship through which one person influences the behaviour or actions of other people’. ISO 9000:2005 and ISO 9004:2009 define *Leadership* as ‘Leaders establish unity of purpose and direction of the organisation. They should create and maintain the internal environment in which people can become fully involved in achieving the organisation’s objectives’. Oakland (2000), on the other hand, emphasises that successful leadership starts with the Chief Executive’s vision, capitalising on market or service opportunities, and continuing through a strategy that will give the organisation competitive advantage, and will lead to business or service success. It is recognised that there are six fundamental differences between management and leadership; these are shown in Table 2.3.

Table 2.3: Fundamental Differences between Management and Leadership (Adopted from Mullin, 2005)

Management	Leadership
Manager administers	Leader innovates
Manager maintains	Leader develops
Manager focuses on systems and structure	Leader focuses on people
Manager relies on control	Leader inspires trust
Manager keeps an eye on the bottom line	Leader has an eye on the horizon
Manager does things right	Leader does the right thing

The manager and the leader use two different ways of organising people: the manager uses a formal, rational method; the leader uses passion and moves emotions.

The importance of quality of products or services provided by enterprise should be one of the priorities of leadership and management of this enterprise.

2.2.5 The Importance of Quality

The quality of the product or service is a highly important aspect of any contemporary manufacturing or service enterprise. With consumers becoming ever more conscious of their requirements, recognition and benchmarking of quality can now be viewed as important order-winning criteria in the global marketplace. Crosby (1979) defines quality ‘as conformance to requirements’, whilst Deming (1982) considers quality ‘in terms of quality of design, quality of conformance and quality of the sales and service function’. Feigenbaum (1991) further suggests that ‘quality is a customer determination based upon a customer's actual experience with a product or service, measured against his or her requirements-stated or unstated, conscious or merely sensed, technically operational or entirely subjective and always representing a moving target in a competitive market’. Juran and Godfery (2000) provide a much more simplistic definition, referencing quality as ‘Fitness for use’, whereas the Japanese Industrial Standards Committee (1981) defines quality with much more emphasis on systemisation and the customer, i.e. ‘quality is the system of means to economically produce goods or services, which satisfy customers requirements’.

Dale and Cooper (1992) further consider the holistic view that quality should be considered part of a system, i.e. Quality Management System. In EN ISO 9000:2000, the quality management system is described as part of the enterprise management system, which focuses on the achievement of results in relation to the quality objectives in an effort to satisfy the needs, expectations and requirements of interested customers as appropriate.

The model of a process-based quality management system, as shown in Figure 2.4, includes the process of management responsibility, resource management, product realisation, measurement, analysis and improvement. This model illustrates that customer play a significant role in defining requirements as inputs. The monitoring of customer satisfaction requires the evaluation of information relating to customer perception as to whether or not the enterprise has fulfilled the customer’s requirements (EN ISO 9001:2000).

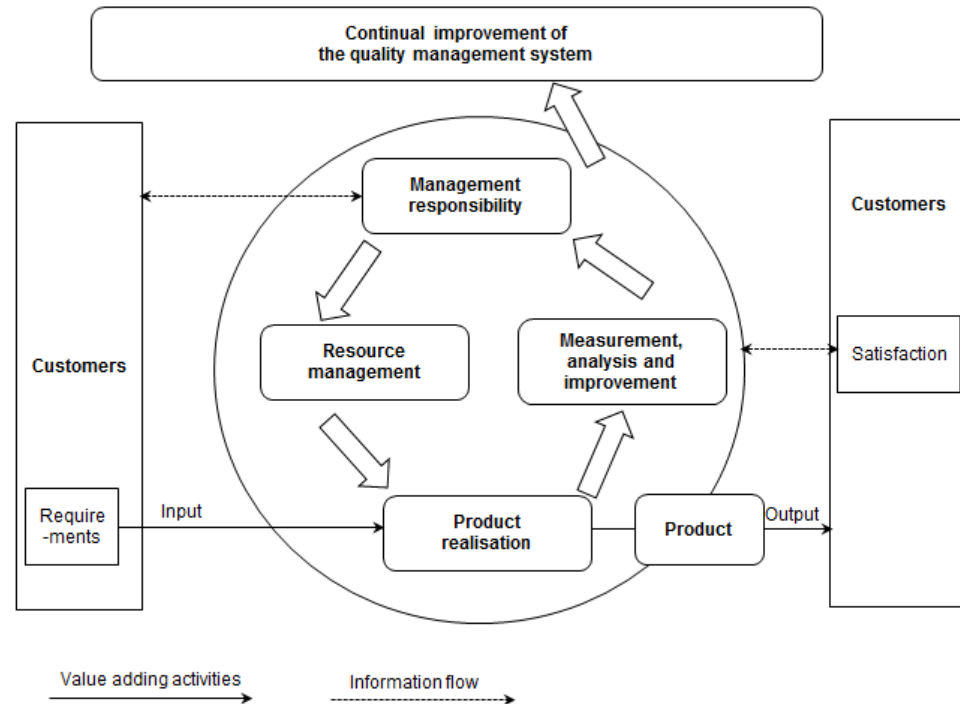


Figure 2.4: Model of a Process-Based Quality Management System (Adopted from ISO, 2009).

The QMS should apply to and interact with all processes in the enterprise. This begins by identifying customer requirements and ends with customer satisfaction across each transaction interface. Activities can be classified in several ways, usually as a treatment, communication and control, but more usefully and more specifically when shown in the process of quality management system described in EN ISO 9001:2000. The form of this process model, as shown in Figure 2.4, is as presented in EN ISO 9001:2000, and graphically reflects the integration between four major areas:

- Management responsibility
- Resource management
- Management processes
- Measurement, analysis and improvement

Conti (1993) suggests that QMS can be broken into five first-level subdivisions: the role of management, corporate values/culture, infrastructure, involvement/use/role of human resources, and the adequacy/use of technical resources. These are shown in Figure 2.5. Conti also suggests

a further deployment model from the first-level criteria to the second-level criteria, and affirms that the choice of criteria is more subjective at the second-level deployment and is based on experience, and when used by different enterprises and/or in different market sectors, it is necessary to determine appropriate weights to different criteria. Figure 2.6 represents second-level deployment of a quality system.

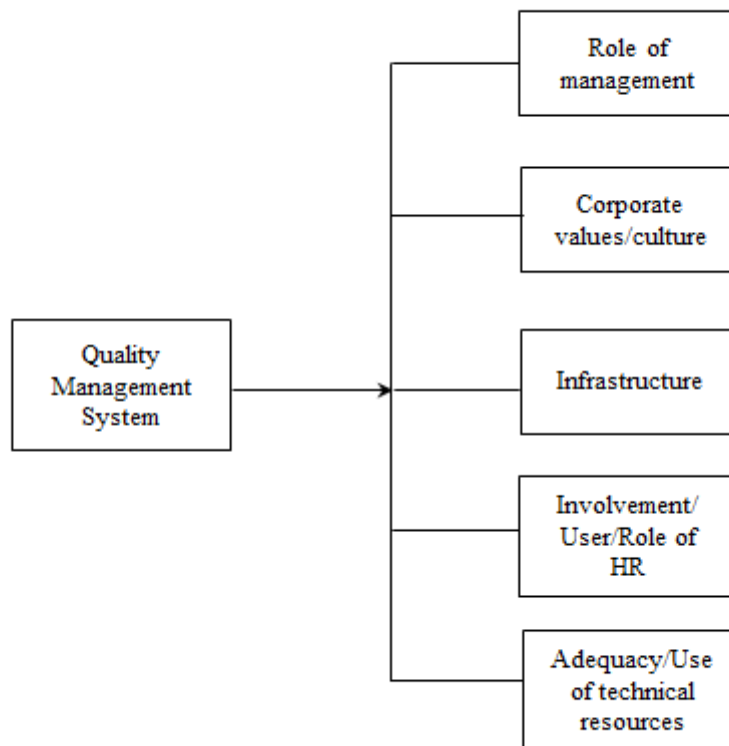


Figure 2.5: First-level Deployment of a Quality System (Adopted from Conti, 1993)

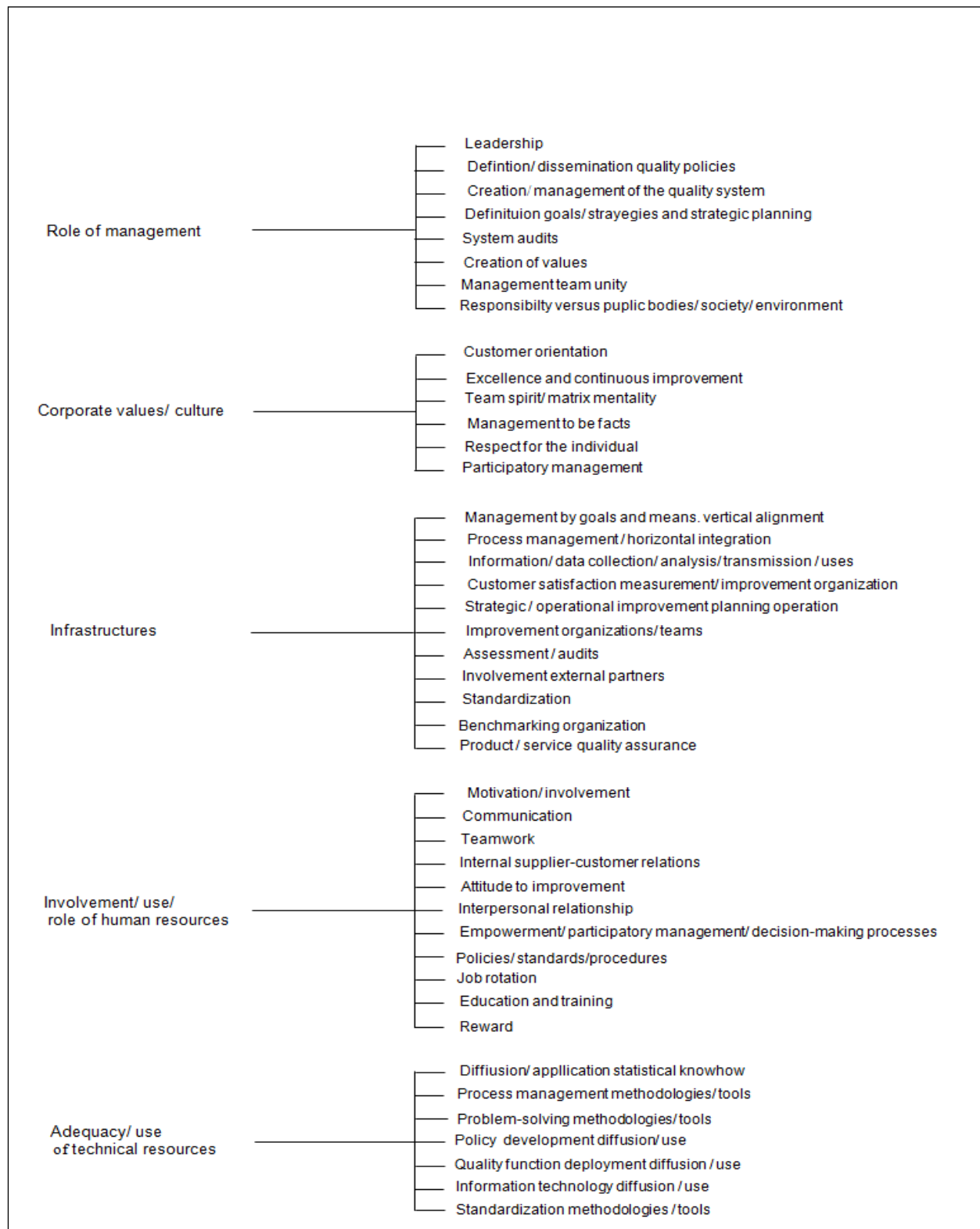


Figure 2.6: Second-level Deployment of a Quality System (Adopted from Conti, 1993)

The quality of a product or service was and remains a main objective for scholars and researchers. At the beginning of the 20th Century, pioneers of quality research, such as Juran, Crosby, Feingenbaum, Ishikawa and Deming, for example, laid the foundation of comprehensive quality management systems.

For a successful integration among the four quality management system processes, an enterprise requires to create a proper work environment taking into account the relationships, and communications between these processes and with the customers.

2.2.6 Total Quality Management (TQM)

The concept of quality has developed during the last thirty years. According to Dale (1994), quality management has evolved rapidly since the 1970s. Simple inspection activities have been replaced or supplemented by quality control; quality assurance has been developed and refined, and now many enterprises are working in line with TQM principles. Through this progression, four fairly distinct stages can be identified—the inspection, quality control, quality assurance and TQM—as shown in Figure 2.7.

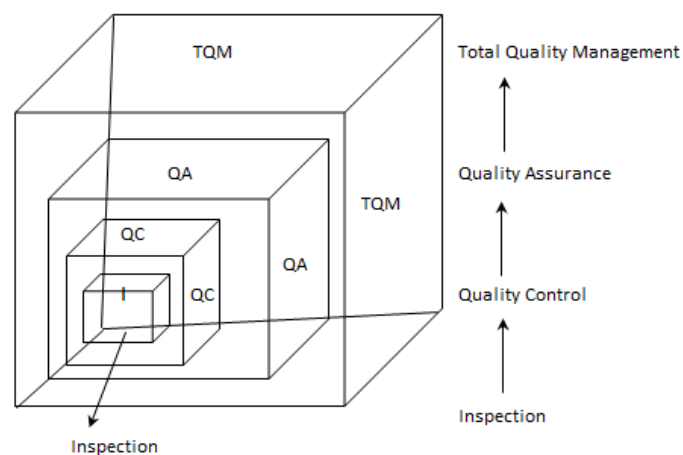


Figure 2.7: The Four Levels in the Evolution of Total Quality Management (Adopted from Dale et al., 2007)

The key elements of TQM are described as follows:

- The commitment and leadership of the CEO
- Planning and organisation
- Used tools and techniques
- Education and training
- Participation
- Teamwork
- Measurement and feedback
- Culture change.

Total quality management is implemented by enterprises to create a competitive advantage (Nilsson et al., 2001; Chan & Quazi, 2002). TQM in developing countries is considered a new concept (Al-Zamany et al., 2002), with this vision supported by Wong (1998), who notes that the programmes of quality, which are implemented in developing countries, fail because there is a lack of understanding of the quality principles. It is proposed by Oakland (1989) that TQM can be viewed as a method for freeing people's lives of wasted effort by everyone involved in the process of improving the efficiency of work so that results are achieved in less time.

The methods and techniques used in TQM can be applied across the enterprise. They are also useful in finance, sales, marketing, distribution, development, manufacturing, public relations and personnel. It is often seen that enterprises that have implemented TQM have quickly gained ground in the marketplace, with the advocated systems and procedures commonly becoming a way of life for many of the enterprise employees. To implement the TQM elements mentioned above it is necessary to generate a proper work environment that contributes to successful implementation of these elements.

2.2.7 Six Sigma

Six Sigma is a tool is to detect the deviations in production and is geared towards helping enterprise management to reduce the occurrence of production defects. Anbari (2002) notes that, 'Six sigma is a business strategy that focuses on improving customer requirement's understanding, business systems, productivity, and financial performance'. From a statistical

point of view, the term *six sigma* is defined as having less than 3.4 defects per million opportunities or a success rate of 99.9997%; sigma being a term used to represent the variation concerning the process average (Antony & Banuelas, 2002). From another perspective, Nakhai et al. (2009) state that Six Sigma is a way of reducing process variation, but ultimately it is much more than this: it is a philosophy where everyone benefits, including the customer, shareholders and even suppliers and employees. Six Sigma is a way of saving both the enterprise and the customer not only money but also all the problems associated with poor quality. Six Sigma is not only a means of measuring the level of quality; it is a way of identifying weaknesses, what the enterprise can improve, and how best the customer can be served. The backbone of Six Sigma comprises the five stages of the DMAIC process:

- Define: Identify process improvement.
- Measure: Collect all necessary data.
- Analyse: Identify the causes of the problem.
- Improve: Take actions to reduce the amount of defects.
- Control: Reduce defects by a change in the process.

Figure (2.8) shows DMAIC model

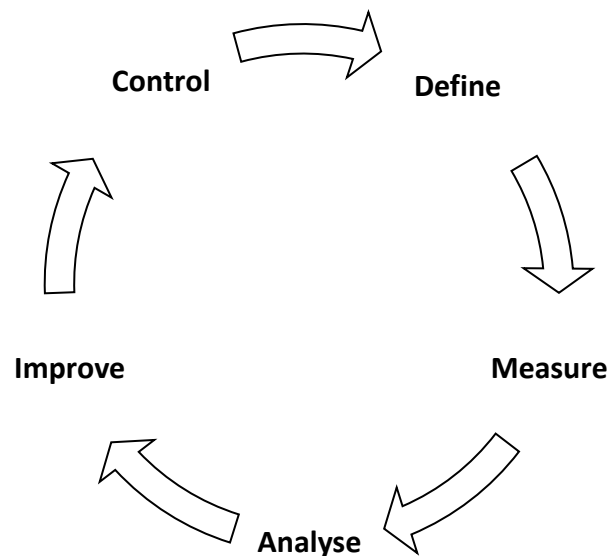


Figure 2.8: DMAIC Model

Steve Bell (2006) states that the Six Sigma approach places emphasis on collecting accurate data on the causes and the root of the problem, and attempts to draw solutions based on the data analysis. Further comments made by Hambleton (2007) states that Six Sigma started as a problem-solving approach to minimise variations in products. This request expanded to process improvement and other areas of business, including product or process redesigns, research, and product development. The study conducted by Antony et al.(2008), relating to the implementation of Six Sigma in SMEs, has shown that many SMEs are not aware of Six Sigma, and have limited resources, thus making them unable to implement Six Sigma projects.

The most critical factors for the successful deployment of Six Sigma in SMEs are the management involvement and participation, as well as linking Six Sigma to customers and business strategy. To achieve these factors it is necessary to create an appropriate work environment within enterprises.

2.2.8 *Lean Manufacturing*

Lean production, as defined by Hopp and Spearman (2004) and De Treville and Antonakis (2006) is, ‘an integrated socio-technical system whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability’. The lean production system was developed, firstly, in Toyota plants in Japan at the end of the 20th Century (Browne et al., 1996). In order to achieve lean production, Juran and Godfrey (2000) state that the process involves the removal of waste from every step in the production chain, as well as the removal of wasted energy, motion, time and resources. There are seven main types of waste, as described by Melton (2005), which are outlined in Table 2.4.

The concept was popularised by Womack et al. (2007), who suggest that, ‘the best way be to understand the concept of the Lean Production System was to contrast it with Craft production and Mass production’. They add that the lean producer embodies a synthesis of the characteristics of the mass producer and the craft producer: the craft producer uses highly skilled workers and simple but flexible tools to make exactly what the consumer asks for, one item at a time; conversely, the mass producer uses narrowly skilled professionals to design products made by unskilled or semi-skilled workers. The lean producer employs teams of multi-skilled workers at all levels of the enterprise and uses highly flexible, increasingly automated machines to

produce volumes of products of an enormous variety. The benefits resulting from the implemented lean production system are summarised by Kilpatrik (2003) as those below:

- Fewer machine and process breakdowns.
- Lower levels of inventory.
- Greater levels of stock turnover.
- Less space required.
- Improved delivery performance.
- Greater customer satisfaction.
- Improved employee morale and involvement.
- Improved supplier relations.
- Improved quality, fewer defects and rework.
- Lead time reduced.
- Increased productivity.
- Reduced paperwork.

Table 2.4: The Seven Types of Waste (Adopted from Melton, 2005)

Types of waste	Description
1.Over-production	<ul style="list-style-type: none">• Product made for no specific customer• Development of a product, a process or a manufacturing facility for no additional value
2. Waiting	<ul style="list-style-type: none">• As people, equipment or product waits to be processed it is not adding any value to the customer
3. Transport	<ul style="list-style-type: none">• Moving the product to several location• Whilst the product is in motion it is not being processed and therefore not adding value to the customer
4. Inventory	<ul style="list-style-type: none">• Storage of products, intermediates, raw materials and so on, all cost money
5.Over-processing	<ul style="list-style-type: none">• When a particular process step does not add value to the product
6. Motion	<ul style="list-style-type: none">• The excessive movement of the people who operate the manufacturing facility is wasteful

	<ul style="list-style-type: none">• Excessive movement of data, decisions and information
7. Defects	<ul style="list-style-type: none">• Errors during the process-either requiring re-work or additional work

From the potential benefits provided by the Lean production system, many enterprises may be encouraged to adopt this system if they have enough financial and human resources to cover the expenses of the system. The benefits gained from a Lean production system such as improved employee morale and involvement, reduced paperwork, and increased productivity, etc. may help the SMEs to improve their work environment and to adopt the development programmes successfully.

2.3 The ISO 9000 Standards

ISO 9000 standards can be viewed as one of the most important management concepts seen to have emerged in the last 30 years. Rodriguez-Escobar et al. (2006) commented that, since the first version of ISO 9000 was issued in 1987, its popularity has significantly increased. The first version of these standards concentrated on quality assurance concepts, with later versions of ISO 9000:1994 forming a wider family of standards (ISO 9001; ISO 9002; ISO 9003). This emphasises quality assurance through preventive actions, and continues to require proof of compliance with documented procedures.

The ISO 9000 family was revised in 2000; the three previous parts of the ISO 9000:1994 version were integrated into a single standard known as ISO 9001:2000; the latest version of standards was issued in 2008. Hoyle (2009) points out that the purpose of these standards is to give confidence to customers that products and services meet the needs and expectations of customers and other stakeholders, and improve the capability of organisations to do this. The number of ISO 9000 certificates in the UK has increased from of 35,571 in 2007 to 43,564 in 2011, moving the UK by two places on a global scale. The latest year for which there are published figures is 2011; the top 10 countries for ISO 9001 certificates of 2011 are shown in Table 2.5.

Table 2.5: Top 10 Countries with ISO 9001 Certificates (Adopted from ISO survey 93, 2011)

Top 10 Countries for ISO 9001 Certificates 2011		
1	China	328,213
2	Italy	171,947
3	Japan	56,912
4	Spain	53,057
5	Germany	49,540
6	United Kingdom	43,564
7	India	29,574
8	France	29,215
9	Brazil	28,325
10	Republic of Korea	27,284

The number of enterprises to pursue the implementation of ISO 9001 standard is increasing steadily worldwide; this indicates the importance of the ISO 9001 standard to improve performance and enables increase in profitability through the adoption of a quality management system.

2.3.1 The ISO 9000 Models and their Requirements

The ISO 9000 family has been identified and defined by BS EN ISO 9000 as follows:

- ISO 9001 is a quality systems model for quality assurance in those enterprises whose processes include design, development, production, installation and servicing.
- ISO 9002 is a quality systems model for quality assurance in those enterprises, whose processes include production, installation and servicing, but not design and development.

- ISO 9003 is a quality system model for quality assurance in those enterprises whose processes use final inspection and testing to meet product and service quality requirements.

Any enterprise attempts to implement ISO 9001 standard even small or medium or large enterprise providing product or service activity should follow the ISO 9001 requirements. The requirements of the ISO 9000 family standards are shown in Table 2.6.

Table 2.6: Requirements of ISO 9000 Standards (ISO 9000: 2000)

Item	ISO 9000 Elements	ISO 9001 (20 Requirements)	ISO 9002 (18 Requirements)	ISO 9003 (16 Requirements)
1	Management responsibilities	√	√	√
2	Quality systems requirements	√	√	√
3	Contract review requirements	√	√	√
4	Product design requirements	√		
5	Document and data control	√	√	√
6	Purchasing requirements	√	√	
7	Customer- supplied products	√	√	√
8	Product identification and tracing	√	√	√
9	Process control requirements	√	√	
10	Product inspection and testing	√	√	√
11	Control of inspection equipment	√	√	√
12	Inspection and test status of products	√	√	√
13	Control of non-conforming products	√	√	√
14	Corrective and preventive action	√	√	√
15	Handling, storage, and delivery	√	√	√
16	Control of quality records	√	√	√

17	Internal quality audit requirements	√	√	√
18	Training requirements	√	√	√
19	Servicing requirements	√		
20	Statistical techniques	√	√	√

The implementation of the ISO 9001 standard can help SMEs management to improve overall performance and capability, and to achieve a competitive advantage.

These standards have been updated to keep pace with the development of administrative and technical support over the years.

2.3.2 Historical Background of ISO 9000 Standards

The idea of quality assurance spread beyond the military and, in 1966, the British Government conducted the first national campaign for quality and reliability with the slogan ‘Quality is everyone’s business’. Progress was made in 1969 when the British government committee report on the subject recommended that suppliers’ methods should be evaluated with the use of a generic standard for quality assurance. In 1971, the Institute of British Standards (BSI) published the first British Standard for Quality Assurance (BS 9000). Subsequently, in 1974, the BSI published BS 5179, Guidelines for Quality Assurance. In 1979, BS 5750 was introduced, the requirements of which were to ‘prevent nonconformity’.

The purpose of BS 5750 has been to provide a common contractual document, demonstrating the control of industrial production. The ISO 9000 standards have evolved through several revisions. The first version of 1987 (ISO 9000:1987) has the same structure as the British standard BS 5750, with three ‘models’ for systems of quality management. It was therefore more accessible to manufacturing, and was well suited to the demands of a rigorous, stable factory floor. With its structure of twenty requirements (see Table 2.6), the focus tended to be overstated in regard to conformance with procedures as opposed to the overall management process, which was the original intention. The 1994 version (ISO 9000:1994) was an attempt to break from practices that had somewhat corrupted the use of the 1987 standard. It also emphasised quality assurance via

preventive actions, and continues to require proof of compliance with documented procedures. The ISO 9000:2000 version of the standard attempted to make a radical change in thinking. It placed the concept of process management at the heart of the standard, specifying the central objectives of the standard. Expectations of continuous process improvement and tracking customer satisfaction were also made explicit in this review. The fourth and latest edition of the standard (ISO 9001:2008) was published on November 14, 2008. The latest version of the ISO 9001:2008 and its predecessor, ISO 9001:2000, is based on eight quality management principles. According to EN ISO 9000:2005, Quality Management Systems Fundamentals and Vocabulary, eight quality management principles have been identified as follows:

1. *Customer focus*: Organisations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements, and strive to exceed customer expectations.
2. *Leadership*: Leaders establish a unity of purpose and direction for the organisation. They should create and maintain the internal environment in which people can become fully involved in achieving the organisation's objectives.
3. *Involvement of people*: People at all levels are the essence of an organisation, and their full involvement enables their abilities to be used for the organisation's benefit.
4. *Process approach*: A desired result is achieved more efficiently when activities and related resources are managed as a process.
5. *System approach to management*: Identifying, understanding and managing interrelated processes as a system contributes to the organisation's effectiveness and efficiency in achieving its objectives.
6. *Continual improvement*: Continual improvement of the organisation's overall performance should be a permanent objective of the organisation.
7. *Factual approach to decision making*: Effective decisions are based on the analysis of data and information.
8. *Mutually beneficial supplier relationships*: An organisation and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.

The objective of this review was to clarify existing requirements and improve consistency of the approach with other management standards, such as ISO 14001:2004 (British-Assessment

Bureau, 2008). Lee et al. (2009) highlight that the number of certified companies is continuously increasing with more than 951,000 ISO 9001:2000 certificates being issued across 175 countries.

Table (2.7) shows the stages of development of ISO 9000 standards.

Table 2.7: Development Stages of ISO 9000 (The British Assessment Bureau, 2011)

Year	Event	Purpose
1966	First national campaign for quality and reliability by British Government	Quality is everyone's business.
1969	British Standard Government Committee Report	Supplier methods should be evaluated by quality assurance.
1971	First BS 9000 published	First Standard for quality assurance by BSI.
1974	BS 5179 was published	Guide line for quality assurance.
1979	BS 5750 was introduced	Provide a common contractual document.
1987	First version of ISO 9000 standards	The focus tended to be overstated on conformance with procedures rather than the overall management process, which was the original intention.
1994	Revision of ISO 9000, 1987, with the inclusion of various amendments	It emphasised quality assurance via preventive actions and continues to require proof of compliance with documented procedures.
2000	Amendments on some clauses of ISO 9000/94	It placed the concept of process management at the heart of the standard, specifying that the central objectives of the standard
2008	Amendments on some clauses of ISO 9000,2000	To clarify existing requirements and improve consistency of approach with other management standards such as ISO 14001:2004.

The journey of ISO 9000 standards started in 1987 the date of the first version and then, spanning the years, there were several amendments made as a result of change management

systems and technical progress. The last versions of standards published in 2008. The aim of standards is to provide the management of enterprises with a quality management system, which helps them to manage their financial and human resources successfully, and which further allows their customers to be satisfied with their products or services. In an effort to maintain the ISO 9001 certificate, there is the need to ensure commitment from top management, and to make continuous improvements.

2.3.3 ISO 9000 and Business Excellence

Hoyle (2009) states that business excellence can be symbolised by a number of models; these models are based on the premise that ‘excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy that are delivered through people, partnerships and resources and processes’. In Europe, excellence is promoted by the European Foundation for Quality Management (EFQM) through the EFQM Excellence Model. In the USA, excellence is promoted by the National Institute of Standards and Technology (NIST) through the Baldrige National Quality programme (BNQP).

Hoyle adds that, around the world, several Quality Awards are being presented for excellent use of the same or similar models. One characteristic that distinguishes these models from ISO 9001 is that the models include a non-prescriptive framework recognising the various approaches to achieving sustainable excellence. Another is the award scheme: excellence awards are generally annual events where winners collect awards; the award does not have a time limit, although an organisation can apply to alter a suitable lapse, usually five years. However, unlike the ISO 9001 certification scheme, there is no continuous assessment, and organisations do not lose the award for failing to maintain standards. EFQM, according to Dubas and Nijhawan (2005), is a non-perspective framework comprising of nine criteria. Five criteria are ‘Enablers’ and four being ‘Results’. The Enabler criteria on the left-hand side of the Figure 2.9 cover what an enterprise does. The result criteria on the right-hand side of the figure cover what an enterprise achieves. Feedbacks from results help to improve Enablers. The nine weighted criteria are used in the assessment process. Figure 2.9 provides an overview of the EFQM model. The EFQM Excellence Model is used by over 30,000 enterprises in Europe INNO-Partnering Forum (2012).

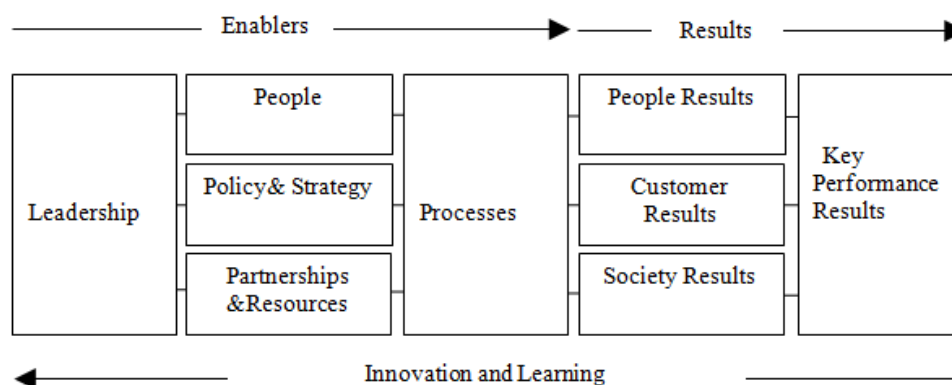


Figure 2.9: EFQM Excellence Model (Adopted from Oakland, 2000)

In general, ISO 9001 standard is a quality management system aiming to improve the performance of enterprise management through continuous assessments. EFQM excellence is an annual event, and the award does not have a time limit and does not need to involve continuous assessments.

2.3.4 ISO 9000 and Management Commitment

To implement ISO 9000 standards, the management of the enterprises should follow all requirements of the standard and accordingly demonstrate their commitment. Sarkar (1998) comments that top management commitment and involvement must be first assured for the planning of ISO 9000 implementation. According to Huarng et al. (1999), top management must always provide evidence of its commitment and ensure the quality system includes dedication to continual improvement. Koo et al. (1998) and Mahadevappa and Kotreshwar (2004) stated that the workforce was seen as an important player, with their cooperation and personal commitment to ISO 9000 standards requirements. Ishikawa (1985) mentions that every single employee in an enterprise needs to be fully committed to ISO 9000 implementation. The collective, integrated and coordinated efforts of all fully involved staff members make for a world-class organisation. Sandholm (2005) reported that both vision and quality policies need to be effectively communicated by management to every staff member in the enterprise. Furthermore, management need to make certain that the stated company vision and quality policies can be

applied to every job function in the organisation, and that staff members understand their respective positions.

The challenge potentially facing many enterprises, that are ISO 9000 certified centres, is that how they can maintain the ISO 9001 certificate for a long time. Essentially, this depends on the extent to which the managements of these enterprises are committed to continuous improvement and developing the skills of their employees through creating an appropriate work environment which will help them to achieve their plans successfully.

2.3.5 Planning for ISO 9001 Standard

Feng et al. (2008) point out that ISO 9001 certification requires a short-term plan for the implementation process and long-term plan for sustaining the efforts. These plans should be integrated into overall business planning so as to allow the enterprise to effectively apply ISO 9001 quality management systems; this includes top management commitment, education, training, documentation and organised resources. In addition, it is stated that the progress by enterprise toward ISO 9001 certification is made only when the demands of motivation, information, resource and planning come together. The planning for ISO 9001 implementation involves preparation and the development of a quality system for an enterprise. According to Stelian (2008), ISO 9001:2000 provides only a generic framework for bringing quality to life; both careful performances planning and process innovation are required to elaborate a mature quality management system. Martinez-Costa et al. (2007) conclude that, if obtaining ISO 9001 is driven by external pressures and the satisfying of external requirements, the enterprise would end up conforming only at the administrative or surface level.

2.3.6 Work Environment and ISO 9001 Standard

The implementation of ISO 9000 within enterprises requires the creation and maintenance of a good work environment and ISO 9000 standards centred on the work environment, which is considered to be one of its requirements for getting the ISO 9001 certificate. ISO 9000 (2008) defined work environment as ‘work environment relates to those conditions under which work is performed including physical, environmental and other factors (such as noise, temperature, humidity, lighting or weather)’.

In Hoyle (2009), it is recommended that the concept of work environment is a set of roles, which are necessary to achieve the work, including physical, social and psychological and environmental factors. It is added that, ‘the physical factors of the work environment include space, temperature, noise, light, humidity, hazards, cleanliness, vibration, pollution, accessibility, physical stress and airflow. In addition to visible light, other types of radiation across the whole spectrum impact the physical environment. Whereas social factors of work environment are those that result from interactions between people and involve the impact of individual’s family, education, religion and peer pressure, culture and climate lastly the psychological factors of work environment result from an individual’s inner needs and external influences and include recognition, responsibility, achievement, advancement, reward, job security, interpersonal relations, leadership, affiliation, self-esteem and occupational stress’. Sundstrom (1994) reports that most of the people spent as much as 50% of their time pursuing indoor environments, which have greatly impacted their mental status, actions, abilities and performance. In an effort to improve outcomes and accordingly increase productivity, Carnevale (1992) and Clements-Croome (1997) assume improvements in the work place environment are fundamental. In addition, a better physical office environment would boost employees and ultimately improve their productivity. Factors such as dissatisfaction, untidy work places and the physical environment are all recognised as playing a key role in the loss of employees’ productivity.

The work environment, according to Opperman (2002), is composed of three major sub-environments: the technical environment, the human environment and the organisational environment. The technical environment refers to tools, equipment, technological infrastructure and other physical or technical elements. This environment creates elements that enable employees to perform to their respective responsibilities and activities. The human environment refers to peers, others with whom employees relate, team and work groups, interactional issues, leadership, and management. The human environment is designed in such a manner that it encourages informal interaction in the work place so that the opportunity to share knowledge and exchange ideas could be enhanced. Organisational environment includes systems, procedures, practices, values and philosophies.

There are two types of work environment according to Kyko (2005), namely conducive and toxic work environments: Conducive work environment gives pleasurable experiences to employees,

thus enabling them to actualise their abilities and behaviour, which further reinforces self-actualising behaviours; on the other hand, the toxic work environment gives unpleasant experiences and, at the same time, de-actualises employees' behaviour. This environment reinforces low self-actualising behaviours, and subsequently leads to the development of negative traits in employee behaviours. Kyko (2005) identifies six factors that are believed to contribute to the toxic work environment, hence contributing to the low productivity of workers, namely, opaque management, biased boss, company's policies, working conditions, interpersonal relationship and pay. The management of the enterprise should control and manage its work environment to comply with conformity to product/service requirements.

2.3.7 Motivation and ISO 9000 Implementation

Powerful motivation can help to push workers to increase their performance and hence to be innovative in their work. Greenberg and Baron (2000) define motivation as: 'The set of processes that arose, direct, and maintain human behaviour toward attaining some goals'. Paulo et al. (2008) found that ISO 9000 certification motivations can be classified according to one of two main categories, internal and external motivations: internal motivations are related to the goals of achieving organisational improvements, whilst external motivations are mainly related with promotional and marketing issues, customer pressures and the improvement of market share. Martinez-Costa et al. (2007) add that motivation for certification has been analysed, with many researchers indicating that most try to obtain it because of the pressure from the customers or as a marketing tool. Enterprises that obtain ISO 9001 certification motivated by internal reasons usually obtain better results than those pressured by external reasons.

Enterprise applying ISO 9001 by external motivations, such as customer pressure or as a promotional tool, gain fewer benefits than those enterprises convinced of ISO 9000's possibilities to improve management practice and, consequently performance.

2.3.8 Relationship between ISO 9000 and Total Quality Management

Hokoma et al. (2010) emphasise that TQM can be considered one of the many forms of quality management concepts seen to have emerged and taken shape during the 1970s. They also mention that the concept of quality management is not only a set of tools centred on improving enterprise efficiency, but can also be seen as symbols giving the enterprise greater credibility.

TQM can be described as a management philosophy that centres on customer needs by working towards continuous improvement through the whole enterprise's activities, through the use of statistical monitoring, and through continuous efforts to meet the requirements of internal and external clients in manufacturing and business environments. Paulo et al. (2008) conclude that, 'companies that have already implemented or have planned to implement TQM were those that achieved ISO 9001 certification based mostly on internal reasons or that have been ISO 9001 certified for a long period of time already', adding that ISO 9001 standards cannot be faced as an independent approach from TQM, but that both methodologies should be integrated and implemented together.

Ching and Woan (2008) indicate that improved performance depends most on continuous improvement in ISO 9000 implementation. Martinez-Costa et al. (2007) supplement this notion, stating that the impact of ISO 9000 on performance was more mixed compared with the impact of TQM. Ching and Woan (2008) further add that the continuous improvement of ISO 9000 quality management systems is essential to monitoring and improving the overall quality approach. Indeed, certification may be seen as just the beginning of the ISO 9000; what cannot be ignored, however, is that the enterprise must continue with its internal audits, management reviews and corrective actions.

The ISO 9000 series provides a platform for an enterprise to demonstrate its compliance with a quality system by establishing the documentation and procedural standards that need to be met. Employees in an enterprise need to follow the procedures laid out in the plans: only through involvement can employees understand the need to continually improve and dedicate their efforts to fix deficiencies, thus achieving the goals of quality improvement. ISO 9000 standards also require that the enterprise continually improves the effectiveness of the quality management system through the use of strategic policies on quality, quality objectives, audit results, the analysis of data, corrective and preventive actions, and management review.

Both TQM and ISO 9000 standards aim to improve performance. The TQM including inspection, quality control and quality assurance, TQM is the responsibility of all staff in the enterprise. ISO 9000 standards are fundamentally concerned with quality management with respect to customer requirements and customer satisfaction through the application of a quality management system.

2.3.9 Quality Culture and Implementation of ISO 9000 Standards

The quality culture of managers and employees is one of the most important factors assisting enterprises to implement ISO 9000 standards. According to Dale et al. (1994), quality culture can be defined as ‘the culture which nurtures high social relationship, and respects for individual, a sense of membership or the organisation and a belief that continuous improvement is for common good’. Briscoe et al. (2005) propose that enterprise quality culture should influence the workforce’s acceptance of the changes brought about by ISO 9000.

One of the most prominent challenges to ISO 9000 implementation comes from employees who resist change. Employees often wonder why practices need to be altered and documented, especially in the absence of a crisis. Enterprises where quality is already a part of the organisational culture are accustomed to looking for the sources of quality problems and then making the changes needed to eradicate them. In this vein, Ching and Woan (2008) state that it is essential for top management to model all the quality behaviour they want employees to mimic; through this approach, the leadership from top management downwards can eventually lead to changes in the attitudes of staff members. Employees’ work effectiveness is deemed a direct function of the quality of the systems managers create. Srivastav (2010) concludes that if ISO 9000 is implemented successfully, this will improve human wellbeing and increase the overall functionality of organisational culture, and organisational climate.

The quality culture of employees represents one of the keys to the successful implementation of ISO 9000 standards as it will help employees to understand the aim and requirements of the standards.

2.3.10 Internal Audit for ISO 9001 Standard

The internal audit for ISO 9001 defined by Hoyle (2009) as ‘an examination of results to verify their accuracy by some other than the person responsible for producing them’. Moreover, ISO 9000: 2005 defines an audit as ‘a systematic, independent and documented process for obtaining, audit evidence and evaluating it objectively to determine the context to which agreed criteria are fulfilled’. The quality audit is defined by Haider (2001) as ‘quality audit is a methodical and independent examination in order to determine if quality-related activities and results satisfy

predetermined requirements and if these requirements are implemented efficiently and are capable of achieving the objectives’.

The purpose of quality audits, in the view of Hoyle (2009), is to establish, by an unbiased means, accurate information on quality performance. Quality audits are the measurement component of the quality system. Auditing for conformity to ISO 9001 standard requires that the enterprise conduct internal audits, at planned periods, in an effort to highlight the extent to which the quality management system conforms to the ISO 9001 requirements. Phillips (2009) mentions that the audit provides management with information needed to assess conformance to the defined quality management systems and to identify possibilities for continuous improvement. The auditor is ‘a person who is qualified and authorized to perform all or any portion of a quality system audit’, as was defined by Haider (2001). Phillips (2009) further notes that, when selecting the internal auditor, the enterprise should take into account the following attributes: ethics, open-mindedness, diplomacy, observation skills, and the degree of perceptiveness, persistence and curiosity. Phillips adds that an effective audit preparation process includes seven steps, as follows:

Step 1: Define and understand the scope of the audit

Step 2: Review applicable standards

Step 3: Prepare a process models

Step 4: Review applicable documentation

Step 5: Review previous audit results

Step 6: Create an effective checklist

Step 7: Perform a pre-audit meeting.

In an effort to prepare the internal process model, firstly, there is a need to identify the outputs of the process and accordingly establish those inputs that feed into the process being audited. Figure 2.10 represents the Internal Audit Process Model.

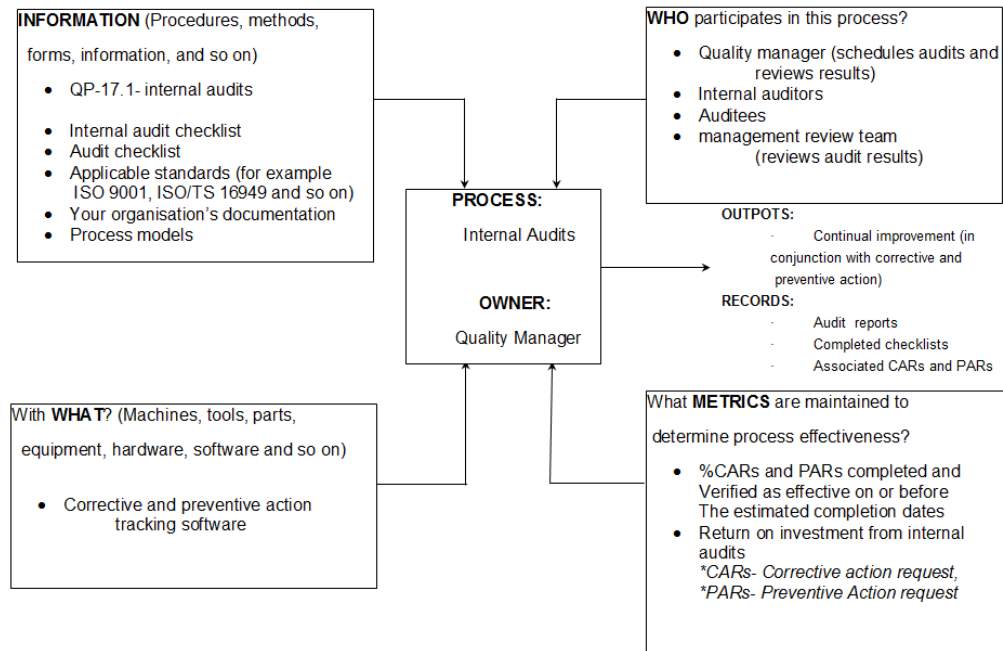


Figure 2.10: Internal Audit Process Model (Adopted from Phillips, 2009)

The internal audit process helps enterprises to determine deficiencies and accordingly identify the most suitable solutions for solving them before the external auditor's assessment. This contributes to increasing the overall awareness of employees, and provides them with right instructions which help to maintain the ISO 9000 certificate. To implement the audit programme successfully the management of the enterprise should provide a good working environment for employees.

2.3.11 Benefits and Barriers of ISO 9000 Implementation

The potential benefits concluded by the researchers from the implementation of ISO 9001 standard are summarised in Table 2.8.

Table 2.8: Benefits gained from Implementation of ISO 9001 Standard

Benefits gained from the implementation of ISO 9001 standard	Sources/Authors/Year
Better corporative image	Paulo et al. (2008), Goetsh and Davis (1998), Tsiotras and Gtzamani (1996), Vloeberghs and Bellens (1996).
Improve quality awareness	Levine and Toffel (2010), Paulo et al. (2008), Magd and Curry (2003), Dick (2000), Brown et al. (1998), Goetsh and Davis (1998), Quazi and Padibjo (1998), Tsiotras and Gtzamani (1996), Brown and Van der Wiele (1995 a, b), Dale (1994).
Improve documentation procedures	Levine and Toffel (2010), Prajogo (2009), Ashrafi (2008), Santos and Escanciano (2002), Goetsh and Davis (1998), Jones et al. (1997), McLachlan (1996), Tsiotras and Gtzamani (1996).
Clearer working instructions or procedures	Santos and Escanciani (2002), Tsiotras and Gtzamani (1996).
Defining the responsibilities and duties of staff	Paulo et al. (2008), Santos and Escanciani (2002), McLachlan (1996).
Reduce unnecessary work	McLachlan (1996), Lloyd's Register Quality Assurance Ltd (1994).
Improve customer service	Levine and Toffel (2010), Garder et al. (2009), Paulo et al. (2008), Magd (2006), Magd and Curry (2003), Brown et al. (1998), Jones et al. (1997), McLachlan (1996), Brown and Van der Wiele (1995a,b), Raynor and Porter (1991).
Reduce the rate of product defects and inefficiency	Garder et al. (2009), Sampaio et al. (2009), Mersha (2007), Zaramdini (2007), Magd (2006), Gtzamani and Tsiotras (2002), Dick (2000), Brown et al. (1998), Garvin (1988), Lee (1998) Mo and Chan (1997), Dale (1994), Raynor and Porter (1991).
Improve customer satisfaction	Paulo et al. (2008), Ashrafi (2008), Magd (2006), Magd and Curry (2003), Gtzamani and Tsiotras (2002), Quazi and Padibjo (1998), Lee (1998), Mo and Chan (1997), McLachlan (1996), Brown and Van der Wiele (1995 a, b), Dale (1994) Morgan and Pierce (1992), Raynor and Porter (1991).
Greater competitive advantage	Paulo et al. (2008), Oke and Charies-Owaba (2007), Poksinska et al. (2006), Magd and Curry (2003), Gtzamani and Tsiotras (2002), Dick (2000), Quazi and Padibjo (1998), McLachlan (1996), Brown and Van der Wiele (1995 a, b), Corrigan (1994).

Helped in continual improvement	Dick (2000), McLachlan (1996), Brocka and Brocka (1994).
Greater staff retention	Sampaio et al. (2009), Paulo et al. (2008), Mersha (2007), Gtzamani and Tsiotras (2002), Brown et al. (1998), Mo & Chan (1997), McLachlan (1996).
Improved profitability	Levine and Toffel (2010), Sampaio et al. (2009), Ashrafi (2008), Santos and Escanciano (2002), Gtzamani and Tsiotras (2002), Dick (2000), Haversjo (2000), Lee (1998), Jones et al. (1997), Mo and Chan (1997), Scotto (1996).
Increase market share	Sampaio et al. (2009), Paulo et al. (2008), Mersha (2007), Magd and Curry (2003), Santos and Escanciano (2002), Dick (2000), Brown et al. (1998), McLachlan (1996), Lloyd's Register Quality Assurance Ltd (1994).
Expansion to international market	Prajogo (2009), White et al. (2009), Sampaio et al. (2009), Paulo et al. (2008), Zaramdini (2007), Magd (2006), Brown et al. (1998), Lloyd's Register Quality Assurance Ltd (1994).

There is a range of barriers faced by enterprises implementing ISO 9001:

- A lack of participation in management during the process of implementation Brown et al. (1998), (Stevenson & Barnes, 2002), Torre et al. (2001) and Douglas et al. (2003).
- High implementation and maintenance costs, despite decline over time (Leung et al., 1999; Stevenson & Barnes, 2001; Casadesu's et al., 2005).
- Small and medium enterprises face restrictions on financial, human and material resources (Brown et al., 1998).
- One of the barriers facing SMEs to implement ISO 9000 standards the internal resistance that comes from employees (Psomas et al., 2010, Briscoe et al., 2005).
- Most of the SMEs have suffered financially from increases in paperwork consumption due to awarding of the ISO 9001 certification (Brown et al., 1998). Table (2.9) summarises some of the problems facing enterprises in the maintaining of the ISO 9001 certificate.

Table 2.9: Problems Faced in ISO 9001 Maintenance (Adopted from Wahid et al., 2009)

Category	Problems
People	<ul style="list-style-type: none">▪ Staff took their time in following new/revised procedures.▪ Not following procedures.▪ Lack of understanding and ignorance on the part of employees on the QMS itself.▪ Not enough training of staff.▪ Internal audits not taken seriously.▪ Lack of commitment.▪ Head of Department taking time to give feedback for system review and improvement.▪ Taking things for granted once certification is achieved.▪ Some procedures are outdated with the current market practice.▪ Some of the old staff did not follow procedures, they used shortcuts instead.▪ Lack of participation from staff.
Subcontractors	<ul style="list-style-type: none">▪ Subcontractors doing shortcuts at work and therefore had to be closely monitored.
Communication of Information	<ul style="list-style-type: none">▪ Difficult to cascade down information to people at sites or on the ground due to dispersed location.▪ No disclosure of audit performance to employees.

In order to achieve some of the aforementioned benefits from implementing ISO 9001 standard and reducing the barriers that may face some of the enterprises, there is the need of successful management that knows how to successfully invest the financial and human resources available.

The management of an enterprise can achieve a number of benefits from the implementation of ISO 9000 standards if it overcomes the difficulties it may face such as employees' internal resistance and paperwork consumptions, high implementation costs and insufficient financial resources etc. through creating a suitable work environment.

2.4 Organisational Development (OD)

Organisational Development (OD) is concerned with investigating organisational health and performance, and the capability of the enterprise to adapt to change. It requires the application of organisational behaviour and the recognition of the social processes of the enterprise. The manager needs to understand the nature of organisational culture, employee commitment and successful implementation and change management (Mullins, 2005). A comprehensive definition of OD in the behavioural science sense is given by (French & Bell, 1999) as, 'A generic term which embraces a wide range of intervention strategies which are aimed at the development of individuals, groups and the organisation as a total system'.

Organisational development is defined by (Cummings & Worley, 2009) as 'a system-wide application, and transfer of behavioural science knowledge to the planned development, improvement and reinforcement of the strategies, and processes that lead to organisation effectiveness'. This definition emphasises several features that differentiate OD from other approaches to organisational change and improvement, such as management consulting, innovation, project management, and operation's management. OD assists organisations in changing themselves and rebuilding their strategies, structures and processes. Additionally, it helps enterprise employees to expand beyond surface change to transform the underlying assumptions, and values governing their behaviours.

The OD should be applied in parallel with technological and managerial progress, which is different from one enterprise to another depending on the enterprise's size, type of products, or services etc.

2.4.1 Organisational Culture

Organisational culture is defined by (Buchanan & Huczynski, 2010) as 'the shared values, beliefs and norms, which influence the way employees to think, feel and act towards others inside and outside the organisation'. In addition, organisational culture has been defined by Mclean and Marshall (1993) as, 'the collections of traditions, values, policies, beliefs, and attitudes that constitute a pervasive context for everything we do and think in an organisation'. In the view of Ostroff et al. (2003), organisational culture is the key to explaining the happenings in an enterprise. This centres on the behavioural and environmental traits underpinning the attitudes

of individuals in the enterprise. It pervades all relationships that exist in the enterprise, and influences decisions that are taken. Schein (1992) affirms that organisational culture is the assumptions that are invented, discovered and developed by a group of people during the course of integrating in order to adapt to and cope with its problems. These assumptions are in the form of values, which are transferred to new members of the group, and also are taught as the right way of behaving in relation to solving problems. In addition to what has been said, Bhaskaran and Sukumaran (2007) declare that organisational culture centres on the foremost and continuing values, attitudes and behaviours of a group.

Organisational culture represents the attitudes, values and behaviours of employees. Positive attitudes and behaviours will create a good climate within the enterprise, and with its clients and stakeholders.

2.4.2 Organisational Climate

Schneider (1975) defines organisational climate as ‘psychologically meaningful molar environmental descriptions that people can agree to characterise a system’s practices and procedures’. Furthermore, (Litwin & Stringer, 1968) define organisational climate as ‘the set of measurable properties of the work environment that is either directly or indirectly perceived by the employees who work within the organisational environment that influences and motivates their behaviour’. Organisational climate seeks to identify the environment that affects the behaviour of employees. It deals with the way(s) employees make sense of their environment (Reichers & Schneider, 1990).

Organisational climate reflects beliefs about environmental organisations shared amongst members, where members attach psychological significance to help them make sense of their environment (James & James, 1989; James & Jones, 1974; Schneider, 1975; Schneider & Reichers, 1983). According to Rentsch (1990), organisational climate is a relatively suffering quality of the internal environment of an organisation that (a) is known by its members, (b) affects their behaviour, and (c) can be described in terms of the values of a particular set of characteristics of the organisation.

The organisational climate is necessary, and it helps the management of an enterprise to implement its plans successfully. Importantly, it is the responsibility of the leadership of the

enterprise to create a good internal environment through motivation, recognition, personal relationships and interest with the physical factors.

2.4.3 Types of Organisational Structure

Mullins (2005) defines organisational structure, as ‘the pattern of relationships amongst positions in the organisation and among members of the organisation. Structure makes possible of the application through which the activities of the organisation can be planned, organised directed and controlled. It defines tasks and responsibilities, work roles and relationships, and channels of communication’. Mansfield (1986) points out that all enterprises, such as industrial enterprises, schools or civil-service divisions, are structured, meaning there are relatively limited relationships between different personnel, and more-or-less regularised procedures for carrying out the enterprise business. According to ISO 9000:2008, the structure of the management system is dependent on enterprises’ size and purpose. Small enterprises may not be aware of any formal structure, but when enterprise grows, however, the need for a formal structure becomes necessary for coordination and control. The types of organisational structures are as follows:

1. Functional Structure

Fincham and Rhodes (2005) indicate that the basic model represents the functional design of choice for many large enterprises. This structure groups individuals in the most obvious way, with people of similar professional functions positioned in the same departments.

Coordination is achieved through a Board of Directors or management committee, overseen by a Managing Director or General Manager (Carnall, 2007). The functional structure is shown in Figure 2.11.

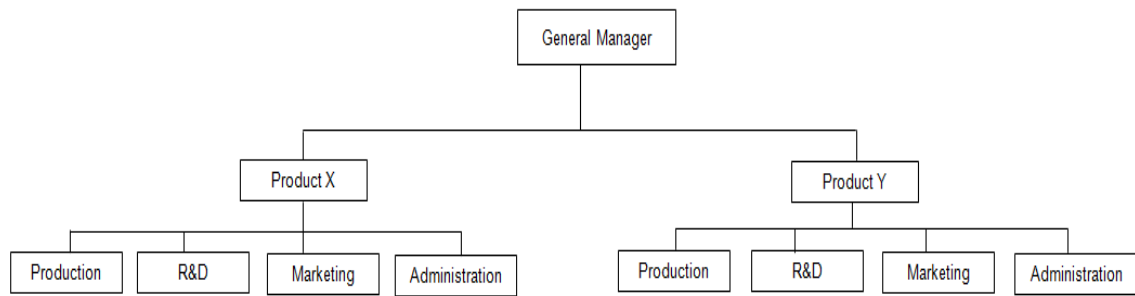


Figure 2.11: Functional Organisational Structure (Adopted from Fincham & Rhodes, 2005)

2. Product-based Structure

This structural type, according to Fincham and Rhodes (2005), includes the skills and professions required for a particular type of output. It may be a specific product, but it can also be the product range for a specific market or geographical region, being brought together in a department or organisational division. Product-based structures mean the regrouping of a functional structure; all the technical skills, and so on, in functional departments are redistributed in different divisions. Carnall (2007) stated that the functional structure provides a good basis for achieving internal efficiency of functions and coordination. Figure 2.12 shows the product-based structure.

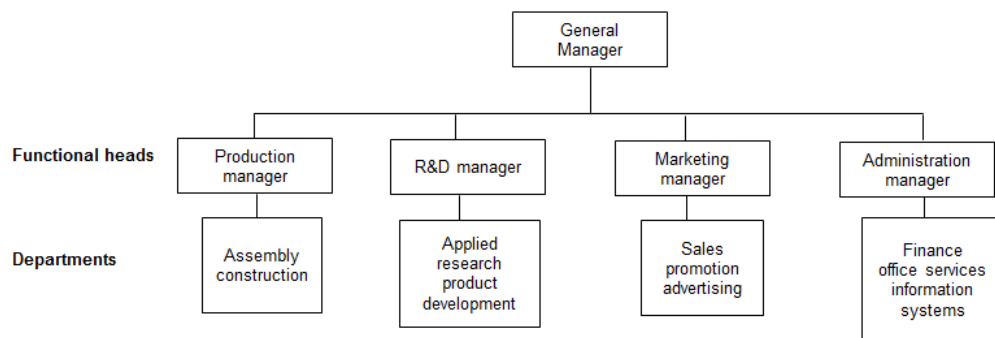


Figure 2.12: Product-based Organisational Structure (Adopted from Fincham & Rhodes, 2005)

3. Divisional Structure

The divisional structure, according to Carnall (2007), involves breaking down the enterprise into divisions. Each division might serve a specific product or a particular market; each will have its own divisional Chief Executive and management committee or Board. Figure 2.13 shows the divisional structure.

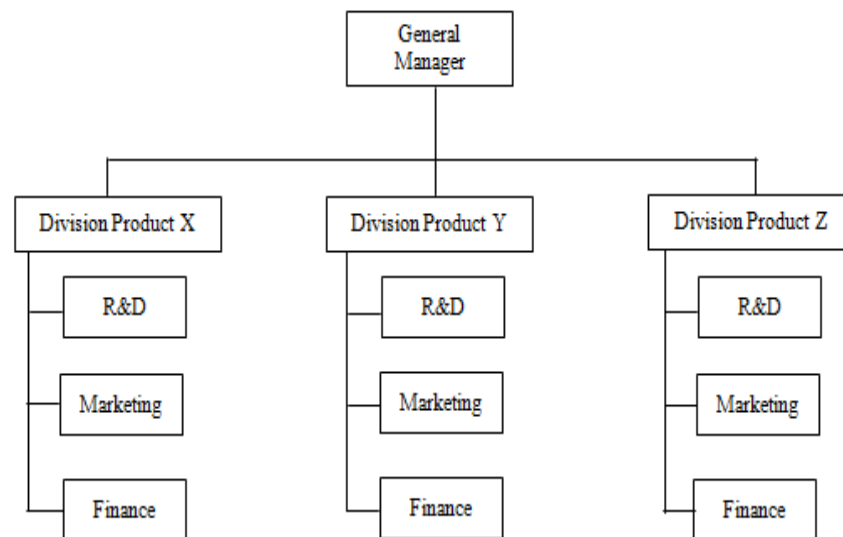


Figure 2.13: Divisional Structure

4. Matrix Structure

The matrix structure is an organisational design grouping employees by both function and product. The organisational structure is very flat, and the structure of the matrix is differentiated into whatever functions are needed to accomplish certain goals. Each functional worker reports to the functional heads, but does not normally work directly under their supervision; instead, the worker is controlled by the membership of a certain project, and each functional worker works under the supervision of a Project Manager. In this way, each worker has two superiors who will jointly ensure the progress of the project Fincham and Rhodes (2005). According to Carnall (2007), the matrix structures are commonly identified on large construction, aerospace or computer software development projects. Figure 2.14 represents the matrix structure.

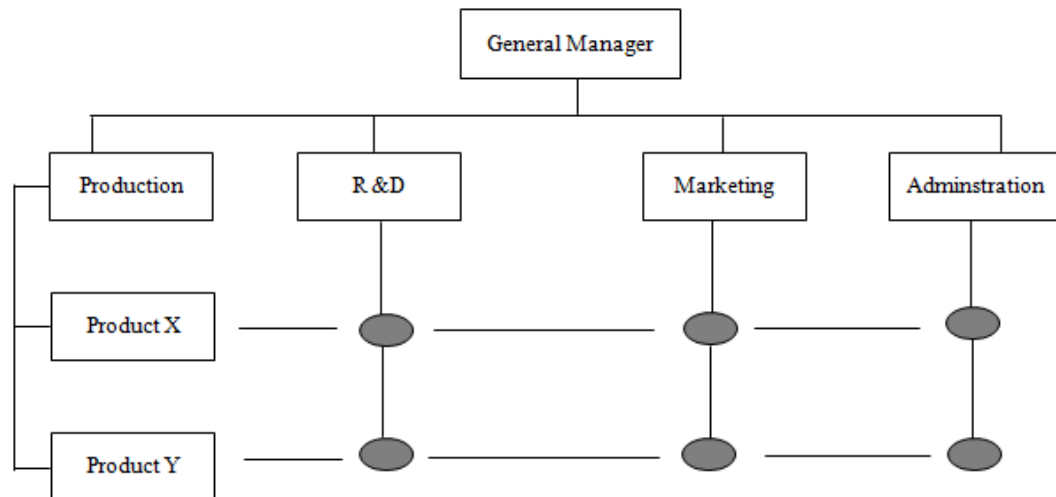


Figure 2.14: Matrix Organisational Structure (Adopted from Fincham & Rhodes, 2005)

Table 2.10: Organisational Structures Advantages and Disadvantages (Adopted from Duncan, 1979; Carnall, 2007)

Structure Type	Advantages	Disadvantages
Functional structure	<ul style="list-style-type: none"> • Allows economies of scale within functional departments • Enables in-depth knowledge and skill development • Enables the organisation to accomplish functional goals • Is best with only one or a few products 	<ul style="list-style-type: none"> • Slow response time to environmental change • May cause decisions to pile on top, hierarchy overload • Leads to poor horizontal coordination among departments • Results in less innovation • Involves restricted view of organisational goals
Product-based structure	<ul style="list-style-type: none"> • Product-based structure is decentralised, enabling a greater level of flexibility when reacting to external market forces 	<ul style="list-style-type: none"> • Product-based structure creates redundancies that increase operational costs. For example, each division could require its own warehousing facilities or shipping contracts

Divisional structure	<ul style="list-style-type: none">• Suited to fast change in unstable environment• Leads to client satisfaction because product responsibility and contact points are clear• Involves high coordination across functions• Allows units to adapt to differences in products, regions, clients• Best in large organisations with several products• Decentralizes decision-making	<ul style="list-style-type: none">• Eliminates economies of scale in functional departments• Leads to poor coordination across product lines• Eliminates in-depth competence and technical specialisation• Makes integration and standardization across product lines difficult
Matrix structure	<ul style="list-style-type: none">• Achieves coordination necessary to meet dual demands from customers• Flexible sharing of human resources across products• Suited to complex decisions and frequent changes in unstable environment• Provides opportunity for both functional and product skill development• Best in medium-sized organisations with multiple products	<ul style="list-style-type: none">• Causes participants to experience dual authority, which can be frustrating and confusing• Means participants need good interpersonal skills and extensive training• Is time consuming; involves frequent meetings and conflict resolution sessions• Will not work unless participants understand it and adopt collegial rather than vertical-type relationships• Requires great effort to maintain power balance

When the management of enterprises adopt one of these types of organisational structure, it should take into considerations the size of enterprise, the number of employees, its activities, and whether it produces a product or provides a service to customers, etc. The right choice will reduce the time and costs involved, and will facilitate communication between the departments inside and outside the enterprise.

2.4.4 Change Management Approach

The implementation of change management aims to improve the performance of staff members. Armstrong (1992) indicates that Human-Resource Management (HRM) is largely centred on helping to achieve change. Its introduction and development may require significant changes to the culture of the enterprise and to its policies, structure and systems. Managing changes in terms of HRM is based on the strategic vision of the enterprise—or any part thereof—in terms of how human resources can achieve it. Two types of change may be identified, namely strategic and operational: the strategic is concerned with the major issues in the long-term and across the enterprise, whilst operational changes relate to new systems, procedures, structures or technology, all of which have an immediate effect on the enterprise of working arrangements within a part of the enterprise. However, their impact on people may be more important than the broader strategic change, and should be treated with equal care.

Many studies are focused on identifying change factors from both the external and internal environments. As enterprises face the dynamic, changing environment, they are required to adapt, change and, at times, completely transform. Previous research examines environmental factors that encourage enterprises to change in response to external environmental pressures and opportunities and to instead direct focus to environmental factors that may motivate enterprises to change (Kotter, 1996; Lawrence, 1990; Hedberg et al., 1976).

The most driving forces for change stem from macro-environmental factors, such as major economic and political changes, technological advances, rapid expansion in the global marketplace, and altering demographic and social structures (George & Jones, 2002). Once organisational leaders decide the need for change, they also face challenges in terms of successfully implementing initiatives that will lead to change. There is significant research that focuses on the process of implementing organisational change, with various issues considered, such as how change occurs (Beer et al., 1990; Kanter, 1983, 1989; Quinn, 1980), who initiates the implementation of change (Hambrick, 1989; Robbins & Duncan, 1988; Tichy & Ulrich, 1984), and reactions to the fairness of the change implementation, specifically whether the implementation process was handled fairly or unfairly (Cobb et al., 1995; Schweiger & De Nisi, 1991). Robbins (2005) emphasises the fact that some sort of reinforcement is necessary to produce changes in behaviour, meaning management need to be very active during the change

phase in order to institute reinforcement tactics. One method of use that does not cost money is verbal reinforcement. Verbal reinforcement of behaviours, aligned with organisational change, will increase the employee repetition of those new ‘change’ behaviours. Over time, old behaviours will hopefully ‘disappear’ as they are replaced with new behaviours. However, essentially, this depends on the extent of organisational change taking place in terms of the type and how intense reinforcement needs to be. The necessary point is that reinforcement of some sort is a prerequisite for change to take place in the individual. An enterprise can change its structure and policy by simply writing new rules and procedures; however, staff will not change quite so easily (Robbins, 2005).

A recent study suggests that non-tangible factors, such as strategy and culture, are the major determinants of long-term positive results, contrary to the specific methods of implementing changes (Nohrai et al., 2003).

Lewin (1947) designed his change management model on the basic assumption that ‘motivation for change must be generated before change can occur’. Accordingly, the Lewin model comprises a three-stage process:

Stage 1—Unfreeze: The Unfreezing stage involves preparing the enterprise to accept that change is necessary, and makes the enterprise ready to move from the current position to the desired one.

Stage 2—Change: The transition from Unfreeze to Change does not happen easily: employees take time to embrace the new way, and to participate proactively in the change. Change will not be completed in a short period of time; the enterprises will struggle to make people understand the benefit of the change and to accept the mistakes from employees—especially at the beginning.

Stage 3—Refreeze: When the changes are taking shape and employees have embraced the new ways of working, the enterprise is ready to Refreeze. The outward signs of the Refreeze include a stable enterprise chart, consistent job descriptions, and so on. In general, Refreezing is centred on stabilising and consolidating the new situation and system, preventing individuals from going back to the previous ways of doing things, and instead should be about building—or, rather, re-building—relationships. Figure 2.15 represents Lewin’s Change Management model.

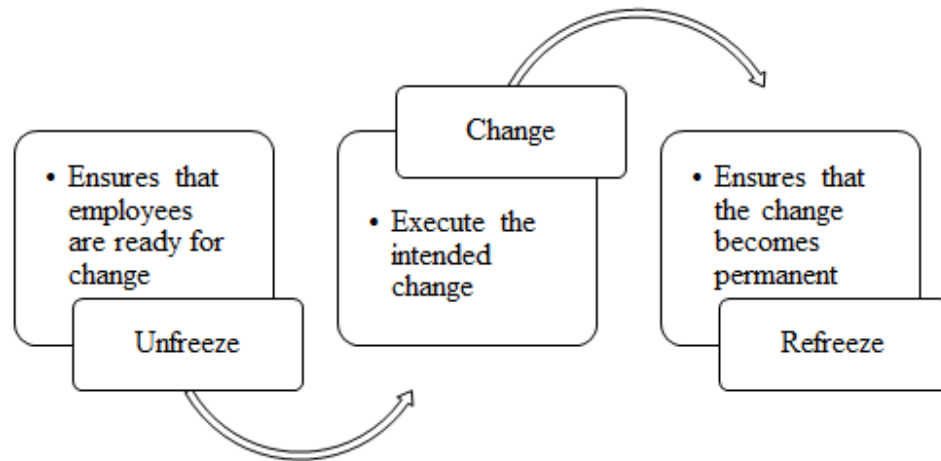


Figure 2.15: Lewin's Change Management Model (Adopted from Lewin, 1951)

The change of management is necessary so as to improve the performance of the enterprise and accordingly overcome the problems that may stem from leadership, financial resources, marketing, technology, employees, etc. This change should be viewed as positive or the change may become negative if not planned and if the aim of the change is not clear.

2.4.5 Employee Motivation

In clause (2.3.7) of this chapter, the researcher describes two categories of motivation: internal and external. Motivating employees is one of the important internal drivers that help the enterprise to achieve its objectives. Hoyle (2009) suggests that motivation is key to achieving high performance. The performance of work is almost always a function of three factors: environment, ability and motivation. To increase the performance of work, employees need to work in a good environment and have the motivation to perform well. Motivation is defined by Hoyle (2009) as 'an inner mental state that prompts a directional intensity and persistence in behaviour', and also is defined by Buchanan and Huczynski (2010) as 'the cognitive decision-making process through which goal-directed behaviour is initiated energised, directed, and maintained'. Hoyle further states that Herzberg determines two quite separate sets of factors for employee motivation (see Figure 2.16).

It has been established by Herzberg (1959) that the key determinants of job satisfaction are achievement, recognition, work itself, responsibility and advancement, whilst enterprise policy

and administration, supervision, salary, interpersonal relationships and working conditions are all recognised as prime causes of job dissatisfaction. Basically, the theory differentiates factors between intrinsic motivators and extrinsic motivators: intrinsic motivators, known as job content factors, define things that people actually do in their work, such as their responsibility and achievements. These factors are those that can contribute a great deal to the level of job satisfaction and how an employee feels at work. The job context factors, on the other hand, are the extrinsic factors that an employee does not have control over; they relate more to the environment in which people work than to the nature of the work itself (Schermerhorn, 2003). Therefore, the basic premise of the Two-Factor Theory is that, if an employer or manager is trying to increase job satisfaction and ultimately job performance for an employee or co-worker, they need to address those factors that have an impact on one's job satisfaction. The most direct approach is to work on the intrinsic job content factors. Considering employee encouragement and recognition helps staff to feel more valued within the enterprise, and also gives a sense of achievement and responsibility (Leach, 2000). Moreover, it is also important to involve employees in the decision-making, and at times, job assignment or delegation, all of which will help the employee to feel more responsibility and to create a higher level of motivation. On the other hand, however, employers also need to consider the level of job dissatisfaction amongst their employees. To directly approach the issue of dissatisfaction in the work place and to try to refresh the environment a bit, employers need to focus on the hygiene or job context factors. For example, if an employer introduces an ergonomic expert with the role of altering the workstations in some way or changing some of the work teams, they might decide to turn an individual's desk to face a certain direction or change something as little as the height of employees' chairs, or the position or style of the keyboard and computer monitor. Through the two-factor theory, job satisfaction and job dissatisfaction are totally separate dimensions; therefore, when trying to improve a factor affecting job dissatisfaction, an extrinsic factor, such as the working conditions, will not alter employees' perceptions of whether or not they are satisfied with their work; it will only prevent them from being dissatisfied (Schermerhorn, 2003).

Hoyle (2009) reports that motivations result from satisfying the personal needs and expectations of work; needs were represented by Abraham Maslow's Hierarchy of Needs (Figure 2.17), as discussed earlier on in this study.

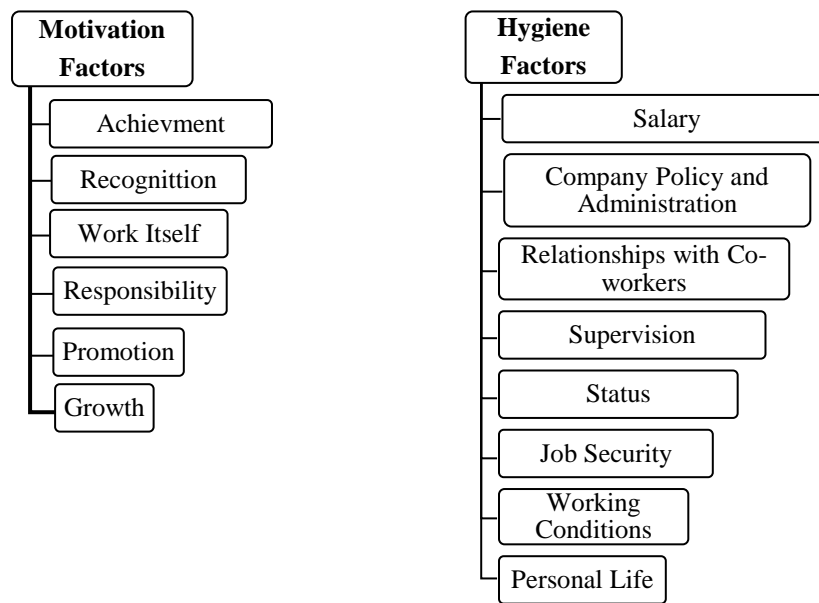


Figure 2.16 : Motivation-Hygiene Theory (Herzberg, 1959)

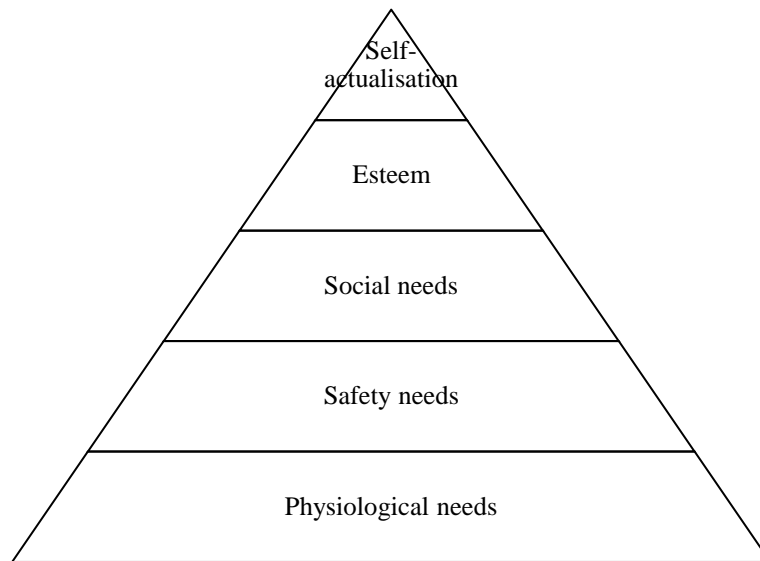


Figure 2.17: Maslow's Hierarchy of Needs

According to Maslow, 'once a lower-level need has been largely satisfied, its impact on behaviour diminishes'. Moreover, in the view of Hunsaker (2005), one of the difficulties with using Maslow's Hierarchy of Needs theory when analysing enterprises is that, although it may seem to be very easy to implement, it is difficult to relate this distinct five-level hierarchy in the context of an enterprise. On a number of occasions, when this theory has been used, the results show that the needs contributing to motivation more heavily vary according to the level of the individual, the size of the enterprise, and even the geographic location of the enterprise.

The integration of Maslow's needs and Herzberg factors will contribute to increasing employees' performance and satisfaction, and their affiliation with the enterprise. More details about Maslow's Hierarchy of needs, and Herzberg's Motivation Factors theory are given in the next Chapter 3.

2.5 Summary

From the literature survey conducted within this chapter, it may be seen that there exist a number of challenges facing enterprises, such as customer satisfaction, commitment, the infrastructure of enterprises, the culture of employees, motivation, and work environment. The following provides a summarised conclusion:

The quality of products or services was and remains a goal of all pioneers in the quality field and enterprises. In the last 30 years, the concepts of quality have been developed from just inspection to quality control, with quality assurance subsequently emerging, and finally TQM, which includes all of these concepts. As a result of the efforts of pioneers, the first version of ISO 9000 was established in 1987; this version has improved in line with technological and organisational development changes. The latest version of ISO 9000 was issued in 2008. There have been a wealth of companies across the globe that have obtained ISO 9000 certification after fulfilling the requirements of ISO 9000. The successful implementation of ISO 9000 relates to many factors, such as the commitment of top management, the infrastructure of the organisation, the culture of workers, motivation systems, and the background of the organisation in regard to quality.

- Enterprises that have obtained ISO 9000 certification due to being motivated by internal reasons obtain better results than those pressured by external reasons, such as customer pressures, marketing issues, etc. (Martinez-Costa et al. ,2007).
- ISO 9000 can be considered an independent approach from TQM; however, both methodologies should be integrated and implemented together (Paulo et al., 2008).
- The planning for ISO 9000 implementation involves the preparation and development of a quality system for an organisation (Feng et al., 2007).
- One of the most prominent challenges in terms of ISO 9000 implementation stems from employees who resist change (Briscoe et al., 2005).
- Any organisation should have a clear strategy and take into account the internal and external changes on the demands of their services/products, and how it can deal with these changes.
- Globalisation is changing the markets and environments in which enterprises operate, as well as the way they function (Cummings & Worley, 2009).

- In the UK, 99.9% of manufacturing enterprises employ less than 100 people (BIS National Statistics, 2011).
- Six Sigma is a way of reducing process variation; however, it encompasses far more. It is a philosophy where everyone benefits, from the customer to shareholders, and even suppliers and employees (Nakhai et al., 2009).
- Work environment relates to those conditions under which work is performed including physical, environmental and other factors (such as noise, temperature, humidity, lighting or weather)' (ISO 9000 ,2008).
- Organisational development assists organisations in changing themselves and accordingly rebuilding their strategies, structures and processes. Additionally, it helps enterprise employees to expand beyond simple surface change to transform the underlying assumptions and values governing their behaviours (Cummings & Worley, 2009).

Chapter 3 : Theoretical Basis

3.0 Introduction

This chapter emphasises on the theoretical basis represented in theories, standards and legislations concerning motivation, hygiene factors and safety needs. It provides brief discussion how different factors were identified, and it also includes the definitions and classifications of these factors.

3.1 Theoretical Background

Maslow's (1943&1954) reported that there are five levels of needs: physiological needs, security needs, social needs, esteem needs and self-actualization needs. The most basic of Maslow's needs are physiological needs which refer to the need for air, food, and water. Once physiological needs are fulfilled, people tend to become concerned about safety needs represented in security, stability, dependency, protection, freedom from fear, anxiety. Subsequently, people seek to satisfy social needs in an effort to develop good relationships, and communications. According to (Baumeister and Leary, 1995) the achievement of social needs creates esteem needs which in turn, develop further desires to be respected by one's peers, to feel important, and be appreciated. Finally, if all previous needs are satisfied the self-actualization needs may be satisfied by acquiring new skills, taking on new challenges, and behaving in a way that will lead to the satisfaction of one's life goals.

Herzberg et al. (1959) & Herzberg (1965) stated that the aspects of the work environment that make employees happy and satisfied are different from aspects that make them unhappy and dissatisfied. Herzberg classified factors causing dissatisfaction of workers as "hygiene" factors. Hygiene factors include company policies, supervision, working conditions, salary, safety, and security on the job. On other hand, motivators are factors that are intrinsic to the job, such as achievement, recognition, interesting work, increased responsibilities, advancement, and growth opportunities. According to Herzberg's research, motivators are the conditions that truly encourage employees to increase their performance. Herzberg et al. (1959) suggested that paying attention to motivator factors will increase job satisfaction, but will not affect job dissatisfaction.

Alternatively, paying attention to hygiene factors will decrease job dissatisfaction but will not increase job satisfaction.

The ISO 9000 standards came to support the concept of work environment and to ascertain its importance for improving the performance of employees and increasing the productivity and it is became one of the requirements for any enterprise pursuit to implement ISO 9000 standards, and the management should provide a suitable and safe workplace for their employees. ISO/TC 176 (2008) pointed that “the workplace can be an office environment where lighting, noise, and air quality is important or it can be a factory where there are particular safety and other specific conditions to be considered”

The United Kingdom’s (UK) Health and Safety at Work etc. Act 1974 (c.37,s.2) interested with the work environment in workplace and it creates the necessary legislations to protect employees from hazards which are produced from physical or environmental factors it determined the general duties of employers toward their employees one of the most important is “The provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work”.

3.2 Definitions and Classification of Factors and Needs

This research is centred on to examine the relationships between the work environment and success of ISO 9000 standards implementation in SMEs through investigation and classification of the needs and factors determined in work environment definition in ISO 9000 standards, Health, Safety and Welfare Legislation (UK), and in Maslow’s and Herzberg’s Motivation theories. In an effort to evaluate the work environment in the work place, this evaluation requires the assessment of the current work environment through measuring of the quantitative factors and the assessment of qualitative factors. The combination of needs and factors is represented in Table 3.1, whilst the classifications and concepts of these factors are displayed in Tables 3.2, 3.3, 3.4 and 3.5.

Table 3.1: Combined of Needs and Factors

Maslow's Needs	Herzberg Hygiene Factors	Herzberg Motivation Factors
Physiological needs	Company policy	Achievement
Safety needs	Supervision and relationships	Recognition
Social needs	Working conditions	Work itself
Esteem needs	Salary	Responsibility
Self-actualisation needs	Security	Advancement
		Growth
Definition of Work Environment in ISO 9000 Standards: Work environment relates to those conditions under which work is performed including Physical factors, Environmental factors, Other factors (such as temperature, lighting, humidity, noise, vibration) or weather.	Health and Safety Legislations (UK) These regulations aim to ensure that work places meet the Health, Safety and Welfare requirements of all staff of a workforce, including people with disabilities.	

Table 3.2: Maslow's Needs

<i>Theory</i>	<i>Needs</i>	<i>Concept / Definition</i>	<i>Classification</i>	<i>References</i>
Maslow's Theory of needs	Physiological needs	These needs are necessary to keep life such as food, water, clothing, air, and shelter.	Qualitative	Stephins (2000)
	Security and safety needs	Security need is the need to feel secure and unthreatened by physical, psychological or economic harm in the service transaction such as life insurance, job security, and health care.	Qualitative	
	Belongingness needs	Belongingness needs represent in friendship and social interaction at work rather than isolation.	Qualitative	Chung-Herrera (2007)
	Esteem needs	Esteem needs satisfied by recognition of contribution, status relative to the individual's peers and influence through power, authority or respect.	Qualitative	Hoyle (2009)
	Self-actualisation needs	Describe the ongoing process of fully developing your personal potential.	Qualitative	Fisher (2009)

Table (3.2) shows Maslow's needs which are represented as five needs as follows: physiological, safety, esteem, belongingness and self-actualisation. Maslow's believed that human begins aspire to become self-actualising Stephins (2000). In this Table, these needs are classified as qualitative because the required data was collected by questionnaires, interviews or by the observations. These needs play a significant role to make the people feeling more comfortable and satisfied if they have acquired and developed them.

Table 3.3: Herzberg Motivation Factors

<i>Theory</i>	<i>Factors</i>	<i>Concept / Definition</i>	<i>Classification</i>	<i>References</i>
Herzberg Motivation Factors	Achievement	It means successful completion of a job, solutions to issues, vindication, and seeing the results of one's work.	Qualitative	Herzberg et al. (1959) Herzberg (1966) (Ruthankoom & Ogunlana, 2003)
	Recognition	There are two types of recognition; positive and negative recognition. Positive recognition occur when workers are praised or their idea accepted. Whereas negative recognition represents in blame, criticism or when good ideas are overlooked.	Qualitative	
	Responsibility	This factor relates to whether or not the individual is given the responsibility or freedom to make decisions.	Qualitative	

Table 3.4: Herzberg Hygiene Factors

<i>Theory</i>	<i>Factors</i>	<i>Concept / Definition</i>	<i>Classification</i>	<i>References</i>
Herzberg Hygiene Factors	Job security	This include such considerations as tenure and company stability or instability , which reflected in some objective way on a person's job security	Qualitative	Herzberg et al. (1959)
	Working conditions	Includes the physical conditions of work , the amount of work , or the facilities available for doing the work were mentioned in the sequence of events. Adequacy or inadequacy of ventilation, lighting tools, space etc.	Qualitative	
	Salary	Affixed regular payment, typically paid on a monthly basis but often expressed as an annual sum, made by an employer to an employee.	Qualitative	Herzberg (1966)
	Interpersonal relations	Manners of the interaction between the staff members (mangers, subordinates, co-workers) of an enterprise during work hours.	Qualitative	
	Supervision	Supervisor is a person in work place who is responsible on some tasks within an enterprise and he guide or lead his workers to do right work.	Qualitative	
	Status	A person who spoke having a secretary in his new position, allowed him to drive a company car, or to be able to use a company car and company facilities.	Qualitative	Ahmed (2010)

Table 3.3 and Table 3.4 are showing Herzberg's Motivation and Hygiene factors. The motivation factors are the real factors motivating employees at work and thus increasing their job satisfaction (Herzberg, 1966). Ahmed (2010) reports that not everyone is motivated by the identical factors of motivators; someone may be motivated by achieving higher authority and responsibility, whilst others merely need flexibility in their work schedules or may be motivated by a sense of accomplishment. The hygiene factors are preventing job dissatisfaction but do not lead to satisfaction. They are necessary only in order to avoid bad feelings at work. The

motivation and hygiene factors are classified in these tables as qualitative factors because the data collected by questionnaires or interviews, or by observations, are not in a numerical format.

Table 3.5: Physical Factors

<i>Standard</i>	<i>Factors</i>	<i>Concept / Definition</i>	<i>Measurement</i>	<i>References</i>
ISO 9000: 2008 (6.4) -Work Environment Clause	Lighting	Light is simply a name for a range of electromagnetic radiation that can be detected by the human eye.	Lux	Health and safety executive (UK) Canada occupational Health and safety Regulations (SOR/86-304)
	Temperature	Temperature is a measurement of the average kinetic energy of the molecules in an object or system and can be measured with a thermometer or a calorimeter. It is a means of determining the internal energy contained within the system.	°C	Health and safety executive (UK)
	Humidity	The amount of water vapour in the air. Humidity is measured in two ways: <i>Absolute humidity</i> is the percentage of water vapour actually present in the air. <i>Relative humidity</i> is the absolute humidity divided by the amount of water that <i>could</i> be present in the air.	Rh%	Health and safety executive (UK)
	Noise	Noise is a sound or a sound that is loud, unpleasant, unexpected, or undesired. It includes vibration of any frequency, whether transmitted through air or any other physical medium.	dB (A)	Environmental Protection Act 1986 Western Australia National standard for occupational Noise (2000)
	Vibration	A periodic motion about an equilibrium position, such as the regular displacement of air in the propagation of sound.	mm/sec	ISO 10816-1 ISO 2631/1-1997

Table 3.5 represents the physical factors' definitions and measurement units. The standards and legislations include such factors, and incorporate the allowable ranges in order to protect the workers from the risks potentially resulting if the values of these factors increased or decreased beyond allowable limits, as determined in the standards and legislations, such as in terms of a high temperature, which could cause health conditions, such as heart problems, high or low

blood pressure, and respiratory conditions. These factors classified as quantitative factors because the data collected are in a numerical format.

3.3 Summary

This chapter discusses the theoretical basis of the factors which may have a positive or a negative impact on the performance of employees and on the overall performance of the enterprise. These factors include physical, physiological, motivation and hygiene factors, and health and safety needs. In the next chapter, 4 the researcher will explain the methodology that used to measure and assess these factors through conducting the questionnaire survey and case study (chapter 5 and chapter 6 respectively) as tools to collect the data which are necessary to achieve the objectives of this research.

Chapter 4 : Research Methodology

4.0 Introduction

This chapter describes the research methodology, purpose, scope, and data collection methods used to achieve the following research aim: Examine the relationships between the work environment and the success of ISO 9000 implementation in the context of SMEs.

The data collection methods applied in this research comprise an exploratory survey and case studies, with both case studies and exploratory survey carried out with the aim of establishing more in-depth understanding of the research objectives. The expected findings from the exploratory survey and case studies will contribute to the developed work environment model, as well as its overall definition.

4.1 Research Background

Naser-Allah (1995) states that ‘Success within any manufacturing enterprise can be influenced by its management and administrative leadership, together with the work environment under which it operates. Higher degrees of success in applying modern administrative systems can relate to improved production efficiency and the greater achievement of quality’. Moreover, Briscoe et al. (2005) propose that ‘quality can be viewed as being essential to customer satisfaction and competitive success, especially within SMEs’.

The ISO 9001 standard determines the requirements for a quality management system that can be used for internal enterprise’s arrangement or for certification. It focuses on the efficiency of the quality management system to achieve customer requirements. One of the quality management system requirements in ISO 9001:2008 is a resource management clause (6.0), which includes the provision of resources, human resources, competence, training and awareness, infrastructure and the work environment. The sub-clause (6.4) represents a definition of the work environment, with focus centred on the physical, environmental and other factors, such as temperature, humidity, lighting or weather.

The motivation is important to increase the performance of employees and to help create a good working environment on this side Maslow's (1943) defined the motivations as, 'motivations result from satisfying personal needs and expectations of work, therefore, the motivation to accomplish quality objectives must be triggered by the expectation that achievement of objectives will lead to a reward that satisfies a need of some sort.'

Herzberg (1959) presents his research as the Motivation-Hygiene Theory, which is often also regarded as the Two-Factor Theory. Motivation factors increase a job satisfaction whereas hygiene factors decrease job dissatisfaction. Herzberg's research proves that employees will struggle to achieve 'hygiene' needs because they are unhappy without achieving them. The Herzberg research confirms the value of motivations and the extent to which they influence employees in the work place. In Hoyle (2009), it is commented that motivation is an intrinsic part of the work environment, meaning it is key to the successful adoption of ISO 9001. According to Fisher (2009), managers need to be aware of the level at which workers are operating so they can offer opportunities to fulfil needs at the appropriate level, thus motivating employees to achieve their tasks. Furthermore, Ruthankoom and Ogunlana (2003) conclude that major factors for consideration include interpersonal relations and salary, both of which have strong contributions concerning the satisfaction and dissatisfaction of employees.

Health and Safety at Work, etc. Act 1974 (c.37,s.2) affirms that one of the most important duties of employers towards their employees is, 'The provision and maintenance of a working environment for his employees who is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards to facilities and arrangements for their welfare at work'.

The key points to be concluded from this background are as follows:

Quality is becoming necessary to increase customer satisfaction and competitive success.

Herzberg's and Maslow's theories both deal with motivation factors that are considered essential to increasing job satisfaction and improving the relationship between employers and individuals.

In order to create a good work environment, the management of an enterprise need to follow the legislations of health and safety so as to protect employees from risks.

Table 4.1 represents key research themes and findings of the research background.

Table 4.1: Key Research Themes and Findings of the Research Background

Researcher	Research area	Trends/Research findings
Hoyle (2009)	ISO 9000 quality systems handbook.	Motivations a key to successful adoption of ISO 9000 standards.
Fisher (2009)	Motivation and leadership in social work management: A review of Theories and related studies.	Mangers should be aware of the level that workers operating.
ISO 9000: 2008	Resource management.	The interest with work environment which including physical and environmental factors.
Briscoe <i>et al.</i> (2005)	The implementation and impact of ISO 9000 among small manufacturing enterprises.	Quality increase customer satisfaction & competitive success among SMEs.
Ruthankoom & Ogunlana (2003)	Testing Herzberg's Two-Factor theory in the Thai Construction Industry.	Interpersonal relations & salary both they have strong contributions to satisfaction & dissatisfaction of employees
Naser-Allah (1995)	ISO 9000 study, Arab company for publication and distribution.	Modern administrative systems improved quality and production efficiency
Health and safety at work etc. Act 1974	Duties of employers.	Employers should follow the legislations to protect the employees from risks in work place.
Herzberg (1959)	The motivation to work.	Motivation factors increase job satisfaction & hygiene factors decrease job dissatisfaction.
Maslow's (1943)	Theory of human motivation.	Motivations result from satisfying personal needs and expectations of work.

From the literature review carried out, combined with the author's experience of working for 16 years in the global steel industry, it is recognised that there is a gap in current academic studies relating to the work environment and its influence on the successful implementation of ISO 9000 standards in SMEs. For this reason, this research came to focus on the work environment and the notion that its development into a novel framework and subsequent effective use would contribute to higher levels of ISO 9000 implementation success within UK SMEs.

4.2 Research Methodology

This research work aims to evaluate the effect of the work environment on the successful implementation of ISO 9000. It further investigates potential solutions for the problems that may face SMEs when they are implementing ISO 9000, by developing a novel classification and integrated framework for the work environment. In this context, the work environment is defined at a high level within ISO 9000:2008 and with reference to a deeper definition—that of Hoyle (2009) which are commonly centred on three primary factors: (a) physical factors, which include temperature, noise, light, vibration, cleanliness and physical stress; (b) social factors, resulting from interactions between people and including religion, climate, education, peer pressure and culture; and lastly, (c) psychological factors, resulting from an individual's inner needs and external influences, including recognition, responsibility, achievement, advancement, reward, job security, interpersonal relations, leadership, affiliation, self-esteem and occupational stress.

The purpose of this thesis is to assist SMEs to adopt a significant shift in understanding the relationships between the work environment and success of ISO 900 implementation in SMEs; through this, improved work environment should be achieved, thus helping SMEs to increase the performance and satisfaction of workers, and accordingly increasing their productivity and enhancing the quality of products or services through greater interest in the factors and needs included in the human motivations theories (those of Maslow and Herzberg) and the concept of the work environment, as defined in ISO 9001 (2008).

Mixed methods (quantitative and qualitative methods) are used in this research with the aim of measuring physical factors, represented by temperature, noise, lighting, humidity, and vibration as quantitative factors, and to evaluate qualitative factors, such as advancement, recognition, salary and responsibility, etc.

It is claimed by Lincoln (2000) that qualitative research requires an interpretive and naturalistic approach: 'This means that qualitative research study things in their natural settings, attempting to make sense of or to interpret phenomena in terms of the meanings people bring to them'. Dawson (2009) stated that qualitative research investigates behaviour, attitudes and experiences through methods such as focus groups and interviews. Quantitative research has been defined

and investigated by a number of researchers. Gay (1996), for example, defines quantitative research as ‘the collection of numerical data in order to explain, predict and/or control phenomena of interest’ According to Creswell (1994), quantitative research can be defined as, ‘a type of research that is explaining phenomena by collecting numerical data that are analysed using mathematically based methods’. Table 4.2 describes the differentiating characteristics of qualitative versus quantitative research.

Qualitative research was operationally defined as, ‘a variety of analytic procedures designed to systematically collect and describe authentic, contextualised social phenomena with the goal of interpretive adequacy’ (Simmons-Mackie & Damico, 2003). Table 4.3 summarises the advantages and disadvantages associated with various data collection methods, represented in consideration to mail questionnaire, face-to-face interviews and telephone interviews (as identified by (Oppenhiem, 2000; Robson, 2002). The researcher in this study will focus on a mail-based questionnaire and face-to-face interviews for the collection of the data required to complete the study.

Table 4.2: Differentiating Characteristics of Qualitative Versus Quantitative Research (Adopted from Merriam, 1989; Yin, 1995)

Points of Comparison	Qualitative Research	Quantitative Research
Focus of research	Quality (nature, essence)	Quantity (how many? how much?)
Philosophical roots	Phenomenology, symbolic, interaction	Empiricism, Logical positivism
Associated phrases	Fieldwork, ethnographic, naturalistic, grounded, subjective	Experimental, empirical, statistical
Goal of investigation	Understanding, description, discovery, hypothesis generating	Prediction, control, confirmation, hypothesis testing
Design characteristics	Flexible, evolving, emergent	Pre-determined structure
Setting	Natural, familiar	Unfamiliar, artificial
Sample	Small, non-random, theoretical	Large, Random, Representative
Data collection	Researcher as primary instrument, interviews, observations	Inanimate instruments (scales, tests, surveys, questionnaires, computers)

Mode of analysis	Inductive (by researcher)	Deductive (by statistical methods)
Findings	Comprehensive, holistic, expansive	Precise, narrow, reductionist

Table 4.3: Advantages and Disadvantages of Different Data Collection Methods (Adopted from Oppenheim, 2000; Robson, 2002)

Criteria	Mail Questionnaires	Face-to-face Interviews	Telephone Interviews
Economy (cost & time)	High	Low	Moderate
Efficiency of data collection	High	Moderate/High	Moderate
Response rate	Low	High	Moderate
Distribution of sample	Wide	Must be clustered	May be wide
Sensitive topics	Good	Fair	Fair/good
Assuring anonymity	High	Fair	Fair
Sample size	Large	Small	May be large

The descriptive research in the form of a literature review, questionnaire survey, and case studies is used to achieve the objectives of this research. Both a questionnaire survey and case studies target SMEs that have implemented ISO 9000 standards. The selection of the questionnaire survey for this research was based on the study of Babbie (1998) who states that the questionnaire is a good way of collecting data quickly and cheaply. It is more appropriate when dealing with sensitive issues because it offers respondents more autonomy and confidentiality. In praising this method, Wilson (1996) argues that one advantage of questionnaires is that they are a comparatively cheap method of collecting primary data. In addition, Saunders et al. (1997) argue that questionnaires are often a tool for surveys, and since they have standardised data, it is easy to make comparisons, and what is more they are generally authoritative. The selection of the case study was based on the research outcomes of Bebensat et al. (1987, cited by Meredith, 1998) who states that a case study has three outstanding strengths:

1. The phenomenon can be studied in its natural setting, with meaningful and relevant theory generated from the understanding gained through observing actual practice.

2. The case method allows the questions of why? what? and how? to be answered, achieving a relatively full understanding of the nature and complexity of the complete phenomenon.
3. The case method lends itself to early, exploratory investigations where the variables are still unknown and the phenomenon not at all understood.
4. The questionnaire survey will assist the researcher in attaining a good understanding of the current status of the work environment of the targeted enterprises; the researcher then can classify the factors and determine which factors involve counting and measuring (quantitative) and those focused on empirical evidence and theories (qualitative).

Case studies will be conducted through visits to SMEs in the UK. These case studies aim to reveal the influence of factors related to the working environment on the successful implementation of ISO 9000 standards. The data will be collected, analysed and placed in an appropriate statistical form. The results then will be discussed, and the findings presented to validate the research objectives. An overview of the formulated research methodology can be viewed in Figure 4.1.

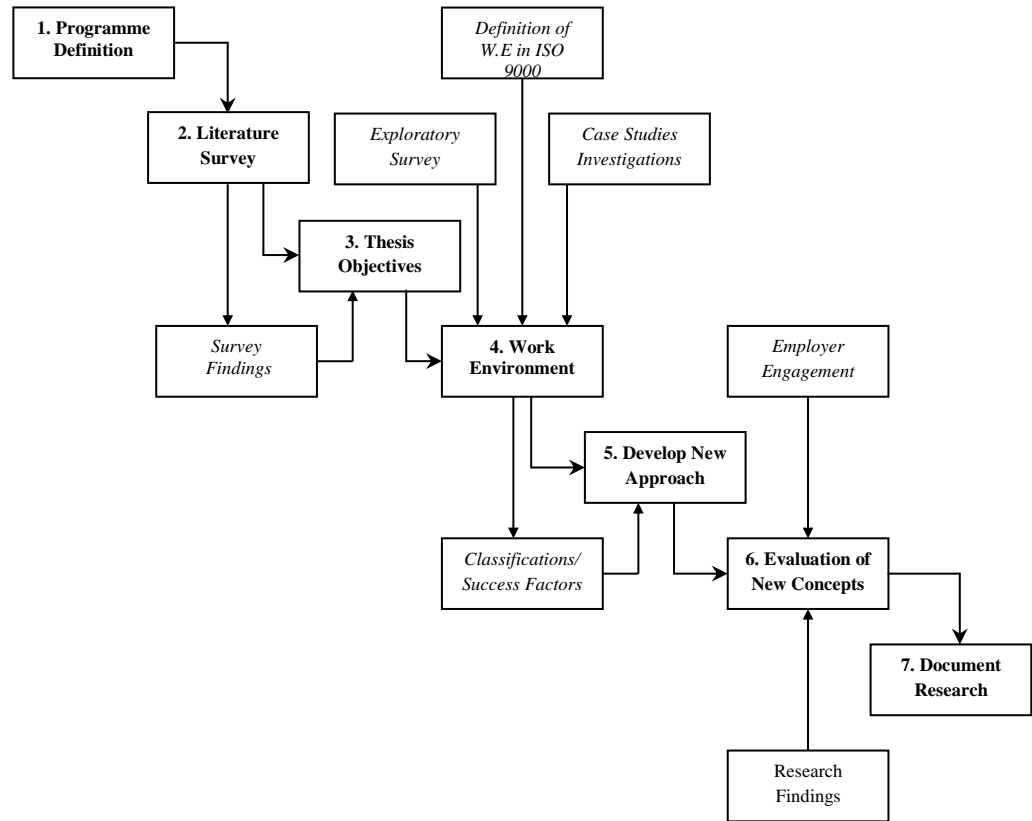


Figure 4.1: Research Methodology Overview (Adopted from Denton, 2003)

4.3 Development of the Questionnaire

4.3.1 Questionnaire-Coding and Scaling Used

Oppenheim (1992) states that the questionnaire should be designed carefully, using clear wording, avoiding informal language and using rating systems specifying their purpose, used to refine the necessary information. According to Ghauri (1995), when designing a questionnaire, the researcher should ask the participants simple and clear questions, with the questions needing to be understood for everybody, circumventing the use of double-barrelled questions. The questions in this research for questionnaire were derived from a number of different studies, including Magd (2008), (Withers & Ebrahimpour, 2001), Hurreeram (2003), Denton (1998), Martinez-Costa et al. (2007), Berdle et al. (1986), Health and Safety at Work, etc. Act (1974), Yi Sit et al. (2009) and Lui (1999).

The questionnaire was divided into three sections as follows: general background; ISO 9000 implementation, and work environment. Most of the questions were closed-ended questions; just three were open-ended questions (i.e. in the form of ‘others or please specify’). The selection of closed-ended questions offers advantages in this type of research. Oppenheim (1992) stated that the advantage of closed-ended questions is that it allows respondents to make direct decisions by choosing from various alternatives. Moreover, they are also easy to analyse and require less time.

In general, the researcher used three types of scales: the interval scale, the nominal scale and the ordinal scale. The first scale—the ratio or interval scale uses numbers to represent the degree of the scale, asking the respondents to state the number only. The second scale, the nominal scale, is where a number does not mean the difference between the alternatives; rather, each number is merely a form of identification for the alternative. The third scale, the ordinal scale, establishes an ordered relationship between the persons or objects being measured. On this scale, a number represents the degree of doing or agreeing on something. With the case of the Likert scale of 5 points, the researcher used the number 5 to represent the strongest agreement and the number 1 to represent the weakest agreement Appendix (1) represents the exploratory survey questions. The type and number of questionnaire questions are shown in Table 4.4.

Table 4.4: Type of Questionnaire Questions

<i>Question Type</i>	<i>Number of questions</i>	<i>Section & Question</i>
Yes & No questions	14	2Qs in sec. 2 and 12Qs in sec. 3
Multiple choice questions	26	11 Qs in sec. 1 & 10 Qs in sec. 2 & 5Qs in sec. 3
Interval questions (5-Point Likert Scale)	6	3 Qs in sec. 2 & 3 Qs in sec. 3
Open-ended questions	3	2Qs in sec. 1 & 1 Q in sec. 2

4.3.2 Questionnaire Structure

The questionnaire was constructed from three sections as follows:

Section One: This section is concerns with demographic data about the respondents and their enterprises. These data included background information, qualification levels, experience, and the number of employees, organisational structure, enterprise activities, product strategy, and enterprise customers.

Section Two: This section is focused on the ISO 9000 implementation, covering responsibility, internal resistance, the influence of ISO 9001 implementation on improvement performance, and, finally, the benefits gained from ISO 9000 implementation.

Section Three: This section is related to the working environment, which was divided into five parts: work place, supervision, motivation, satisfaction, and training and development.

4.3.3 Pilot of the Questionnaire

Validity is one of the aspects of the survey design centred on ensuring that the research instrument achieves the research objectives. (Easterby-Smith et al., 1996), Bobbie, (1998) stated that the instrument is valid when it measures what it is intended to measure. Saunders et al. (2003) state that ‘the purpose of the pilot test is to refine the questionnaire so that respondents will have no problems in answering the questions and there will be no problems in recording the data. In addition, it will enable you to obtain some assessment of the questions’ validity and the likely reliability of the data that will be collected’. Litwin (1995) determines four types of validity when testing a survey instrument: face, content, criterion and construct. Face validity

relates to the instrument being reviewed; content validity refers to review by experts; criterion validity relates to comparison with other similar instruments, and construct validity is a theoretical long-term evaluation of the survey instrument with the aim of establishing its effectiveness over time. The researcher in this study used a content type of validity through subjected questionnaire questions: firstly, extensive review by Supervisor, and then secondly, review by three postgraduate students and two staff members in the university, with a final review by two middle managers and two Supervisors who work in the SMEs. These reviews helped the researcher to make amendments and to ensure confidence regarding the questionnaire's validity, and its readiness to be distributed and to collect the necessary data.

4.3.4 Research Populations and Sample

In order to achieve the research objectives, the population of this research is defined as small medium-sized enterprises that have implemented ISO 9001 standard in the West Yorkshire region in the UK. A total of 12 SMEs were selected as a population—all of which have the ISO 9001 certificate. The reasons for choosing the SMEs for this study are as follows: (1) Small and medium enterprises face a restriction on financial resources, human and material resources Paul et al. (2008); (2) In the UK, 99.9% of all manufacturing enterprises employ less than 100 people (SMEs) (National Statistics-BIS, 2011). Accordingly, the researcher selected from targeted enterprises the middle management and Supervisors to answer the questionnaire questions; the rationale for choosing these respondents is based on the reference made by Madu et al. (1996), who comments that middle managers and Supervisors' position between top management and shop floor level helps them to understand the performance of the enterprise and the reactions of employees with quality practices, and to further understand the barriers relating to quality products or services facing enterprises.

4.3.5 Data Collection and Analysis Techniques

The collection of primary data involves the use of research instruments, such as questionnaire survey, case study, and interviews. For the purposes of this research primary data were collected by a questionnaire survey and a case study. The statistical programme used for the analysis and presentation of data in this research is the Statistical Package for the Social Sciences (SPSS) version 22. The descriptive statistics applied is based on frequency tables and graphical illustrations to provide information on key factor variables in this study. The inferential statistics

used is represented in one sample t-test which was used to test whether the average of observations differs significantly from a test value and Pearson's correlation coefficient which describes the relationship between two variables measured on an interval or ratio scale.

4.4 Ethical Considerations

Ethical considerations play a major role in the design and execution of robust research (Creswell, 2009). Collins and Hussey (2009) stated that one of the key principles of ethical research, adhered to within the current portfolio, is that participants should not be forced to take part in the research and that care should be taken where financial or other incentives are used to encourage participation. They added that anonymity provides protection to participants by ensuring that their names are not identified with the information they give, while confidentiality ensures that sensitive information is not disclosed and that the research data cannot be traced back to its source. Bryman and Bell (2007) stated that the purpose of ethics in research is to ensure that no one is harmed or suffers reverse consequences from research activities. The researcher explained the nature of this research to the respondents in the covering letter which was combined with both the questionnaire survey and case study questions. In this letter the researcher stressed that the information provided by the participants would be treated with the highest confidentiality and will be used only for academic purposes. The researcher has also confirmed that no personal or enterprise names would be in the report of the study.

4.5 Towards an Improved Classification of the Work Environment

The ISO 9000 standards help enterprises to manage their tasks effectively in order to improve the performance of their employees and thus increase productivity and profit. This work requires the creation of an appropriate work environment, which helps employees to do their job successfully and safely. It is recognised that many SMEs wish to implement ISO 9000 standards; however, some of them have difficulties adapting to new tools and techniques due to resource and skill limitations. This research focuses on the influence of the work environment in regard to the implementation of ISO 9000 in SMEs by studying and classifying critical success factors relating to the work environment, as defined in ISO 9000:2008 and also as investigated by motivation

theories (Maslow, 1943; Herzberg, 1959). Figure 4.2 represents the researcher's preliminary vision in terms of influencing the work environment in regard to the implementation of ISO 9000 in SMEs. This work requires studying and assessing the current work environment in these enterprises, and accordingly classifying the factors mentioned in the work environment definition in ISO 9000:2008 and in human motivation theories for Maslow's and Herzberg.

It is considered that existing current research studies only deal with the influence of a limited range of factors on the degree of success of ISO 9000 implementation, such as the commitment of management and customer pressure. There are no studies, to the researcher's knowledge, which directly target the relationship between the work environment and success of ISO 9000 implementation in SMEs. A key element of this work will be to test the research recommendations developed from this study. It is anticipated that, through wider and more extensive investigative work for similar-sector SMEs, the researcher will be able to identify further limitations resulting from non-awareness or the complete ignorance of the concept of the work environment.

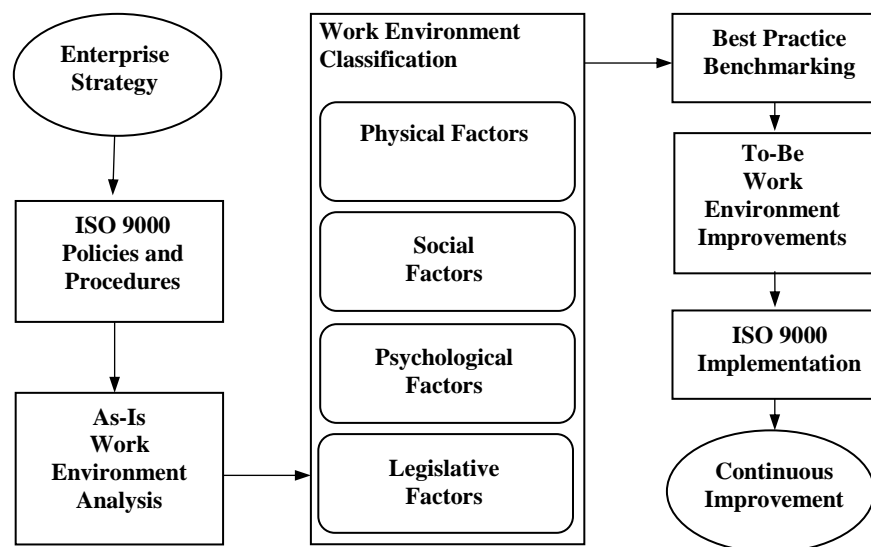


Figure 4.2: Proposed Work Environment Framework Approach

4.6 Summary

The methodology of this research involves the design of an appropriate questionnaire survey in the form of closed-ended questions. These questions cover aspects of the background of the enterprise, ISO 9000 implementation and the work environment. The researcher considers three case studies centred on investigating the factors mentioned in the work environment definition of ISO 9000:2008 and in motivations theories (Maslow and Herzberg), as well as how the management of enterprises manage these factors to improve the performance of workers, and increase their productivity and profit. The main foundation of this work is centred on evaluating the potential solutions for problems that may face SMEs upon the implementation of ISO 9000 standards by developing a novel framework and classifying the critical factors related to the working environment. The outcomes expected from this research will provide a reference for academics, and will help industrialists to direct greater care and understanding to the work environment.

Chapter 5 : Exploratory Survey

5.0 Introduction

The aim of this chapter is to present exploratory survey work conducted to examine the relationships between the work environment and success of ISO 9000 implementation in SMEs. A survey strategy was chosen as it would assist the researcher, through descriptive research, to attain a good understanding of the current status of the work environment within SMEs. Additionally, the survey would contribute to bridging the gap identified in the current literature and research. Several studies have researched the ISO 9000 standards in regard to the benefits and barriers, customer stratification, and ISO 9000 and total quality management, etc.; however, it remains that, thus far, no study has directly dealt with the work environment and its effect on ISO 9000 implementation. The aim of this exploratory survey is to investigate the factors that have an impact on the work environment and ISO 9000 standards, and accordingly to classify them. The enterprises selected were SMEs and ISO 9000 certified.

The researcher distributed 120 copy of questionnaire, by post, to 12 SMEs in the UK, addressed to the quality managers and Supervisors of the enterprises. A total of 60 copies were received; 9 were uncompleted, leaving 51 usable questionnaires for analysis with a response rate of 42.5%. According to Saunders et al. (1997), a response rate between 30% and 50% is appropriate.

The researcher used the Statistical Package for the Social Sciences (SPSS) software to analyse the data gathered from the questionnaire. Several statistical techniques were used to interpret the data collected; these are mainly descriptive statistical techniques intended to specify the associations between the various questions asked and the variations in the data. The descriptive statistical tools used include mean, standard deviations and frequencies. The inferential statistics, used in this study is represented in one sample t-test which was used to test whether the average of observations differs significantly from a test value and Pearson's correlation coefficient, which describes the relationship between two variables measured on an interval or ratio scale.

In this chapter the collected data will be analysed, and subsequently the findings will be discussed and interpreted.

5.1 Data Analysis of Questionnaire Sections

5.1.1 General Background Section

This section of the industrial survey focuses on the activities of enterprises, organisational structures, the number of employees, qualification levels, enterprises product strategies, and where they market their products and provide their services.

5.1.1.1 Enterprise Age

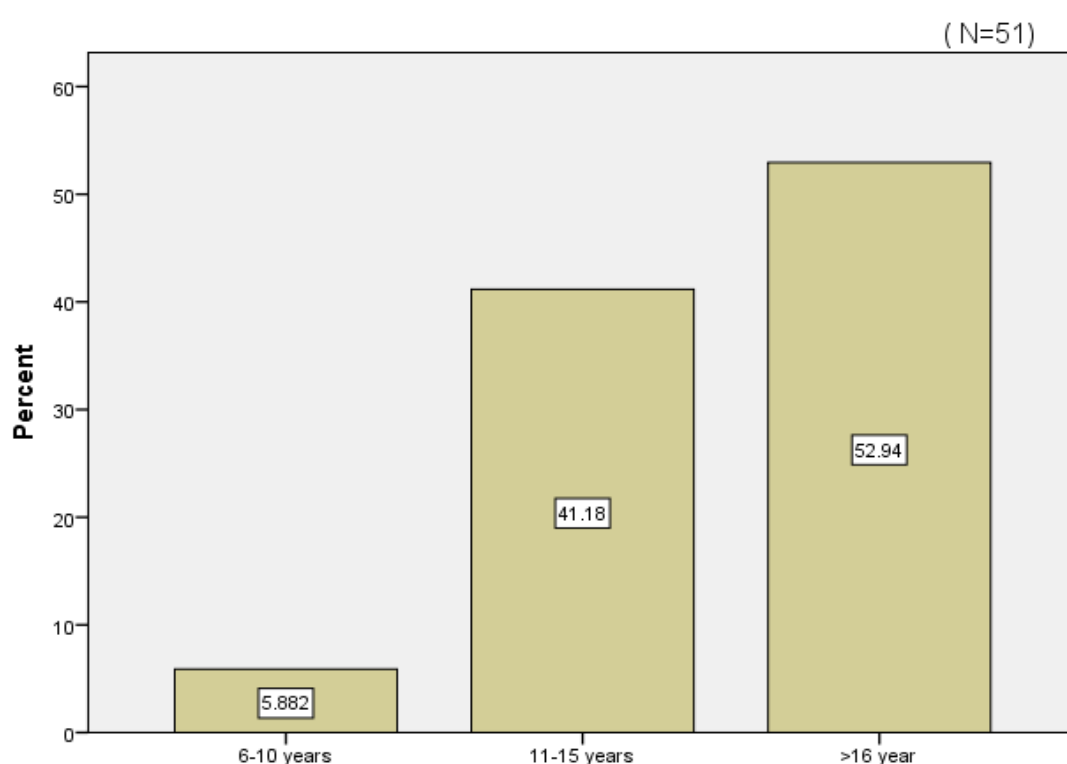


Figure 5.1: Enterprise Age

Figure 5.1 shows that 27 of the respondents representing more than a half (52.94%) of the sample stated that their enterprises are sixteen years or older, whilst 21 of them representing 41.18% said their enterprises are aged between 11 and 15 years; just 3 of them representing 5.88% stated that their enterprises are 6–10 years old.

5.1.1.2 Organisational Structures

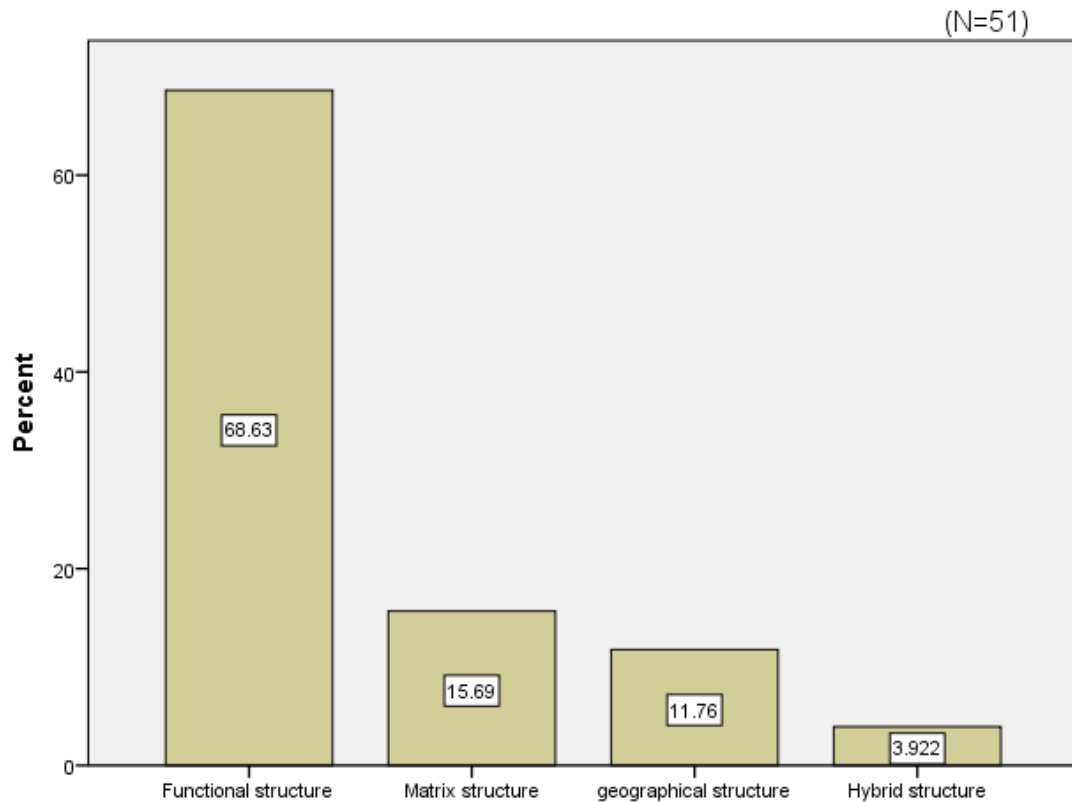


Figure 5.2: Types of Organisational Structures

In Figure 5.2, the answer of 35 of the respondents, representing 68.63% of their enterprises, followed a functional structure, whilst 8 of the respondents, representing 15.69%, said that their enterprises applied a matrix structure, followed by 6, representing 11.76%, who states that their enterprise adopted a geographical structure; the smallest percentage (3.92%), representing 2 of them, suggested a hybrid structure. The functional structure percentage was the largest because the enterprises selected for this study were SMEs, and their number of employees was in the range of 11–49. According to this range, the functional structure is more convenient for them when compared with other structures, which require more workers and extra departments and units to manage the tasks within the enterprise.

5.1.1.3 Enterprises Product Strategies

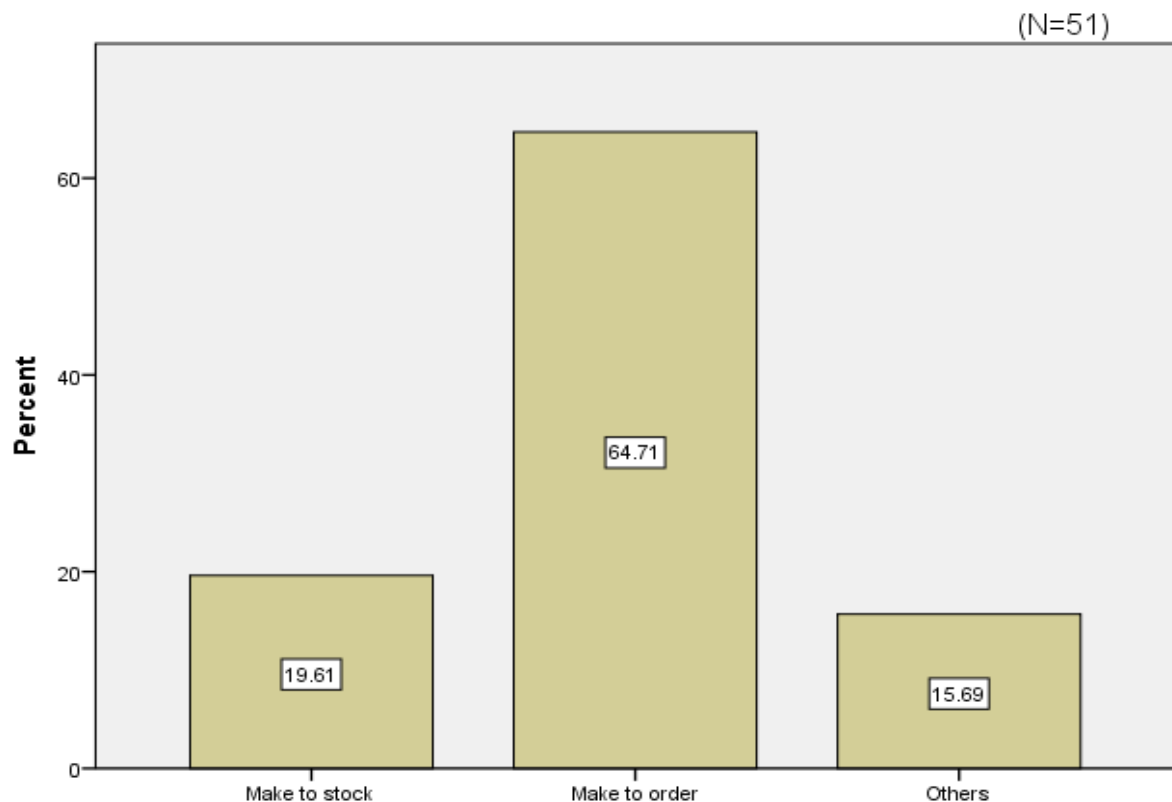


Figure 5.3: Enterprises Product Strategies

Figure 5.3 shows that 33 of the respondents, representing 64.71% stated that their enterprises follow the make-to-order strategy, while 10 of them representing about one-fifth (19.61%) adopting a make-to-stock strategy. Lastly, 8 (15.69%) said other strategies are adopted, such as bespoke and mass production. The make-to-order strategy which is represented (64.71%) the highest percentage according to the answers of respondents. This type of strategy (make-to-order) requires enterprises to show commitment to customer requirements in relation to the delivery time of products, quantities and quality of products: importantly, if the enterprise is unable to meet customer requirements, this may one of the reasons for losing its ISO 9000 certificate and reputation in the market.

5.1.2 ISO 9000 Implementation Section

This section is concerned with ISO 9000 implementation, including the reason for enterprises acquiring ISO 9000 standards, the period taken to implement ISO 9000, the awareness of employees concerning ISO 9000 standards, the influence of ISO 9000, and the benefits gained from the implementation of ISO 9000 standards.

5.1.2.1 Internal Resistance from Employees Prior to implementation of ISO 9000 Standards

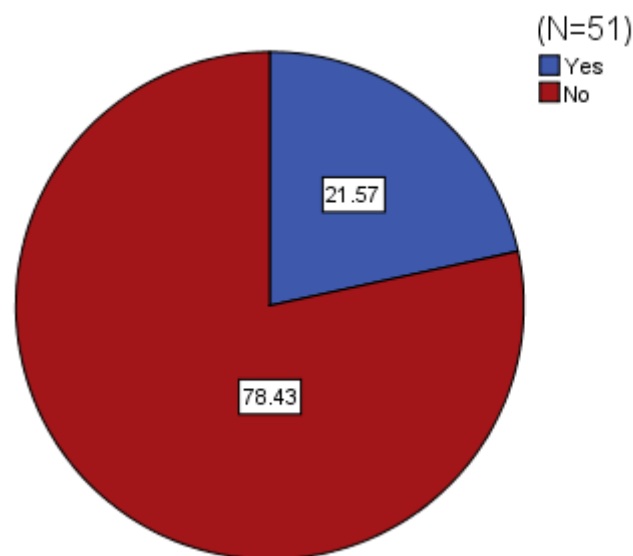


Figure 5.4: Internal Resistance Prior to the Implementation of ISO 9000 Standards

Figure 5.4 shows that 40 of the respondents, representing more than three-quarters (78.43%), stated **No** in regard to whether the enterprise faced internal resistance prior to ISO 9000 implementation, whilst 11 (21.57%) said **Yes**. The main reasons for the latter group's answer was owing to insufficient employee training, as well as a lack of knowledge relating to quality programmes, especially for enterprises that placed considerable reliance on consultants to assist them in the implementation of ISO 9000 standards.

5.1.2.2 Internal Resistance from Employees during Implementation of ISO 9000 Standards

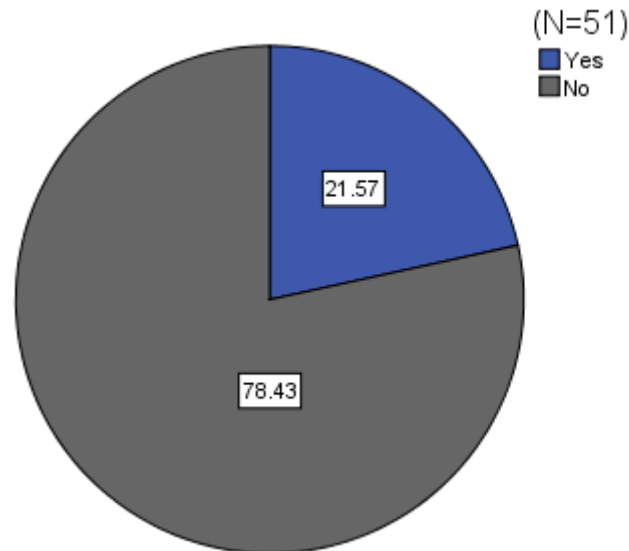


Figure 5.5: Internal Resistance during Implementation of ISO 9000 Standards

Figure 5.5 indicates that 40 of the respondents, representing 78.43%, said there was no internal resistance during the implementation of ISO 9000 standards, whilst 11 of them, representing more than one-fifth (21.57%), said **Yes**, detailing the same reason for internal resistance prior to implementation, in addition to the fact that, during implementation, employees faced problems in terms of how to deal with procedures and follow the instructions of ISO 9000 standards: these enterprises did not have internal audit teams to monitor and evaluate ISO 9000 standards implementation.

5.1.2.3 Internal Resistance from Employees after Implementation of ISO 9000 Standards

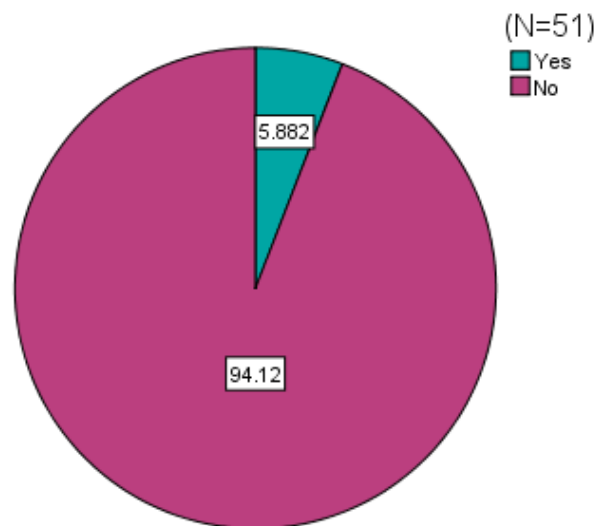


Figure 5.6: Internal Resistance from Employees after the Implementation of ISO 9000

Figure 5.6 indicates that, after implementation, employees' awareness and knowledge improved, and they became more familiar with standards. The number of respondents who answered *Yes* concerned with internal resistance after implementation reduced to just 3 (5.88%), whilst 48 equating to the majority of respondents said there was no internal resistance (*No*) (94.12%). The respondents who answered in the affirmative lacked understanding of ISO 9000 standards due to a lack of training programmes centred on helping employees to increase their knowledge about ISO 9000 standards and develop their skills.

5.1.2.4 Period Taken to prepare and implement ISO 9000 Standards

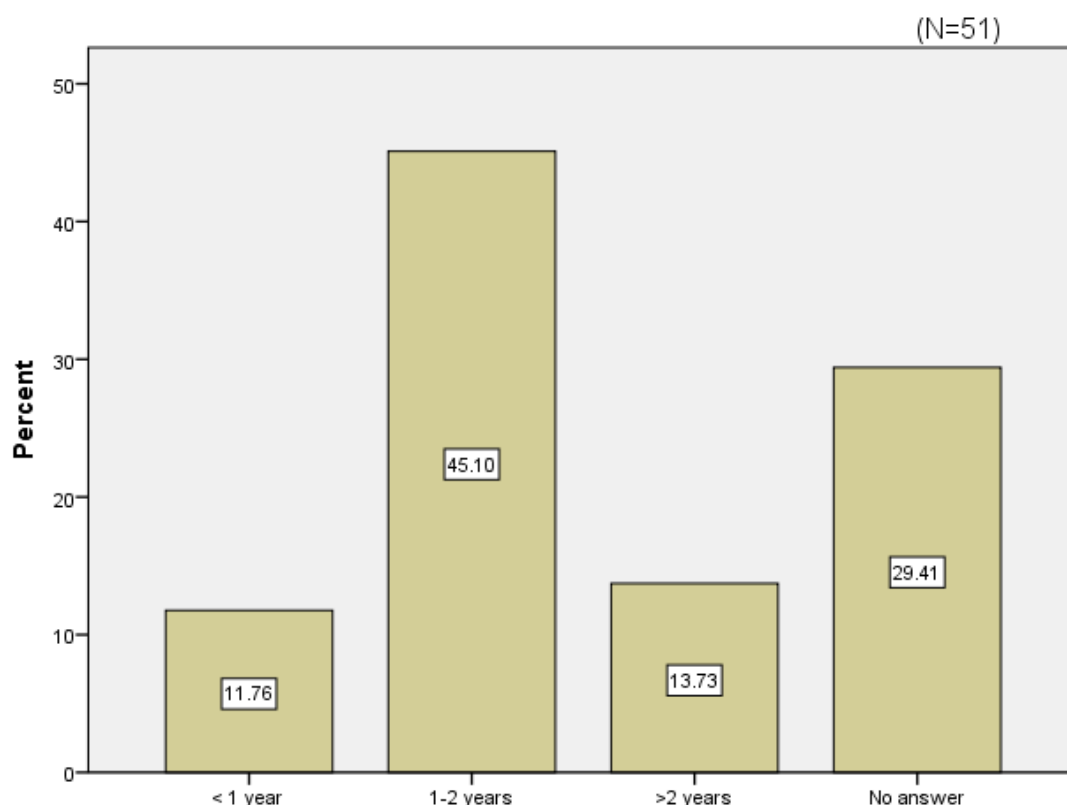


Figure 5.7: Period Taken to Prepare and Implement ISO 9000 Standards

Figure 5.7 represents the period taken to prepare and implement ISO 9000 standards. Of the respondents, 23, representing 45.10%, answered 1–2 years; this is the average expected period for enterprises when they implemented ISO 9000 especially when utilising an internal audit leader or Managing Director. Moreover, 6 (11.76%) said less than one year because these enterprises used external consultants and were small enterprises, employing less than 10 employees. Importantly, 7 of the respondents, representing 13.73%, answered that the period was more than two years as the enterprises did not have a quality management system, also lacked ISO 9000 standards knowledge, and also faced internal resistance from employees. Lastly, 15 of the respondents, representing approximately one-third (29.41%) did not answer this question.

Feng et al. (2008) point out that ISO 9001 certification requires a short-term plan for the implementation process and a long-term plan for sustaining the efforts. Arora (1996) states that

the certification process may take between six months and two years, depending on the size of the organisation, the nature of its operations, and the maturity of its quality system.

5.1.2.5 The Extent to which the Implementation of ISO 9000 Standards Improves Communications between Departments

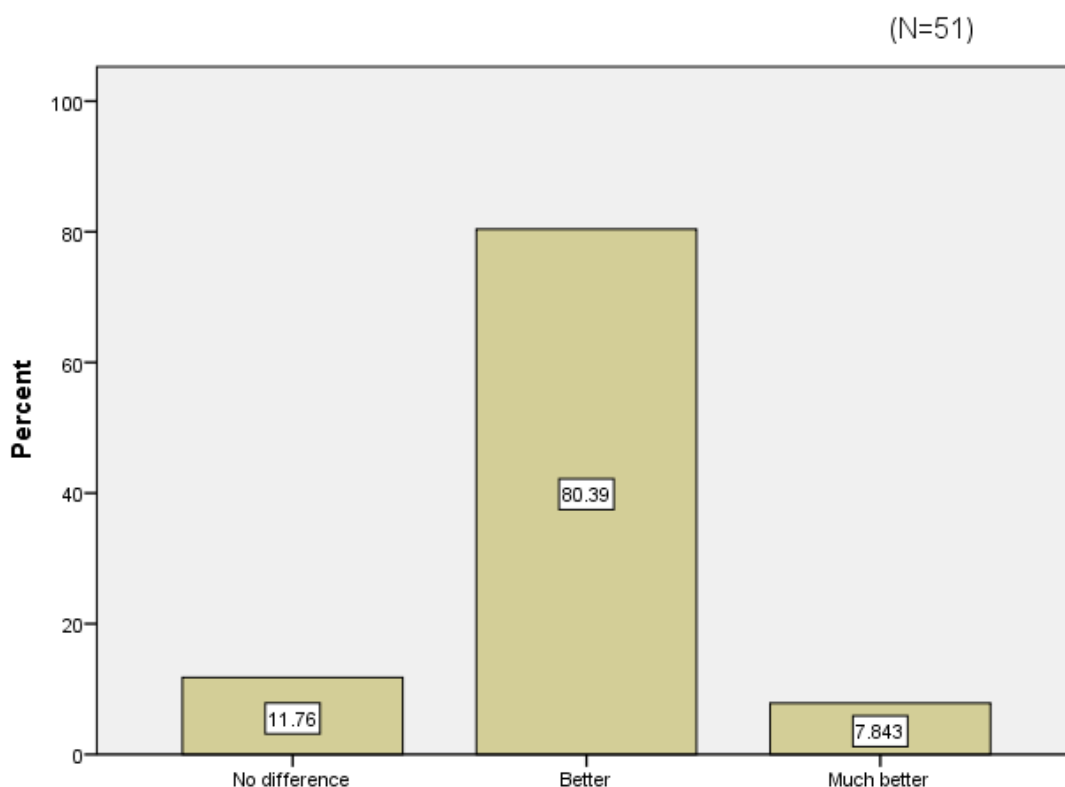


Figure 5.8: ISO 9000 Improves the Communications between Departments

Figure 5.8 shows that 45 of the respondents, representing 88.23% of the total sample, said that the communications between departments and units in their enterprises improved following the implementation of ISO 9000 standards, whilst 6 (11.76%) did not recognise any change in communication after the implementation of ISO 9000 standards, the latter of which used external consultants, and also lacked training and development programmes centred on helping employees to become more familiar with ISO 9000 standards.

Dissanayaka et al. (2001) found that 97% of the respondents agreed that the implementation of ISO 9000 standards improved internal communication. In this vein, Stevenson and Barnes

(2002) state that improved communication has been frequently cited as a benefit of ISO 9000 certification.

5.1.2.6 Influence of ISO 9000 on the Increase of the Quality Awareness

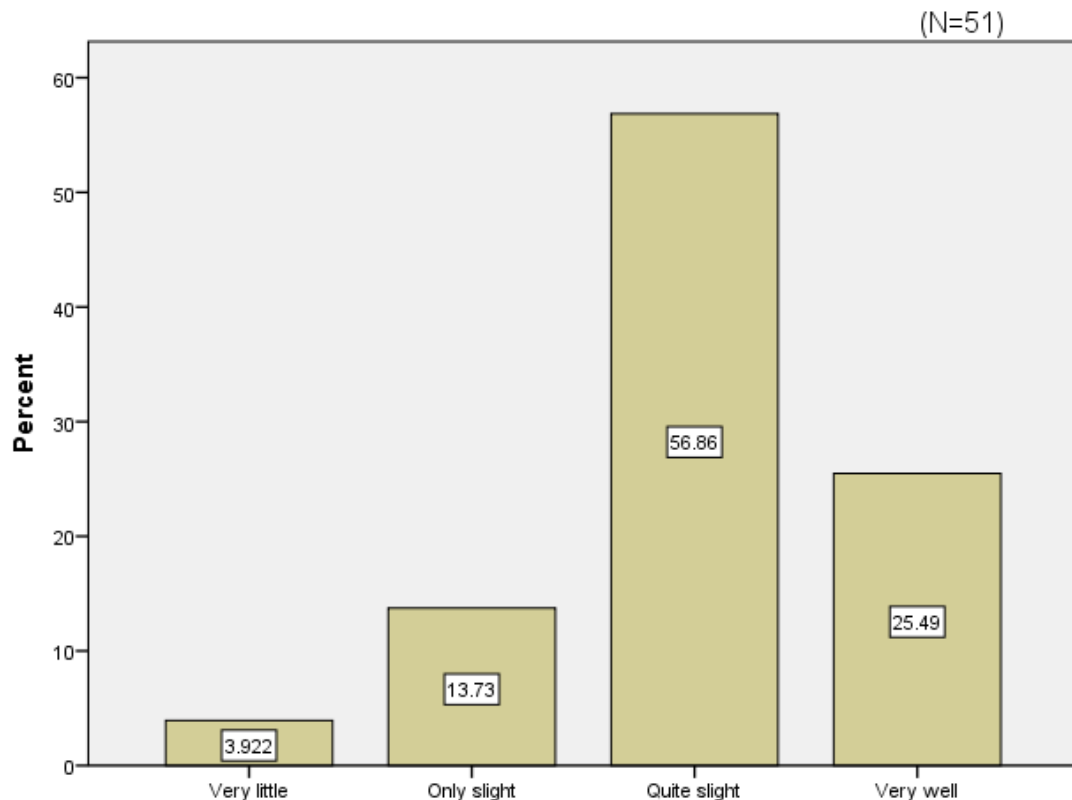


Figure 5.9: Influence of ISO 9000 on the Increase of Quality Awareness

Figure 5.9 shows that 82.35% of the respondents said that the influence of ISO 9000 standards on the increase of quality awareness was *satisfactory*, whilst 17.65% stated *unsatisfactory* as a result of the absence of training and development programmes, both of which are necessary to increase the knowledge of employees, and thus increase their awareness in terms of quality.

Magd (2005) found that the three most important benefits gained from applying ISO 9000 standards were improved efficiency of the quality system, better documentation procedures, and increased quality awareness in the organisation.

5.1.2.7 Influence of ISO 9000 Standards on the Increase of Employee Participation

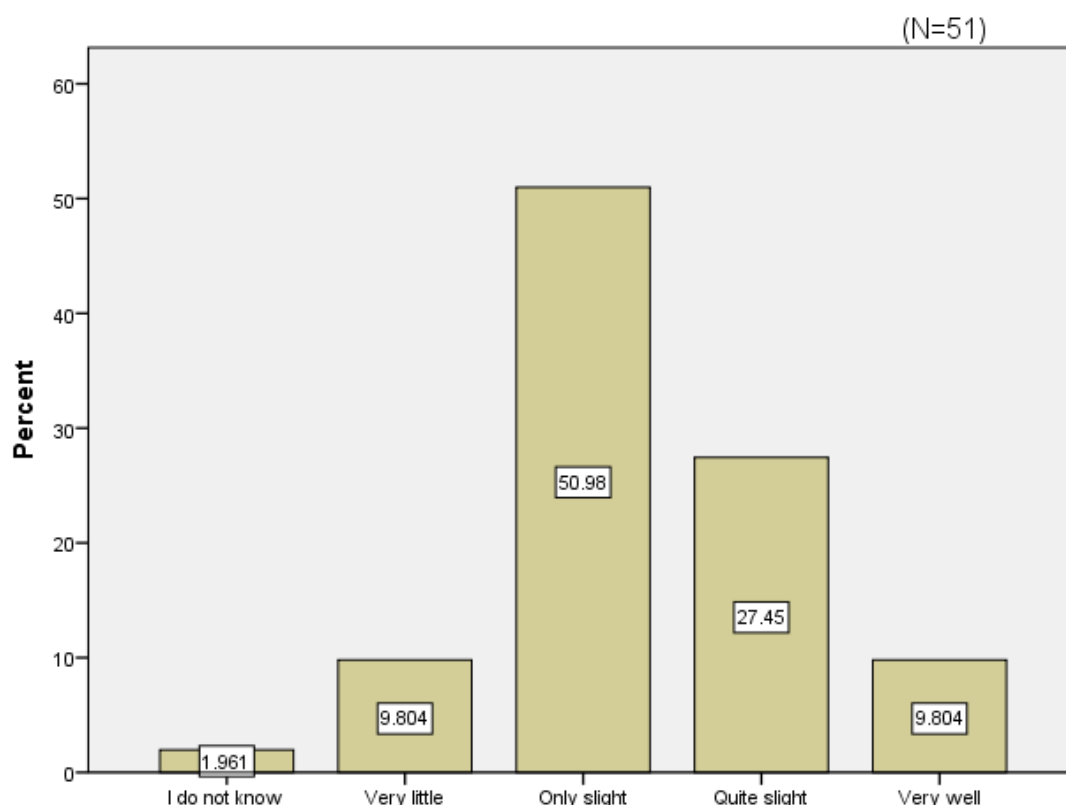


Figure 5.10: Influence of ISO 9000 on the Increase of Employees' Participation

Figure 5.10 details the answers of 37.25% of the respondents, who answered *well* in response to whether ISO 9000 standards helped to increase the participation of employee, especially for enterprises that had not used external consultants in the implementation. Moreover, approximately half (50.98%) of their answers described a *slight* influence on the increase of employee participation, whilst 9.804% answered that the influence was *fairly poor*. Lastly, only 1.961% of the respondents stated that they did not know.

Ching and Woan (2008) state that employees in an enterprise must follow the procedures laid out in the plans. Only through involvement can employees understand the need of continually improving and devoting their efforts to fixing deficiencies, and thus achieve the goals relating to quality improvement.

5.1.2.8 Influence of ISO 9000 on Improving Employees Relations

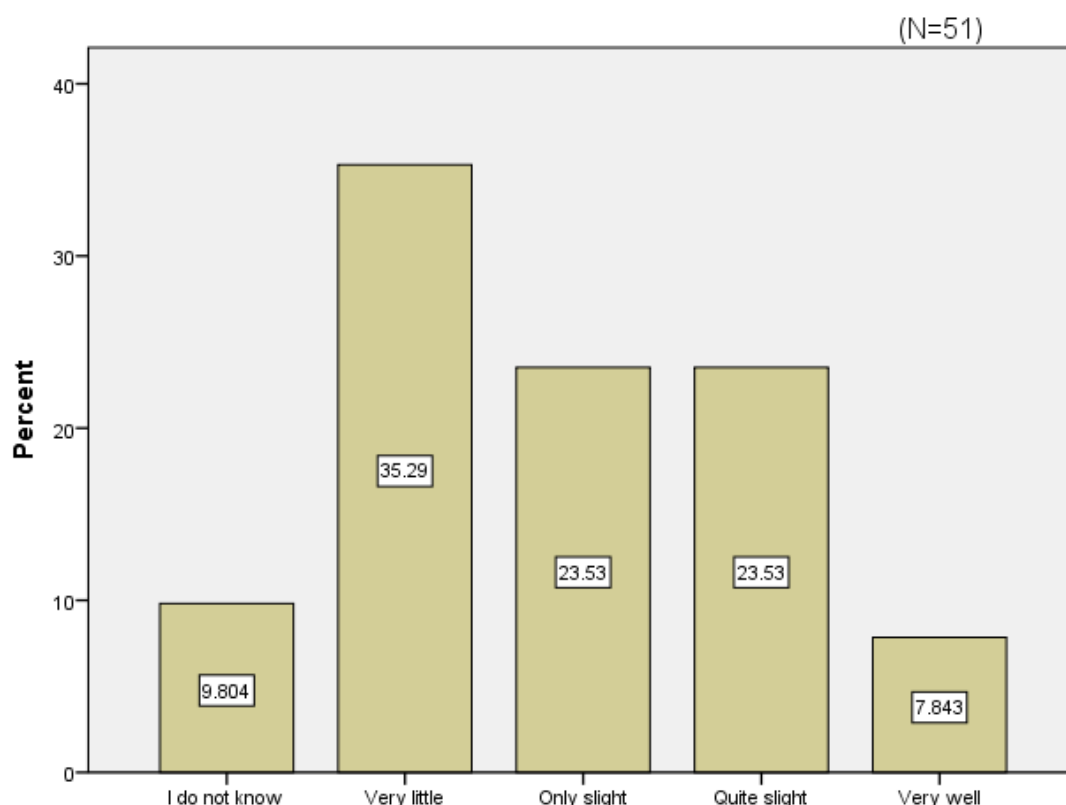


Figure 5.11: Influence of ISO 9000 on Improvements of Employee Relations

As shown in Figure 5.11, approximately one-third of the respondents (31.37%) said the influence of ISO 9000 on improving employee relations was **good**, whereas more than one-fifth (23.53%) said the relations between employees were **only slightly** improved after the implementation of ISO 9000 standards, whereas more than one-third (35.29%) stated that improvement was **weak**. It is considered that this last percentage was derived as a result of the lack of job description in some of these enterprises, which cause the existence of overlaps in the tasks required from their employees, thus influencing their relationship with one another. Lastly, 9.80% commented that they did not know. The management of the enterprise should pursue improvements surrounding the relationship between their employees and solve the problems that may face staff in their work, encouraging them to work as a team.

Lee and Palmer (1999) indicate in their study that interpersonal communication between employees and managers, as well as between employees and customers, improved after ISO 9000 implementation.

5.1.2.9 Increased Quality awareness in the Enterprise [ISO 9000 Benefits]

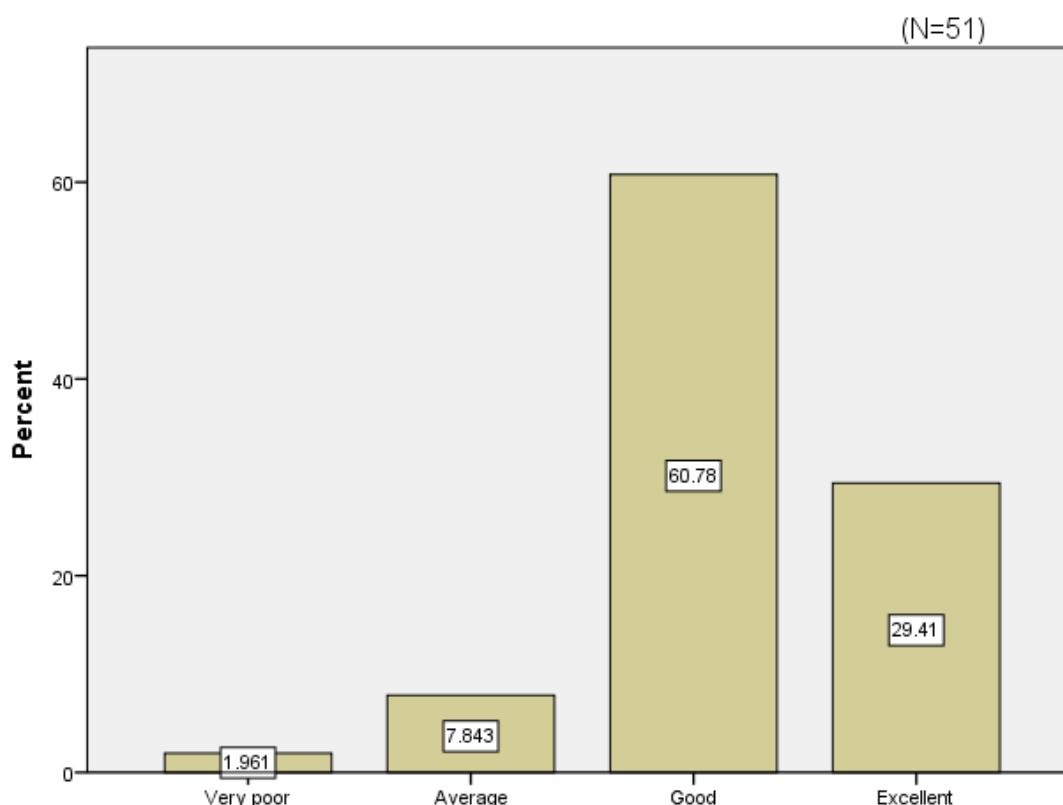


Figure 5.12: Increased Quality Awareness in the Enterprise

Figure 5.12 shows that the majority of respondents, i.e. 90.19%, were *satisfied* that one of the benefits gained from ISO 9000 standards was increased quality awareness of employees in the enterprises, whilst 1.96% said there no change could be seen in regard to quality awareness following the implementation of ISO 9000 standards; this is because employees in these enterprises suffered from a misunderstanding of the ISO 9000 standards requirements. Whilst the high percentage (90.19%) reflects the involvement of employees in the implementation of ISO 9000 standards and also indicates that they received good training and development programmes, it remains that this involvement makes them more experienced in dealing with the requirements of the standards.

Importantly, some authors advocate that certification could increase awareness of quality amongst workers and achieve a good climate in which to implement it (Taylor, 1995; Dick, 2000; Sun, 2000; Escanciano et al., 2001). Some researchers (Brown & Van der Wiele, 1995; Magd & Curry, 2003) quote Yung (1997) and Dale (1994), who state that an increased awareness of quality, in general, is a benefit obtained by organisations with certification. Furthermore, (Quazi & Padibjo, 1998) state that the ISO 9000 certification induces increased awareness of preventive and corrective actions.

5.1.2.10 Improved Staff Motivation [ISO 9000 benefits]

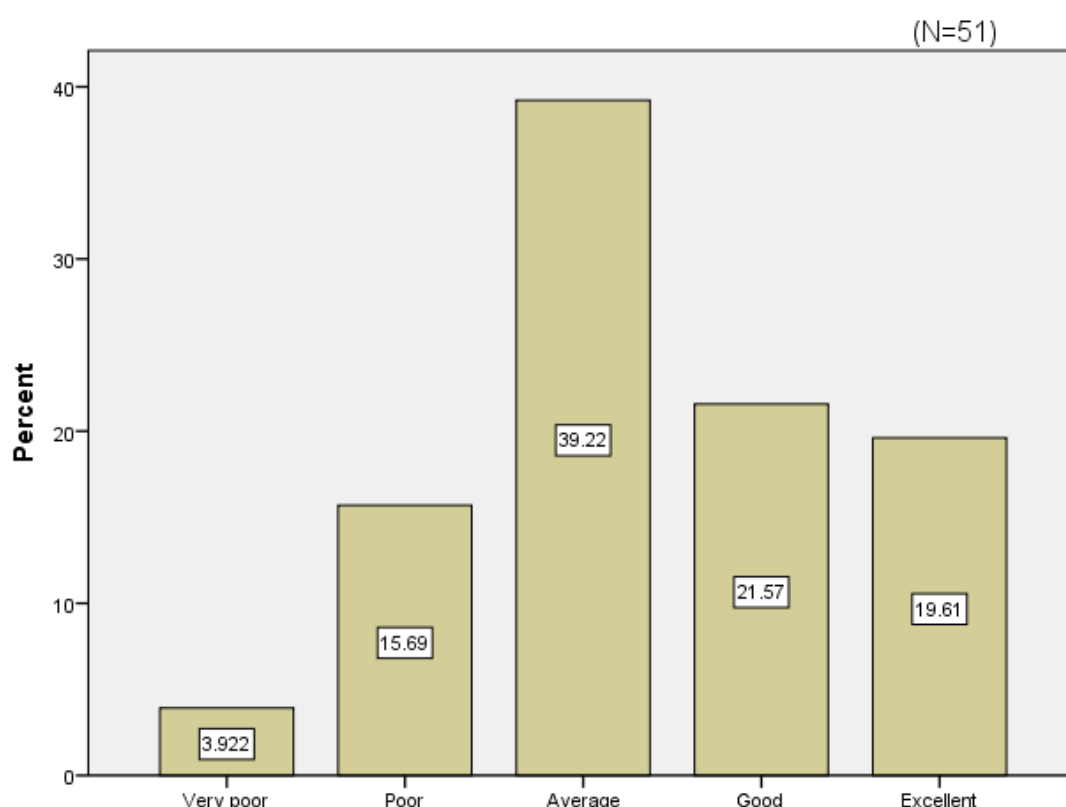


Figure 5.13: Improved Staff Motivation

Figure 5.13 above represents the benefits gained from ISO 9000 standards with regard to improved staff motivation, where 41.18% of the respondents described this as *satisfactory*, whilst approximately one-fifth (19.61%) said the improved staff motivation was *intangible* due to them suffering from poor facilities, such as trips, sports, Christmas party, social events, gym, various clubs, and training, as well as an unacceptable salary level.

In a study targeting Australian firms (Beattie & Sohal, 1999), improvement in staff morale was identified amongst the significant benefits of ISO 9000 standard. This has also been pointed out by other researchers, such as (Quazi & Padibjo, 1998), (Tang & Kam, 1999), (Sohal & Terzioviski, 2000) and (Awan & Bhatti, 2003).

5.1.2.11 Improved the Efficiency of the Quality System [ISO 9000 Benefits]

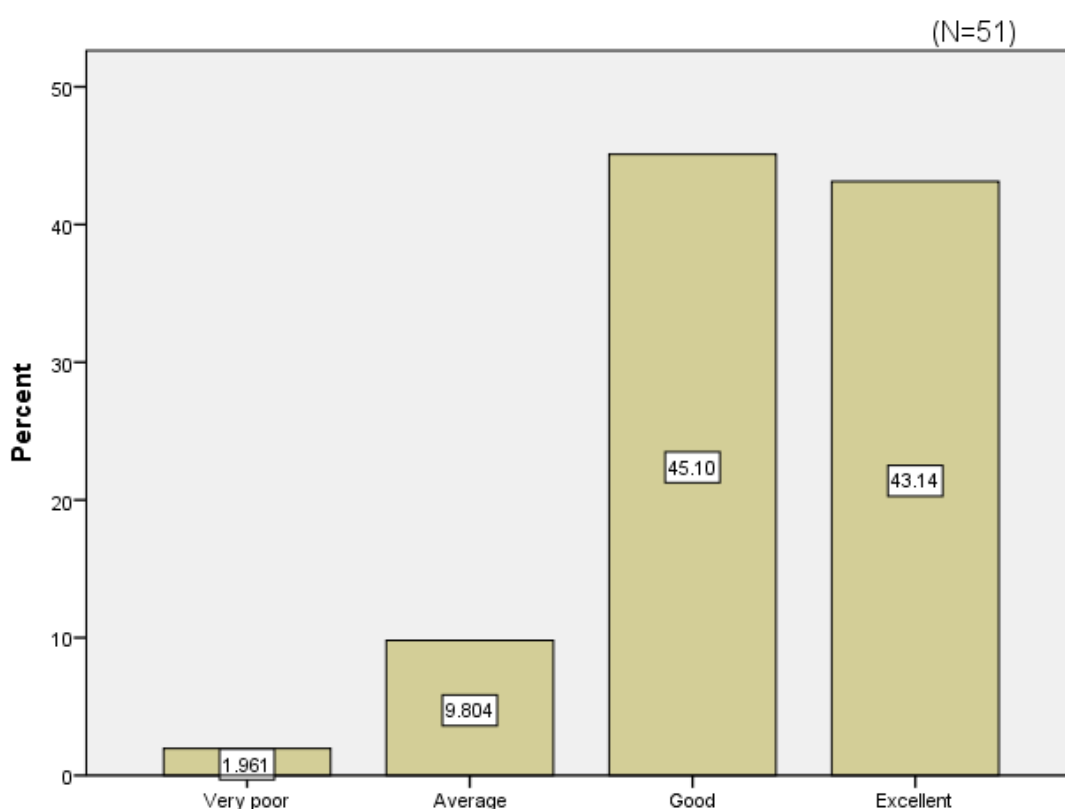


Figure 5.14: Improved the Efficiency of the Quality System

Figure 5.14 displays the answers of the respondents concerned with the benefits gained from ISO 9000 standards in terms of improving the efficiency of the quality system. Importantly, 88.24% stated that efficiency had *significantly improved* following the implementation of ISO 9000 standards, whilst just 1.961% said they considered the efficiency of the quality system *poor* after the implementation of ISO 9000 standards; this may be as a result of a lack of understanding of how the standards should be used in order to improve quality.

This benefit has been concluded by various researchers, such as Lee et al. (1999), Tang and Kam (1999), (Sohal & Terzioviski, 2000), Sun (2000), Escanciano et al. (2001), (Awan & Bhatti, 2003) and (Magd & Curry, 2003).

Magd (2005) recognises that there are three fundamental benefits gained from applying ISO standards, namely improved efficiency of the quality system, better documentation procedures, and increased quality awareness in the enterprise.

5.1.3 Work Environment Section

This section of the industrial survey focuses on the questions relating to the work place, supervision, motivation, satisfaction, and training and development.

5.1.3.1 Temperature and Noise in the Work Place

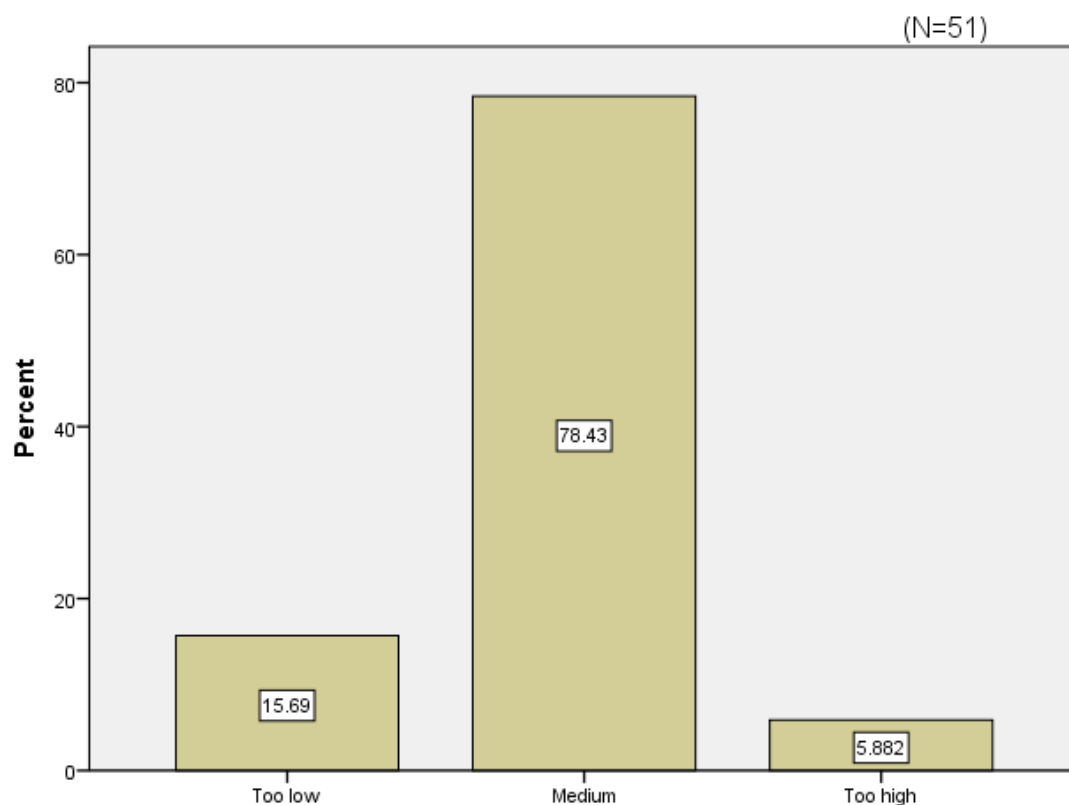


Figure 5.15: Temperature Level in the Work Place

Figure 5.15 shows that 40 out of 51 of the respondents representing more than three-quarters of the sample (78.43%) said the temperature is suitable (medium) in their work place, whilst 3 (5.88%) considered the temperature to be high due to a lack of air conditioning in the place. Furthermore, 8 of the respondents (15.69%) said the temperature was too low because the number of heaters was inadequate to warm the space. A temperature that is either too high or too low causes employees to feel uncomfortable in their work place, thus affecting their performance and moods.

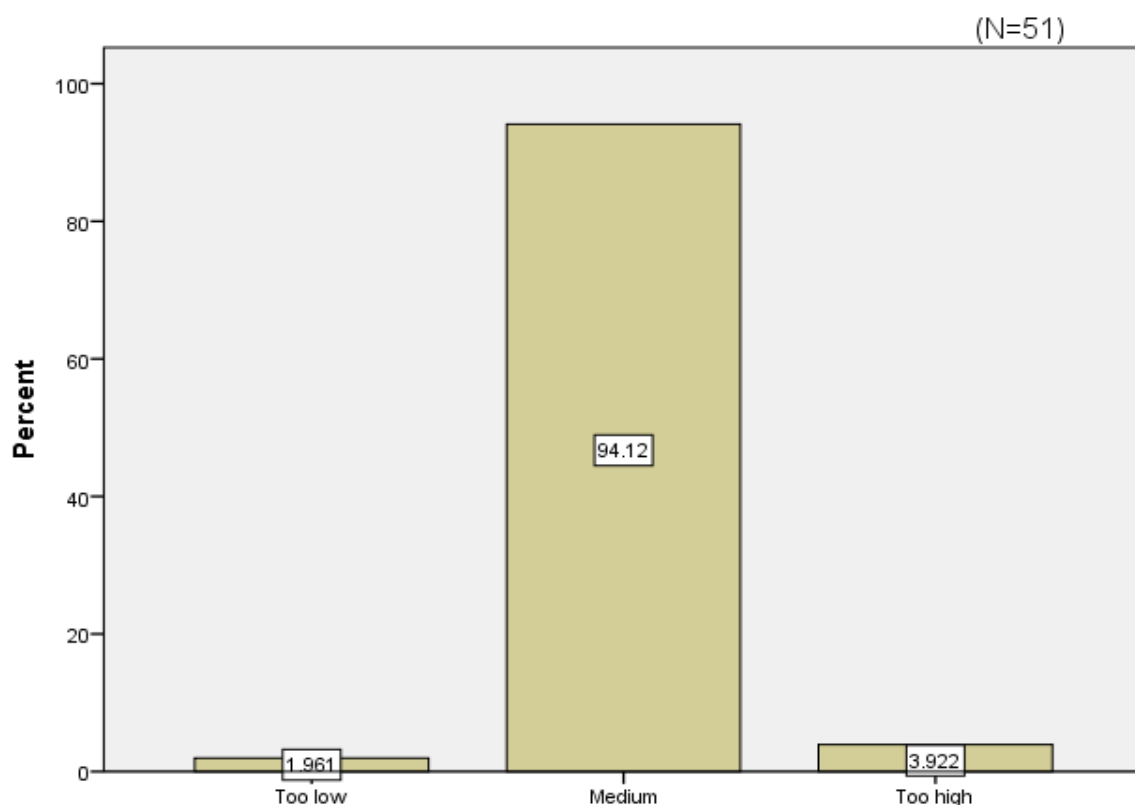


Figure 5.16: Noise Level in the Work Place

Figure 5.16 represents the noise levels in the work place, with 48 of the respondents (representing 94.12%) stating that the level of noise in their work environment is at a convenient (medium) level, whereas 2 of them, with a percentage of 3.92%, consider the level of noise to be too high; just 1 (1.96%) said the level of noise was too low. A high level of the noise influences the level of hearing and, with time, as a result to exposure to high noise levels employees may lose their hearing. In addition, this can also have a direct impact on their concentration and their

performance and cause them to experience headaches—along with other symptoms contrary to the health and safety roles in the work place.

5.1.3.2 To What Extent the Work Place is Comfortable

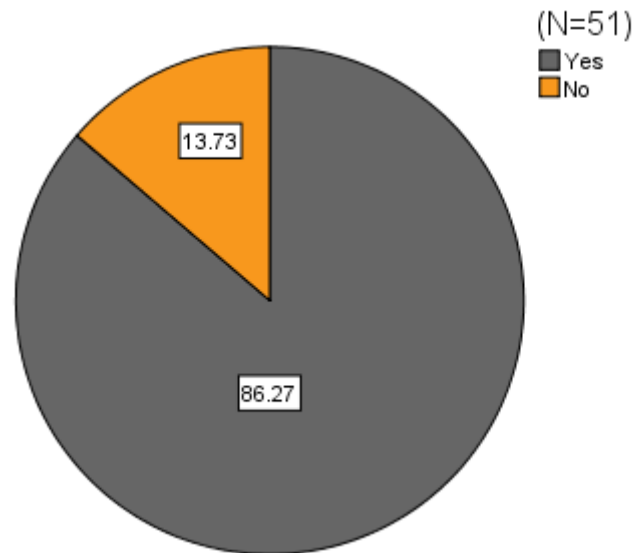


Figure 5.17: The Extent to which the Work Place is Comfortable

As indicated in Figure 5.17 above, 44 of the respondents (86.27%) said *Yes*, they feel comfortable in their work place, whereas 7 of them (13.73%) said *No*, which could be due to a too high or too low temperature and a high level of noise in the work place. Importantly, these individuals were not satisfied with the relationship with Supervisors in the work place.

Heerwagen (1998) states that a comfortable work environment impacts employee performance, psychosocial well-being and health in positive ways: being comfortable and feeling at ease in the work place is connected to basic human needs (both physical and psychological factors), which impact employees.

5.1.3.3 Is your Line Manager or Supervisor Interested in a Social Relationship outside of Working Hours?

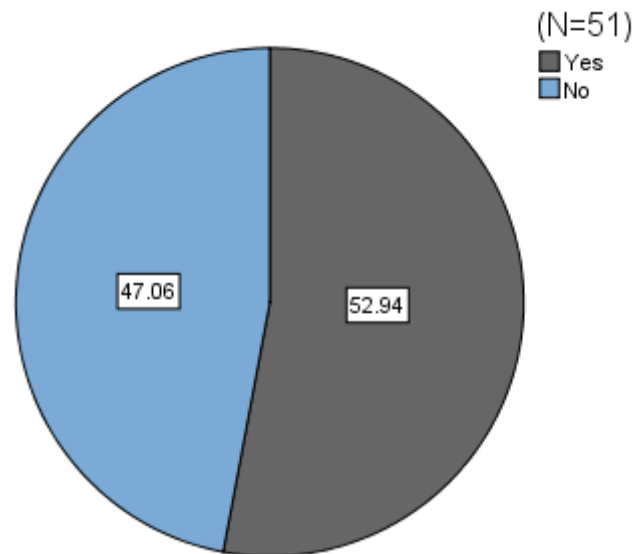


Figure 5.18: Social Relationship Outside of Working Hours

Figure 5.18 shows the answers of respondents relating to the question, 'Is you're Line Manager or Supervisor interested in a social relationship outside of working hours?' Notably, 27 of them they said *Yes* (52.94%), whilst 24 of them they said there is no relationship outside of working hours (47.06%).

The social relationships are related with higher levels of both job performance and organisational citizenship behaviours, as either action provides a means of fulfilling obligations within a strong social relationship (Eisenberger et al., 1990; Shore & Wayne 1993; Wayne et al., 2002; Wayne et al., 1997).

5.1.3.4 Only Money is Enough to Motivate Employees to Achieve Better Performance

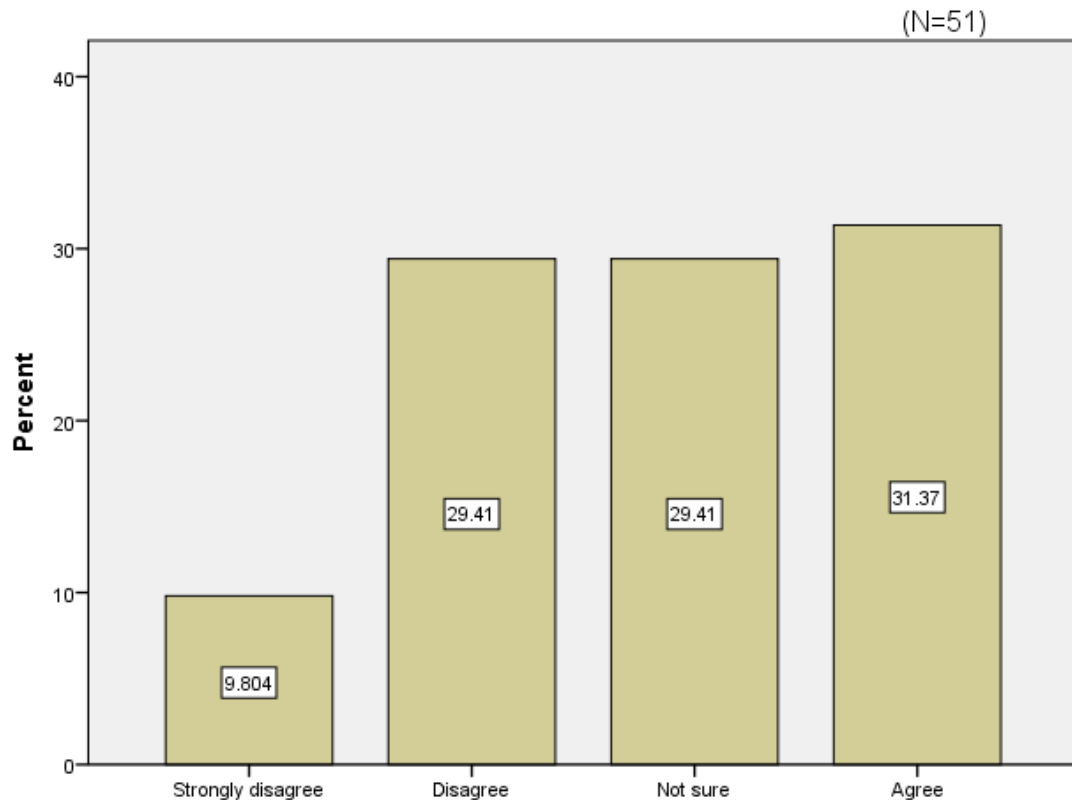


Figure 5.19: Money is Enough to Motivate Employees

Figure 5.19 shows that more than one-third of the respondents (31.37%) **agreed** that only money is enough to motivate employees to achieve a better performance, whilst 29.21% of them **disagreed**, whereas approximately one-third (29.41%) were unsure whether money is enough to motivate employees. The respondents who disagreed stated other factors could play a role in achieving fulfilment in their jobs, such as recognition, achievement, self-esteem and job security.

Mol (1992) stated that, money does not motivate, but rather moves a person to achieve a goal in order to obtain the reward.

5.1.3.5 To What Extent do you Agree or Disagree that Individual Recognition is Important for Employees?

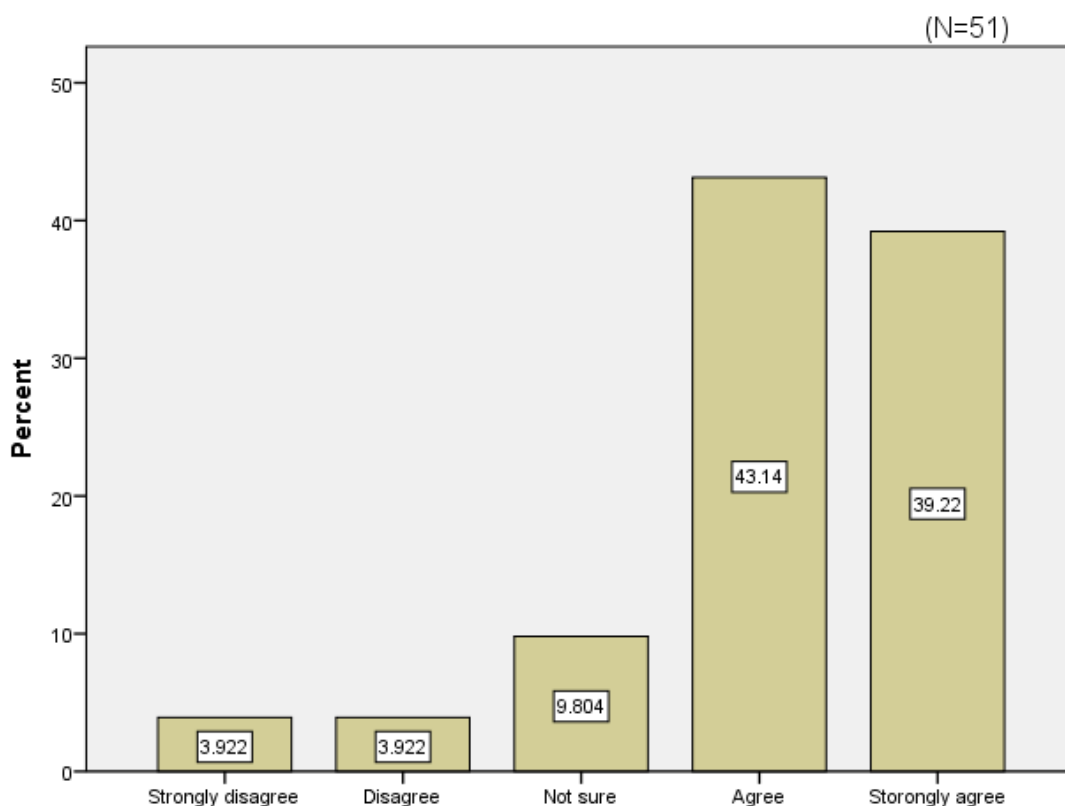


Figure 5.20: Employees Individual Recognition

Figure 5.20 indicates that 82.36% of the respondents **agreed** that individual recognition for high performance is very important to employees, with just 9.80% stating that they were unsure whether individual recognition is important to employees in terms of increasing performance. Lastly, 7.84% **disagreed**, stating that there are other factors more important than recognition, such as job security and salary.

Gar (2011) states that, in those companies in which recognition occurs, the organisation's average score for employee results (an index comprising employee engagement, performance and productivity) was approximately 14% higher than in organisations where recognition does not occur.

5.1.3.6 To What Extent do you Agree or Disagree that Job Insecurity Causes Employees to Worry about their Future?

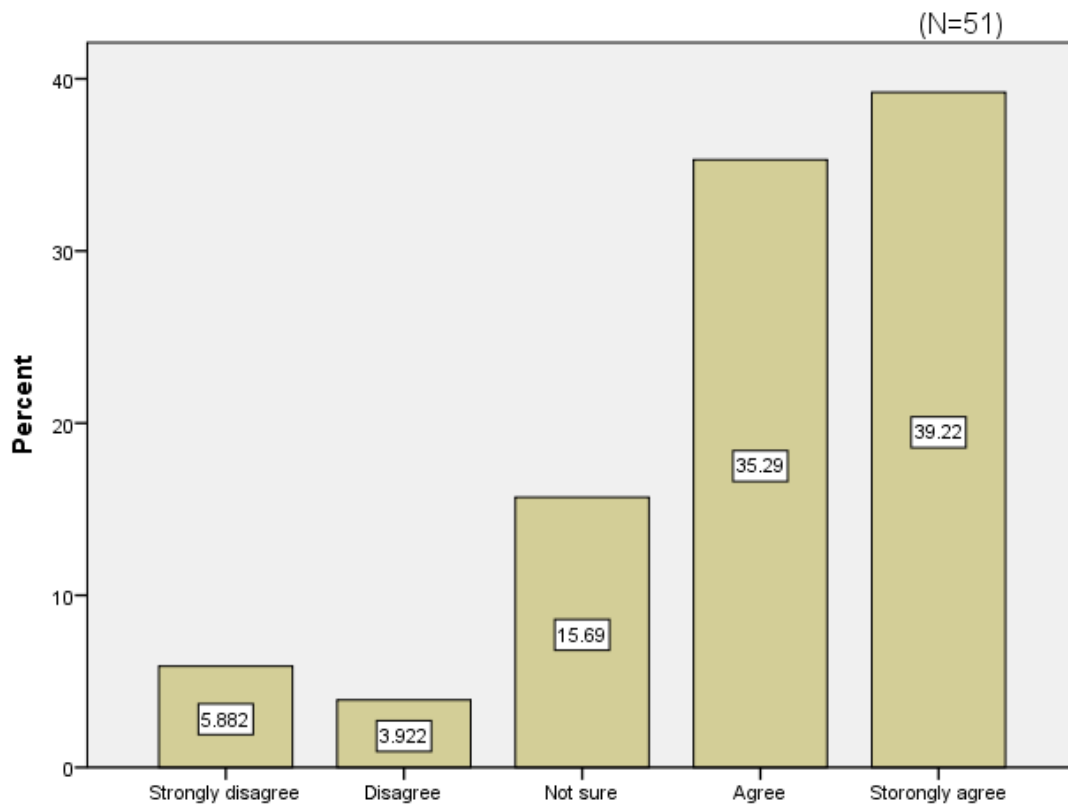


Figure 5.21: Employees Job Insecurity

Figure 5.21 shows that approximately three-quarters of the respondents (74.51%) agreed that job insecurity makes employees to worry about their future, whilst 9.80% of them disagreed. According to Leibman and Weinstein (1990) Job insecurity is often related to job loss; however, it is even more crucial than financial needs as job security can be related to the physiological, emotional and self-esteem of a person.

5.1.3.7 To What Extent do you Agree or Disagree that Having Good Facilities Motivates Employees to Increase their Performance?

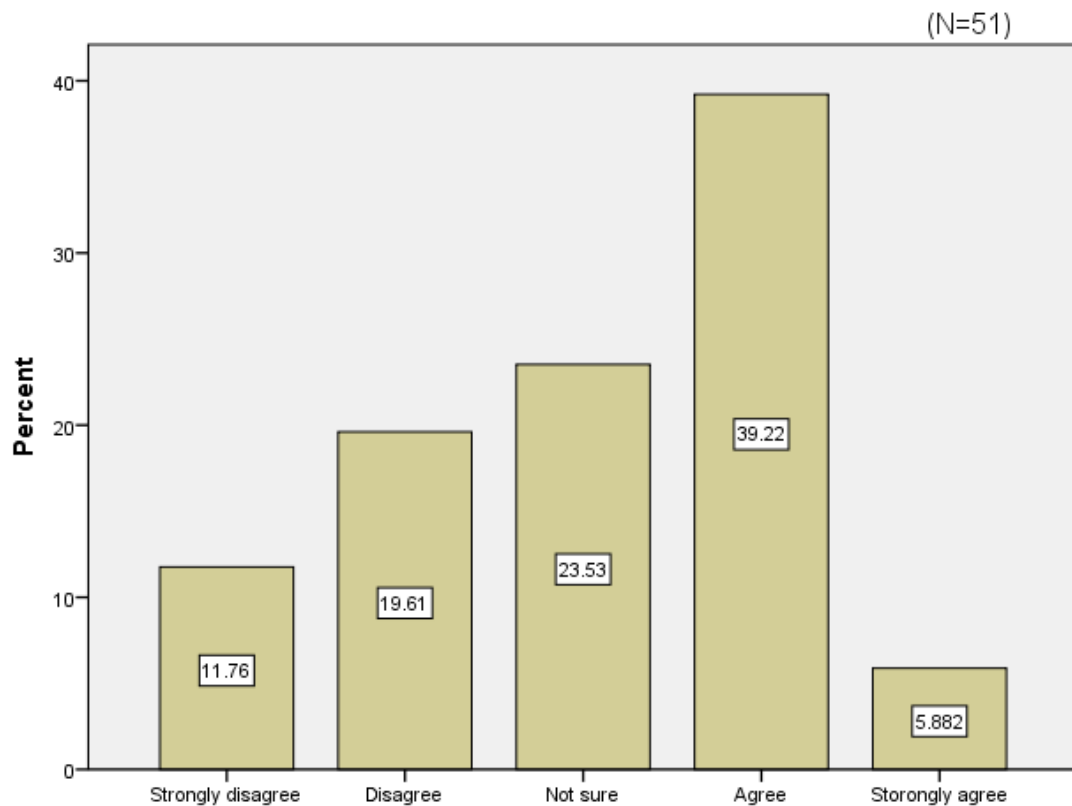


Figure 5.22: The Extent to which Good Facilities Motivate Employees to Improve Performance

Figure 5.22 indicates that 45.04% of the respondents ***agreed*** that, if the enterprise has good facilities, this will motivate employees to increase their performance approximately one-third of them (31.37%) ***disagreed*** because they consider other parameters to be more important, such as job security, salary and recognition.

Sida (1996) reports that infrastructure includes physical facilities (roads, airports, utility supply systems, communication systems, water and waste disposal systems, etc.) and the services (water, sanitation, transport, energy) flowing from those facilities.

5.1.3.8 Is the Level of your Salary Acceptable to You?

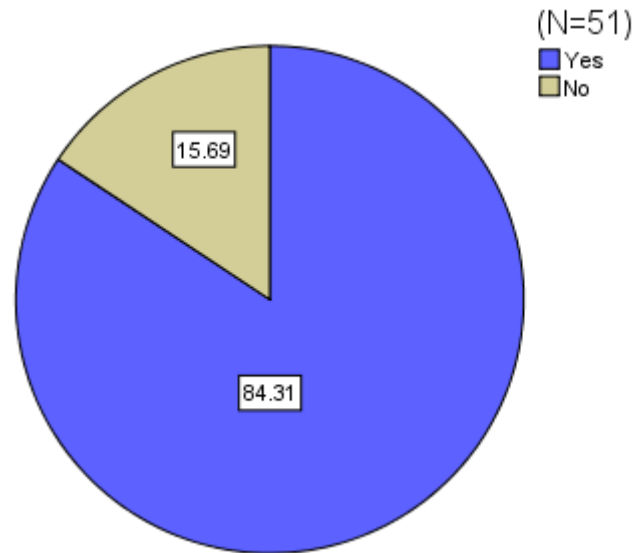


Figure 5.23: Level of Salary

Figure 5.23 shows that 43 of the respondents (84.31%) consider the level of salary to be acceptable, whereas 8 of them (15.69%) consider their salary level to be unacceptable; the reasons for those answering *No* are seen to be owing to the fact that they work in a small family-run business, which offers little chance of progression to increase productivity and profitability, and hence to improve their level of salary.

Barton (2002) argues that formal reward programmes denote financial rewards, such as salary, bonuses, promotions and fringe benefits, all of which play an important role in motivating of employees.

5.1.3.9 Are You Happy with Career Progression Opportunities in Your Enterprise?

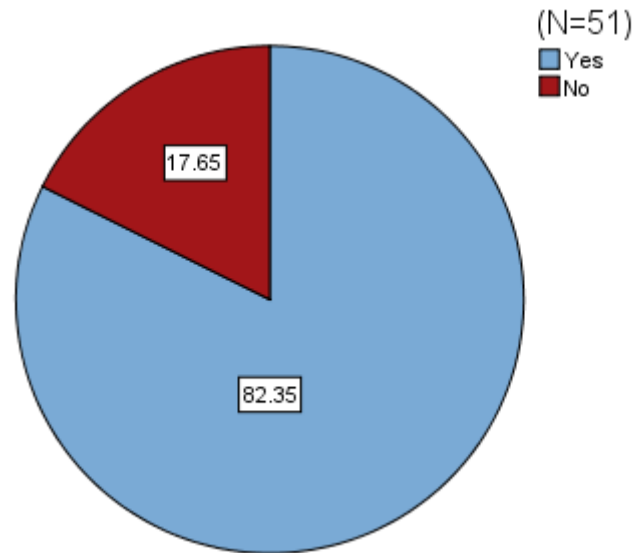


Figure 5.24: Career Progression Opportunities

Figure 5.24 above indicates that 42 of the respondents (82.35%) are happy with the career progression opportunities in their business, whereas 9 of them (17.65%) answered *No*. The respondents who answered *No* did so due to being dissatisfied with the training and development programmes, and reward systems.

Ude and Coker (2012) mention that management, in some enterprises, utilise special opportunities as incentive schemes. These special opportunities include the opportunity to experience special training, favoured assignments and flexible working conditions.

5.1.3.10 The management of the enterprise has a formal plan for training and development programmes

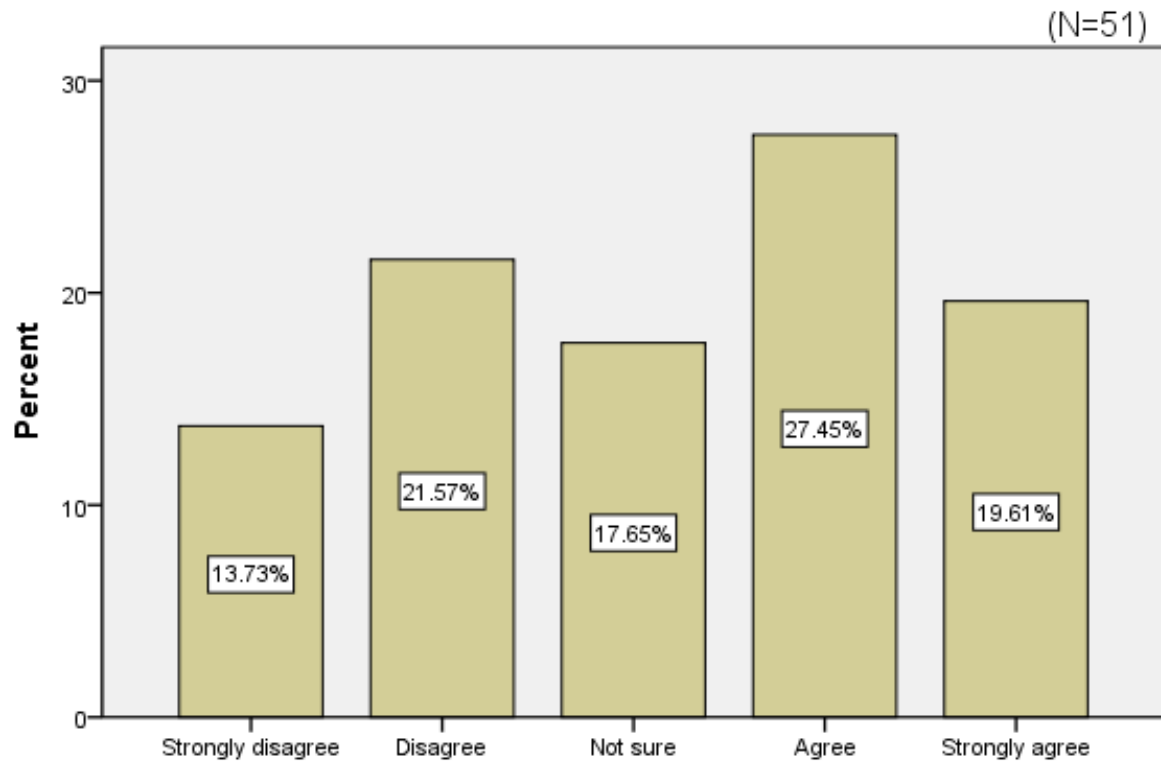


Figure 5.25: Training and Development programmes

Figure 5.25 shows that 47.06% of the respondents agreed that the management of enterprise has a formal plan for training and development programmes, whilst 35.30% of them disagreed. Ronald Burke (1995) found that employees that participated in number of training programs and rated the trainings they attended as most relevant, viewed the enterprise as being more supportive, looked at the enterprise more favourably, and had less intention to leave.

5.1.4 One Sample T-Test

One sample *t*-test is a statistical procedure often performed for testing the mean value of distribution. It can be used under the assumption that sampled distribution is normal. For large samples, the procedure often performs well even for non-normal populations.

Table 5.1: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Enterprises age	51	3.47	.612	.086

Table 5.2: One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Enterprises age	5.494	50	.000	.471	.30	.64

Table 5.2 shows that the one sample *t*-test statistic is 5.494 and the *p*-value from this statistic is .000 which is less than 0.05 (the level of significance usually used for the test). This *p*-value indicates that the age of enterprises is **statistically significantly** different from the test value 3.

Table 5.3: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Enterprise strategy type	51	1.96	.599	.084

Table 5.4: One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Enterprise strategy type	11.461	50	.000	.961	.79	1.13

Table 5.4 shows that the one sample *t*-test statistic is 11.461 and the *p*-value from this statistic is .000 which is less than 0.05. This *p*-value indicates that the enterprise strategy is *statistically significantly* different from the test value 1.

Table 5.5: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Improved the efficiency of the quality system	51	4.27	.802	.112

Table 5.6: One-Sample Test

	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Improved the efficiency of the quality system	2.445	50	.018	.275	.05	.50

Table 5.6 indicates that the one sample *t*-test statistic is 2.445 and the *p*-value from this statistic is .018 which is less than 0.05. This *p*-value indicates that the improved the efficiency of the quality system is *statistically significantly* different from the test value 4.

Table 5.7: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Organisational structure	51	1.51	.857	.120

Table 5.8: One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Organisational structure	4.247	50	.000	.510	.27	.75

Table 5.8 shows that the one sample *t*-test statistic is 4.247 and the *p*-value from this statistic is .000 which is less than 0.05. This *p*-value indicates that the organisational structure is *statistically significantly* different from the test value 1.

Table 5.9: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
The time has been taken to implement ISO 9000 standards	51	3.98	.469	.066

Table 5.10: One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The time has been taken to implement ISO 9000 standards	14.940	50	.000	.980	.85	1.11

Table 5.10 indicates that the one sample *t*-test statistic is 14.940 and the *p*-value from this statistic is .000 which is less than 0.05. This *p*-value indicates that the time has been taken to implement ISO 9000 standards is *statistically significantly* different from the test value 3.

Table 5.11: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Increased quality awareness in the enterprise	51	4.16	.731	.102

Table 5.12: One-Sample Test

	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Increased quality awareness in the enterprise	1.532	50	.132	.157	-.05	.36

Table 5.12 shows that the one sample *t*-test statistic is 1.532 and the *p*-value from this statistic is .132 which is greater than 0.05. This *p*-value indicates that the increased quality awareness in the enterprise is *not significantly* different from the test value 4.

Table 5.13: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Temperature in your work place	51	1.90	.458	.064

Table 5.14: One-Sample Test

	Test Value = 1					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Temperature in your work place	14.049	50	.000	.902	.77	1.03

Table 5.14 indicates that the one sample *t*-test statistic is 14.049 and the *p*-value from this statistic is .000 which is less than 0.05. This *p*-value indicates that the temperature in the work place is *statistically significantly* different from the test value 1.

5.1.5 Correlations

The correlation statistics show whether or not there is a significant relationship between two variables. The correlation coefficient method is used to measure the strength of an association between two variables. The coefficient correlation range (r) is from -1 (perfect negative correlation) to +1 (perfect positive correlation). The tables below show the correlation between particular variables.

Table 5.15: Correlation between Increased Quality Awareness and the Improved Efficiency of the Quality system

Correlations		Improved the efficiency of the quality system	Increased quality awareness in the enterprise
Improved the efficiency of quality system	Pearson correlation	1	.368**
	Sig. (2-tailed)		.008
	N	51	51
Increased quality awareness in the enterprise	Pearson correlation	.368**	1
	Sig. (2-tailed)	.008	
	N	51	51

**, Correlation is significant at the 0.01 level (2-tailed)

Table 5.15 above shows that the increased quality awareness in the enterprise has a positive correlation with the improved efficiency of the quality system by the Pearson correlation coefficient value, $r=0.368$, $N=51$, and a significance value $p=0.008$.

Table 5.16: Correlation between Reduced Costs and Increased Quality Awareness

Correlations		Increased quality awareness	Reduced costs
Increased quality awareness in the enterprise	Pearson correlation	1	-.349*
	Sig. (2-tailed)		.012
	N	51	51
Reduced costs	Pearson correlation	-.349*	1
	Sig. (2-tailed)	.012	
	N	51	51

*. Correlation is significant at the .005 level (2-tailed)

Table 5.16 above shows that the reduced costs has a negative correlation with increased quality awareness in the enterprise where $r = -0.349$, $N = 51$ and $p = 0.012$.

Table 5.17: Correlation between the Supervisor Encouraging Employees and the Supervisor Welcoming Employees

Correlations		The Supervisor accept welcome employees opinions	The Supervisor encourage the employees
The Supervisor accept welcome employee opinions	Pearson correlation	1	.485**
	Sig. (2-tailed)		.000
	N	51	51
The Supervisor encourage the employees to create the confidence between them	Pearson correlation	.485**	1
	Sig. (2-tailed)	.000	
	N	51	51

**.Correlation is significant at the 0.01 level (2-tailed)

The results displayed in Table 5.17 indicate that the Supervisor encouraging employees to create confidence between them has a positive correlation with the Supervisor accepting and welcoming employees' opinions ($r = 0.485$, $N = 51$, $p = 0.000$).

Table 5.18 : Correlation between ‘Do you feel your work place is comfortable?’ and ‘How far away your work place from your home?’

Correlations		How far your work place from your home	Do you feel work place is comfortable
How far your work place from your home	Pearson correlation	1	.297*
	Sig. (2-tailed)		.035
	N	51	51
Do you feel work place is comfortable	Pearson correlation	.297*	1
	Sig. (2-tailed)	.035	
	N	51	51

*. Correlation is significant at the 0.05 level (2-tailed).

The above results (shown in Table 5.18) indicate that ‘Do you feel your work place is comfortable?’ has a positive correlation with ‘How far away is your work place from your home?’ ($r = 0.297$, $N=51$, $p = 0.035$).

Table 5.19: Correlation between ‘Improves the efficiency of the quality systems’ and ‘Improves documentation’

Correlations		Improves documentation	Improves the efficiency of the quality systems
Improves documentation	Pearson correlation	1	.365**
	Sig. (2-tailed)		.008
	N	51	51
Improves the efficiency of the quality systems	Pearson correlation	.365**	1
	Sig. (2-tailed)	.008	
	N	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5.19 indicates that ‘Improves the efficiency of the quality systems’ has a positive correlation coefficient ($r=0.365$) with ‘Improves documentation’, the significance value of which is $p = .008$, $N=51$.

5.2 Discussion

The questionnaire survey findings showed that 21.57% of respondents stated that enterprises faced internal resistance from their employees both prior and during the implementation of ISO 9000 standards. The respondents who answered in the affirmative lacked understanding of ISO 9000 standards due to a lack of training programmes centred on helping employees to increase their knowledge about ISO 9000 standards and develop their skills. This finding is supported by Psomas et al. (2010) who report that employee resistance may stem from the fear caused by a lack of information about ISO 9001 requirements, and from the belief as well that it will be difficult to change the mindset of employees regarding quality programmes.

A majority i.e. (90.19%) of the respondents were *satisfied* that one of the benefits gained from ISO 9000 standards was an increased quality awareness of employees in the enterprises, this high percentage reflects the involvement of employees in the implementation of ISO 9000 standards and also indicates that they received good training and development programmes. This involvement makes them more experienced in dealing with the requirements of the standards. This finding is supported by Magd (2005) who emphasises that the three most important benefits gained from the application of ISO standards include improved efficiency of the quality system, better documentation procedures and increased quality awareness in the organisation.

88.24% of the respondents stated that the efficiency of the quality system had *significantly improved* following the implementation of ISO 9000 standards. The finding is supported by Dale (1994) who reported that ISO 9000 standards implementation leads to the enhancement of quality system efficiency and an overall improvement in productivity. It is further supported by Yung (1997) who agrees that registration to ISO 9000 will help to achieve efficiency improvements and to consequently achieve cost reductions.

In relation to physical factors, the questionnaire survey revealed that 15.69% of respondents said the work place is too cold during the winter because the number of heaters is inadequate to make the place warm. Moreover, 5.88% said that the work place is hot in the summer due to a lack of air conditioning, and this contrasts with health and safety legislations which recommend that the work should be performed under appropriate conditions of physical factors.

39.21% of respondents participating in the questionnaire survey *disagreed* that money is enough to motivate employees. They further stated that other factors could play a role in achieving fulfilment in their jobs, such as recognition, achievement, self-esteem and job security. This finding is supported by Kochan (2002) who argues that money only results in temporary obedience from workers and is unsuccessful in transforming workers' attitudes and behaviour in the long-term. He further points out that money only motivates workers to seek further rewards.

Three-quarters of respondents agreed that job insecurity causes employees to worry about their future in their jobs. This finding is supported by Hartley et al. (1991) who point out that job insecurity does not only mean losing a job, but also encompasses much more: for example, changing job content can create job insecurity.

One of the findings of the questionnaire survey revealed that 82.36% of respondents agreed that individual recognition is very important in terms of increasing the performance of employees. This finding is consistent with Grawitch et al. (2006) who report that employee recognition is key to preserving and building the identity of individuals, giving their work meaning, promoting their development and contributing to their health and overall wellbeing.

Improvement of the efficiency of the quality systems has a positive correlation with increased quality awareness by the Pearson correlation coefficient value, $r = 0.368$, and a significance value $p = 0.008$, and also the improvement has a positive correlation with the documentation by the Pearson correlation coefficient value, ($r = 0.365$) and a significance value of which is $p = 0.008$.

5.3 Summary

In this chapter, the data collected from the questionnaire survey, conducted across SMEs in the UK were analysed by using the SPSS software and the findings obtained from the questionnaire survey indicated that:

- 21.57% of the respondents states that enterprises faced internal resistance from their employees both prior and during the implementation of ISO 9000 standards.
- 80% of the respondents saw communication between departments and quality awareness improve after the implementation of ISO 9000 standards.
- The efficiency of the quality systems has a positive correlation with increased quality awareness and improved documentation.
- 82.36% of respondents agreed that individual recognition is very important in terms of increasing the performance of employees.
- Three-quarters of respondents agreed that job insecurity causes employees to worry about their future in their jobs.
- In relation to physical factors, the questionnaire survey revealed that 15.69% of respondents said the work place is too cold during the winter because the number of heaters is inadequate to make the place warm. Moreover, 5.88% said that the work place is hot in the summer due to a lack of air conditioning. And this contrasts with health and safety legislations which recommend that the work should be performed under appropriate conditions of physical factors.

In the next chapter (Chapter 6) the researcher will present the case studies, which will be conducted amongst three SMEs in the UK with the aim of investigating the situation of the ISO 9000 standards implementation and their work environments.

Chapter 6 : Case Studies

6.0 Introduction

The aim of the case study is to investigate the issues potentially facing SMEs that have implemented ISO 9001 standard, and to examine the extent to which SMEs are interested in the work environment. The case study centres on three main areas: a) general background of the case enterprise; b) major aspects of ISO 9000 implementation; and c) the work environment aspects. The factors covered by these three areas include individual recognition, pension and health, job security, salary, relationship, reward system, money, and ISO 9000 influences and benefits. This chapter comprises the methodology of the case study, case study protocol, data collection techniques, case studies analysis, discussion and summary.

The concept of a case study has been defined by Leonard-Barton (1990) as ‘a history of a past or current phenomenon drawn from multiple of evidence. It can include data from direct observation and systematic interviewing as well as from public archives. In fact, any fact relevant to the stream of events describing the phenomenon is a potential datum in a case study, since context is important’. Gillham (2000) further defines case as, ‘one which investigates to answer specific research questions and which seeks a range of different kinds of evidence, which is there in the case setting, and which has to be abstracted and collated to get the best possible answers to the research questions. A case can be an individual: it can be a group such as a family or a class, or it can be an institution such as a school or a children’s home, or factory; it can be a large-scale community- a town, an industry, a profession. All these are single cases, but you can also study multiple cases: a number of single parents; several schools; two different professions’. He further adds that a case study is a main method within which different sub-methods are used, including interviews, observations, document and record analysis, and work samples. According to Bromley (1990), a case study is a ‘systematic inquiry into an event or a set of related events, which aims to describe and explain the phenomenon of interest’.

The case study, as a research strategy, is defined by Yin (2002) as ‘attempts to examine a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident’. Furthermore, Voss et al. (2002) point out the

strengths of case research, especially for allowing researchers, to: a) document a phenomenon within its enterprise context; b) explore the boundaries of a phenomenon; and c) integrate information from multiple sources. Yin (2002) proposes that, in studies where there exists a lack of defining theory, limited enquiries can be useful to represent unique cases and provide practical examinations of research questions in more natural settings.

In order to design and develop good case studies, Yin (2002) suggests that the development of a case study design needs to maximise four conditions relating to design quality' these four conditions are:

Construct validity: establishing correct operational measures for the concepts being studied.

Internal validity (for explanatory or causal studies only, and not for descriptive or exploratory studies): establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.

External validity: establishing the domain to which a study's findings can be generalised.

Reliability: demonstrating that the operations of a study, such as the data collection procedures, can be repeated, with the same results.

6.1 Methodology of the Case Study

The case study focused on those SMEs in West Yorkshire in the UK that have certified ISO 9001 standard. The researcher devised a survey, which was distributed across 14 SMEs in the West Yorkshire; subsequently, three of them, as recognised as having a good relationship with the University of Huddersfield, were emailed in an effort to make case studies; they had expressed an interest in so doing. The researcher arranged appointments to visit these enterprises in order to collect the necessary data through conducting face-to-face interviews with the person responsible for the implementation of ISO 9001 standard in the enterprise.

Magd (2008) states that the implementation of ISO 9001 standard varies from one enterprise to another, with such variations the result of different levels of enterprise awareness of quality management, its commitment in assisting the enterprise in implementing quality management tools and techniques, organisational structure and infrastructure. The researcher conducted these case studies with the objective to:

1. Investigate the ISO 9001 implementation and work environment for case study enterprises.
2. Evaluate the extent to which these enterprises shown an interest in motivating their staff.
3. Verify the extent to which workers understand the policy followed by the management in the implementation of ISO 9000 standards.

This case study proposes three hypotheses, all of which address the situation of ISO 9001 standard implementation and work environment in SMEs in West Yorkshire in the UK as follows:

1. Is the work environment within the enterprise suitable and adapted to ISO 9001 implementation?

Mullins (2005) states that the organisational climate is the employee's perception of how they feel in the work place, and includes specific aspects of the environment that have a direct influence on the ability of people to get the job done.

2. Does the enterprise face one of these barriers during or after the implementation of ISO 9001 standard?

There is a range of barriers faced by enterprises when implementing ISO 9001:

- a. A lack of participation in management during the process of implementation (Brown et al., 1998; Stevenson & Barnes, 2001; Torre et al., 2001; Douglas et al., 2003).
- b. High implementation and maintenance costs despite, its decline over time (Leung et al., 1999; Stevenson & Barnes, 2001; Casadesu's et al., 2005).
- c. Small and medium businesses face restrictions in terms of financial, human and material resources (Brown et al., 1998).
- d. Most of the SMEs have suffered from an increase in paperwork due to the awarding of the ISO 9001 certificate (Brown et al., 1998).

In an effort to motivate employees and accordingly increase their performance, the management of the enterprise should create and adopt a good reward system.

3. Does the management of the enterprise show an interest in the reward system?

The outcomes expected from this study will act as a reference to help industrialists to direct more care and understanding to the work environment, thereby contributing to an increase in work environment awareness.

6.2 Case Study Protocol

In order to facilitate data collection, it was important to build a case study protocol (Yin, 1994). The instrument for conducting the case study includes all the pertinent questions to ask when investigating the ISO 9001 implementation and the assessment of the work environment. Figure 6.1 represents a schematic diagram of the proposed developed protocol of the case study, which describes the steps that should be followed in order to complete the case study. Firstly, the researcher identified three SMEs in West Yorkshire in the UK that are known to have a good relation with the University of Huddersfield; this would make them good candidates for completing the case study and then the researcher sent their managements an e-mail asking whether there would be the possibility for them to be involved in the case studies; and they agreed to do the case studies. Subsequently, the researcher sent a group of questions to the management of the enterprises, via email; concerned with ISO 9000 implementation and work environment awareness (Appendix -2 represents these questions). The researcher then arranged an appointment to visit each enterprise's management. The case study required the conduction of an interview with someone in charge of monitoring the implementation of ISO 9001 standard to answer the case study questions.

Besides these interviews, the researcher will record observations during the tour within the enterprise. The researcher collected data and made appropriate analyses and interpretations. The expected outcomes from the case study is that SMEs may face difficulties in covering the expenses of implementation and maintaining the ISO 9000 certificate, and may not be interested in the factors that play an important role in improving the work environment.

Finally, in an effort to evaluate the validity of the data collected, the researcher sent a copy of the final report to the management of the enterprise.

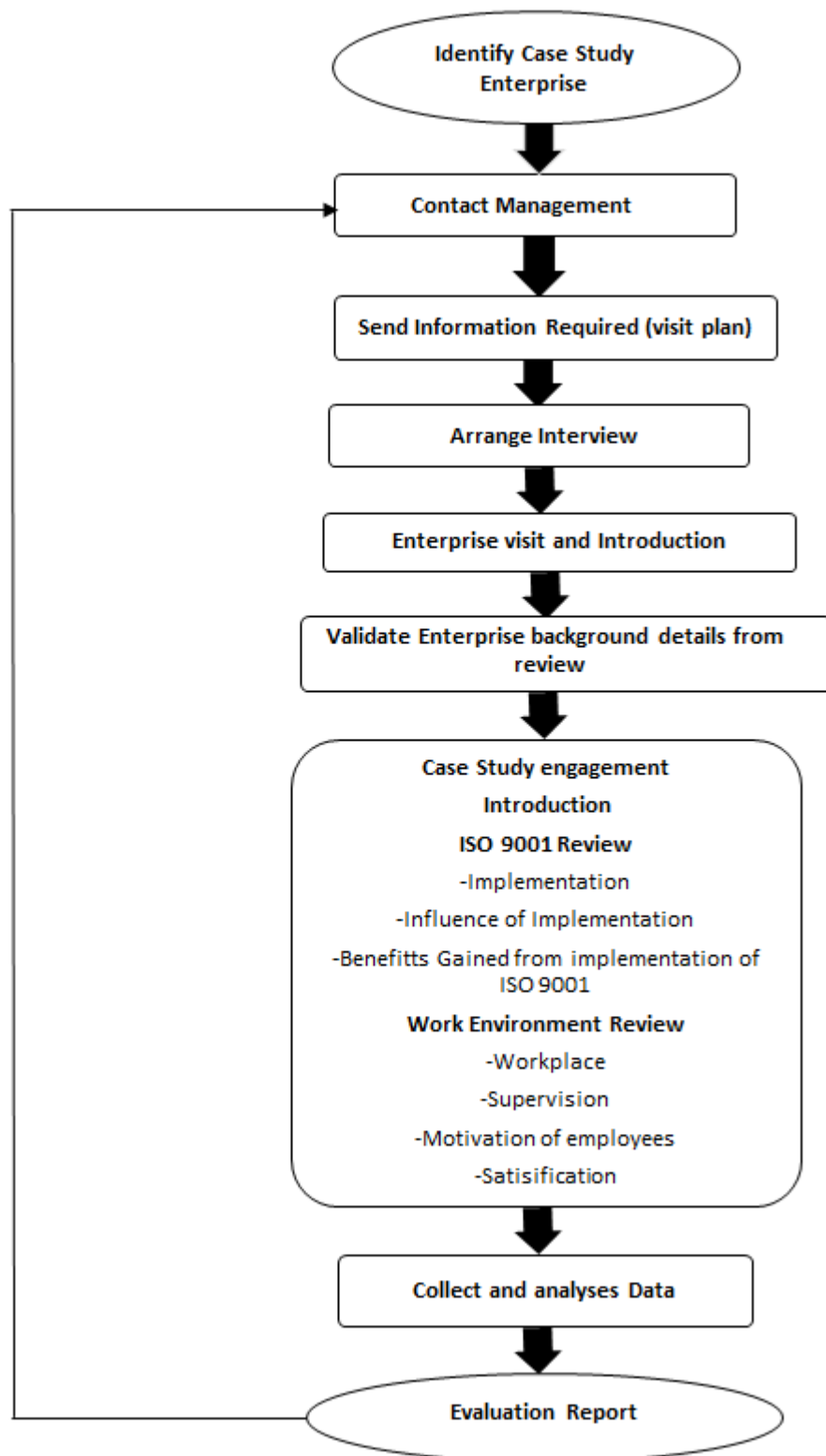


Figure 6.1: Schematic Diagram of Case Study Protocol

6.3 Data Collection Techniques

To collect the data necessary to evaluate the situation of the ISO 9001 implementation and work environment awareness in SMEs, the researcher used as evidences interviews, observations and the available archival records and documentations. The researcher conducted face-to-face interviews with the person responsible for implementing ISO 9001 in enterprises of case studies; the length of the interview was 30 minutes, the interview questions, as mentioned in the case study protocol, covered three parts, namely general background, ISO 9000 implementation and work environment awareness. The interview questions were formulated in the form of closed-ended questions, including multiple choices, Yes and No questions, and a five-point Likert scale. Furthermore, the researcher made a tour inside the enterprises of the case study for approximately 30 minutes, during which the researcher recorded a number of observations concerned with the implementation of ISO 9000 standards and the working environment. The data were collected and detailed in the relevant tables, indicating the situation within the enterprises of the case study relating to ISO 9001 implementation and work environment awareness.

Dawson (2009) points out that there are three types of interview, namely unstructured interviews, semi-structured interviews and structured interviews. In regard to unstructured interviews, ‘the participant is free to talk about what he or she deems important, with little directional influence from the researcher’. Concerning semi-structured interviews, ‘the researcher wants to know specific information, which can be compared and contrasted with information gained in other interviews and the researcher should produce an interview schedule’. Finally, the third type of interviews are structured interviews, which Dawson define as ‘used frequently in market research and it is highly structured and are used in quantitative research and can be conducted face-to-face, online or over the telephone sometimes with the aid of Lap-top computers’. Dawson also points out there are two types of observations: direct observation and participant observation. In the view of Dawson, direct observation ‘tends to be used in areas such as health and psychology. It involves the observation of a subject in a certain situation and often uses technology such as visual recording equipment or one-way mirrors’ and the participant observation is ‘as the principal to ethnographic research, which seeks to provide descriptive studies of human societies’. Furthermore, it can be carried out within any community, culture or context that is different to the usual community and/or culture of the researcher. Yin (2009)

stated that ‘a major strength of case study data collection is the opportunity to use many different sources of evidence’.

6.4 Analysis of the Case Studies

6.4.1 Enterprises Background

Enterprise A was established and started manufacturing in 1960 in the West Yorkshire, UK. It is a small enterprise employing approximately 38 employees. It has pioneered the use of thermoplastics in the process industries sector, and was and continues to be one of the largest design, manufacturing and installation specialists in corrosion-resistant thermoplastics in Europe. Moreover, it has produced the world’s largest diameter spiral wound tank, with manufacturing capability comprising vessels of up to four meters diameter and 100,000 litres capacity. Its products can be found in most of the world’s developed countries. *Enterprise A* produces six items, and places emphasis on *differentiation strategy* through use of the latest technology and manufacturing techniques, and improves and enhances its capabilities in an effort to deal with the competition from other manufactures and to increase confidence in its customer. Enterprise management has developed its policies to improve product quality by implementing ISO 9001 standard; it gained the ISO 9001 certificate in 1992. This depended on an external consultant implementing the ISO 9001 standard.

Enterprise B was founded as a private limited enterprise in 1979, and is located in West Yorkshire in the UK. It is small enterprise currently employing 43 staff. This enterprise introduced its services to a lot of private enterprises in different areas, both inside and outside of the UK, such as in the reclamation of tooling, the reconditioning of work holding, CNC regrind, and the coating of solid carbides drills, end mills, ball nose cutters and new tooling to drawing. The enterprise adopted the *make-to-order strategy* in its service in order to improve its services. The management of the enterprise hold an interest in the implementation of BS EN ISO 9001 standard through the use of an external consultant, and was awarded an ISO 9001 certificate in 1988, which it has maintained through continuous improvements in its performance.

Enterprise C is a manufacturer for horse trailers and horse boxes of different sizes, types and capacities. It was established in 2002 and employs more than 152 employees. It produces according to *the orders* received from its customers. The enterprise implemented ISO 9001

standard and achieved ISO 9001 certificate in 2009; however, it still faces some issues in implementation, such as a lack of records, documentation, and lack of its quality policy. Table 6.1 summarises the general background of the enterprises of the case study.

Table 6.1: General Background of the Enterprises

Enterprise Criteria	Case A	Case B	Case C
Enterprise activity	Product & service	Service	Product
Date of incorporation	1960	1979	2002
Country of origin	UK	UK	UK
Number of employees	38	43	153
Enterprise trade	Locally, Nationality& Internationally	Locally, Nationality& Internationally	Locally, Nationality& Internationally
Product/service categories	More than one items	More than one items	More than one items
Type of enterprise	Private limited enterprise	Private limited enterprise	Private limited enterprise
Product strategy	Make-to-order& limited sale from Stock	Make-to-Order	Engineer-to-order
Sources of raw materials	Local, National &International	Local	Local, National &International
Customers	A manufacturing unit within the same enterprise and other enterprises	Other enterprises(private)	End consumers other enterprises

6.4.2 ISO 9001 Implementation in Enterprises of Case Study

The main reason for the *Enterprise A* implementing ISO 9001 standard derived from the pressure of customers. The enterprise depended on an external consultant to implement ISO 9001 standard and, at the beginning, it faced slight internal resistance from employees, and it has not quality policy.

The main reason for the **Enterprise B** to adopt ISO 9001 standard was pressure from customers; it implemented ISO 9001 standard by using an external consultant. The enterprise faced internal resistance from employees and suffered from high registration and implementation costs. The enterprise has a good quality policy which is applied in all locations within the enterprise.

Enterprise C adopted the ISO 9001 standard as a result of market pressure. The process of implementation was the responsibility of the internal team of the enterprise. The employees of the enterprise were dissatisfied with adopting the ISO 9001 standard because they felt the process was bureaucratic and too complex. The quality policy, followed by the enterprise management, is clear and accepted by its staff.

Table 6.2 showed ISO 9001 implementation in enterprises of case study, whilst Table 6.3 indicates the influence of implementation of the ISO 9001 standard on the activities of the enterprises case study. Table 6.4 represents the benefits gained from the implementation of the ISO 9001 standard.

Table 6.2: ISO 9001 Implementation in Enterprises

Enterprise Criteria	Case A	Case B	Case C
Mean reason to implement ISO 9001	Pressure from customers	Pressure from customers	Pressure from market
Depended on internal team or external consultant for the implementation of ISO 9001	External consultant	External consultant	Internal team
If they were faced resistance from employees	Yes	Yes	Yes
Understand quality policy	No	Yes	Yes

Table 6.3 below summarises the influence of ISO 9001 on the activities of the enterprises case study. The findings showed that the implementation of ISO 9001 has **limited** influence on the activities in improving profitability, improving employee relations, increasing quality awareness, improving employee productivity, reducing costs and increasing employee participation. This is

due to employees misunderstanding of standards, and the absence of the training and development programmes. However, its influence *is good* on improvement of documentations and communications.

Table 6.3: Influence of the Implementation of ISO 9001 on Enterprise Activities

Enterprise Criteria	Case A	Case B	Case C
Improves documentation	Very well	Very well	Quite well
Improves the efficiency of the quality system	Very well	Very little	Only slight
Improves profitability	Quite well	Only slight	Very little
Improves employee relations	Quite well	Very little	Very little
Increases quality awareness	Quite well	Quite well	Only slight
Improves employee productivity	Only slight	Very little	Very little
Reduce costs	Quite well	Very little	Very little
Reduce production time	Quite well	Quite well	Only slight
Increased employee participation	Only slight	Quite well	Only slight
Internal communication	Very well	Quite well	Quite well
External communication	Quite well	Very little	Quite well

The participants were satisfied with the benefits gained from the implementation of ISO 9001 standard in the enterprises of a case study such as reduced defective rate and waste, improved efficiency of the quality system, improved process of product delivery, increased exports, increased quality awareness, and reduced customer complaints. Table 6.4 summarises the benefits gained from implementation of ISO 9001 standard on enterprise activities.

Table 6.4: Benefits Gained from the Implementation of ISO 9001 Standard

Enterprise Criteria	Case A	Case B	Case C
Improved the quality of products	Average	Average	Good
Improved customer service	Good	Good	Poor
Reduced costs	Average	Average	Poor
Increased quality awareness in the enterprise	Good	Excellent	Average
Improved workers relations	Good	Poor	Average
Improved staff motivation	Average	Poor	Poor
Reduced defective rate and wastes	Good	Good	Good
Improved supplier relations	Average	Poor	Average
Improved productivity	Good	Average	Average
Increased exports	Average	Good	Good
Improved the process of products delivery	Good	Good	Average
Improved the efficiency of the quality system	Excellent	Good	Good
Reduced customer complaints	Good	Good	Average
Improved inspection methods for incoming materials and finished products	Average	Excellent	Average
Enhanced communication & coordination among individuals & departments within enterprise	Good	Poor	Average

6.4.3 Work Environment in Enterprises of Case Study

From the interview conducted in the *Enterprise A* with the Production Manager, the researcher found that the management of the enterprise had not written a quality policy and job description for their employees, but it has a comprehensive plan for the training programme. Employees were provided with clear instructions and the necessary information relating to their tasks, and they were encouraged by Supervisors through inviting them to attend meetings and gathering their opinions.

Enterprise B had a good quality policy and, it was applied in all locations within the enterprise and it also created a job description for its employees; however, they had not received any training programmes on the implementation of ISO 9001 standard, due to the various financial issues to be faced at the beginning of the registration and implementation stages of the ISO 9001 standard.

Managers and Supervisors in this enterprise, encourage their employees to hold meetings with them, take their opinion when there are issues relating to their tasks, and provide them with the necessary instructions and information. The enterprise requires more attention and awareness concerning the work environment.

The management of the *Enterprise C* has a quality policy and job description for its employees, which is considered one of the requirements for implementing the ISO 9001 standard; however, employees have not yet received any training programme relating to the concept and purpose of ISO 9001 standard. Managers and Supervisors provide their employees with the necessary information take their opinions and hold meetings with them to discuss and solve any issues that may face them during the work. Table 6.5 represents the answers of interview questions relating to the work environment in the enterprises of the case study.

Table 6.5: Work Environment Criteria

Enterprise Criteria	Case A	Case B	Case C
The availability of job description for employees	No	Yes	Yes
The availability of quality policy	No	Yes	Yes
Training of employees on the ISO 9001	Yes	No	No
Supervisor provide his employees with necessary information	Yes	Yes	Yes
Supervisor take the opinion of employees	Yes	Yes	Yes
Supervisor hold meetings with employees	Yes	Yes	Yes
Supervisor encourage the employees	Yes	Yes	No
Employees have receive clear instructions from Supervisor	Yes	Yes	Yes

6.4.4 Motivation and Satisfaction of Employees

In *Enterprise A*, the Production Manager strongly disagrees that the money is enough to motivate employees to achieve a better performance, whilst he strongly agrees that individual recognition is very important for high performance: he is satisfied with his salary, career and the reward system applied in the enterprise, and is also extremely satisfied with the training programme and relationships with managers and co-workers. The Managing Director of *Enterprise B* disagrees that money is enough to motivate employees to achieve better performance; nonetheless, he strongly agrees that individual recognition is very important for high performance. He is satisfied with his salary, career, the reward system applied in the enterprise, and the relationships with managers and co-workers.

Through the interview conducted with a Production Engineer of *Enterprise C*, it was found that both money and individual recognition are enough to motivate employees to increase their performance; however, he disagrees that the pension and health insurance are important in motivating the employees. He also disagrees that the facilities available in the enterprise, are assisting good enough to motivating the employees. Whilst he strongly agrees that job insecurity causes employees to worry about their future, he is satisfied with his career and the relationships with his Line Manager and co-workers, and also slightly dissatisfied with his salary.

Table 6.6 and Table 6.7 summarises the situation of the case study enterprises in terms of motivation and satisfaction criteria.

Table 6.6: Important Motivation Criteria

Enterprise Criteria	Case A	Case B	Case C
Only money is enough to motivate employees to achieve a better performance	Strongly disagree	Disagree	Agree
Individual recognition for high performance is very important to employees	Strongly agree	Strongly agree	Agree
Pension and health insurance are of the most important things to motivate the employees	Disagree	Agree	Disagree
Job security causes employees to worry about their future	Agree	Strongly agree	Strongly agree
Having good facilities such as furniture, transportation and modern equipment's motivates employees to increase their performance	Agree	Strongly agree	Disagree

Table 6.7: Satisfaction Criteria

Enterprise Criteria	Case A	Case B	Case C
With your career	Satisfied	Extremely Satisfied	Satisfied
With your salary	Satisfied	Satisfied	Slightly dissatisfied
Training programme for your current job	Extremely Satisfied	Dissatisfied	Dissatisfied
Your relationship with your Line Manager or Supervisor	Extremely Satisfied	Extremely Satisfied	Satisfied
Your relationship with your co-workers	Extremely Satisfied	Satisfied	Satisfied
Reward system applying in your enterprise	Satisfied	Satisfied	Dissatisfied

6.5 Discussion

The participants strongly disagree that money is enough to motivate employees to achieve a better performance and this result is consistent with one of questionnaire survey findings which indicated that 39.21% of respondents disagree that only money is enough to motivate employees to achieve a better performance. It is further supported by Mol (1992) who found that money does not motivate, but rather moves a person to achieve a goal in order to obtain the reward.

The participants strongly agree that individual recognition is very important in attaining a high performance and this result is consistent with one of questionnaire survey findings which showed that 82.36% of the respondents agree that the individual recognition is important for high the performance of employees in the work place. It is further supported by Grawitch et al. (2006) who report that employee recognition is key to preserving and building the identity of individuals, giving their work meaning, promoting their development and contributing to their health and overall well-being.

The enterprises involved in the case study faced internal resistance from their employees when implementing the ISO 9000 standards due to the absence of training and development

programmes and a lack of knowledge surrounding ISO 9000 standards. And this result is in line with one of the questionnaire survey findings which revealed that 21.57% of the respondents said that their enterprises faced internal resistance during the implementation of ISO 9000 standards. It is further supported by Psomas et al. (2010) who report that employee resistance may stem from the fear caused by a lack of information about ISO 9001 requirements, as well as from the belief that it will be difficult to change the mindset of employees regarding quality programs.

The participants were satisfied with the benefits gained from the implementation of ISO 9001 standard in the enterprises of a case study, and this result is compatible with the findings obtained from the questionnaire survey with respect to the benefits gained from the implementation of ISO 9001 standard namely 90.19% of respondents are satisfied that one of the benefits gained from ISO 9000 standards has increased quality awareness of employees; and 41.18% of respondents said that ISO 9000 standards improved staff motivation while 88.42% of them said that ISO 9000 standards improved the efficiency of the quality system. This result is further supported by Magd (2005) who recognises that there are three fundamental benefits gained from applying ISO standards, namely improved efficiency of the quality system, better documentation procedures, and increased quality awareness in the enterprise.

Two enterprises from the case study implemented ISO 9001 standard by using the external consultants due to lack of internal team who were able to implement the standard. This meant that the cost of registration and implementation of ISO 9001 standard increased. On the contrary one of the enterprises of a case study is implemented ISO 9001 standard by its internal team.

The analysis of the work environment criteria for the enterprises case study indicated that there are strengths and weaknesses in their work environments. The failure rate of enterprise **B** is the lowest (21%) among the enterprises in the case study, followed by enterprise **A** (26%) and finally, enterprise **C** which has the highest failure rate (37%). The failure occurred due to lack of knowledge, absence of the training and development programmes and lack of awareness to the importance of the work environment in the workplace. Table 6.8 summarises the success and failure rates of work environment in enterprises case study.

Table 6.8: Work Environment Success and Failure Rates

Enterprise	Points			Rate%	
	Positive effect Pts.	Negative effect Pts.	Total Pts.	Success Rate %	Failure Rate %
A	14	5	19	74%	26%
B	15	4	19	79%	21%
C	12	7	19	63%	37%

6.6 Summary

The enterprises of the case study have implemented ISO 9000 standards, but they still need to take more interest in their work environment through making improvements related to some factors such as training programmes, documentation, motivation of employees, and safety needs. These factors have an impact on the success of ISO 9000 implementation and if ignored may become a reason for withdrawal of the ISO 9001 certificate.

Generally, case studies findings indicate that SMEs (case study enterprises) are facing issues especially enterprise **C** as a result of the lack of knowledge and understanding of procedures and some requirements of ISO 9000 standards.

The findings of the case study and findings obtained from the exploratory survey will be classified in Chapter 7, identifying the critical success factors that play a significant role in terms of improving the environment in the work place.

Chapter 7 : Work Environment Assessment Guide

7.0 Introduction

The work environment assessment guide (WEAG) aims to assist the management of enterprises to evaluate and realise the importance of the work environment and its influence on the performance of employees and subsequently on its productivity. This guide can be used in the course of the measuring of the physical factors, such as temperature, lighting, humidity, vibration and noise, by applying appropriate instruments and recording the obtained readings in physical measurement sheet (PFM-sheet). The person responsible for taking the measurements should have experience in the use of the instruments and in assessing the qualitative factors represented in terms of advancement, recognition, achievement, responsibility, growth, salary, status, working conditions, work itself, company policy, supervision, security, esteem, social needs, and safety needs by using work environment assessment questionnaire (WEAQ). The data gathered from the physical factors measurement sheet and from the work environment assessment questionnaire will be analysed through the use of suitable software. This guide comprises definitions, abbreviations, data collections techniques, and appendices.

The management of an enterprise should provide and manage suitable work environment to achieve and maintain the sustained success and the competitiveness of its products and services. A suitable work environment, as a combination of human and physical factors, should include considerations of:

- Creative work methods and opportunities for greater involvement to realise the potential of people in the enterprise
- Safety rules and guidance and the use of protective equipment,
- Ergonomics
- Psychological factors, including workload and stress,
- Work place location
- Facilities for people in the enterprise
- Maximisation of efficiency and minimisation of waste, heat, humidity, light, airflow
- Hygiene, cleanliness, noise, vibration, and pollution.

This guide provides guidelines on how to measure and assess factors related to the work environment in the work place. The intent of this document is to provide the management with information which will be useful and contribute to keep their employees safely and satisfied.

7.1 Definitions

<i>Temperature</i>	Temperature is a measurement of the average kinetic energy of the molecules in an object or system and can be measured with a thermometer or a calorimeter. It is a means of determining the internal energy contained within the system. Temperature will be recorded in degrees °C
<i>Lighting</i>	Light is simply a name for a range of electromagnetic radiation that can be detected by the human eye. The light unit measure is Lux.
<i>Humidity</i>	The amount of water vapour in the air. Humidity is measured in two ways: <i>Absolute humidity</i> is the percentage of water vapour actually present in the air. <i>Relative humidity</i> is the absolute humidity divided by the amount of water that <i>could</i> be present in the air. The humidity unit measure is Rh.
<i>Noise</i>	Noise is a sound or a sound that is loud, unpleasant, unexpected, or undesired. The unit measure of noise is dB (A).
<i>Vibration</i>	A periodic motion about an equilibrium position, such as the regular displacement of air in the propagation of sound. The unit measure of vibration is mm/sec.
<i>Work Environment</i>	Work environment relates to those conditions under which work is performed including physical, environmental and other factors such as noise, temperature, humidity, lightning, or weather (ISO 9000, 2008).

<i>The Physiological needs</i>	Food, water, shelter, air, sleep, drink, and warmth.
<i>The safety needs</i>	Freedom from pain and security, stability etc.
<i>The Belongingness needs</i>	The need to give and receive love and affection.
<i>The esteem needs</i>	Desire for achievement, strength, and confidence.
<i>The self Actualisation needs</i>	Personal growth and development by following one's own passions and interests self-expression, creative need to search for identity, and meaning in life.
<i>Achievement</i>	It means successful completion of a job, solutions to issues, vindication, and seeing the results of one's work.
<i>Recognition</i>	There are two types of recognition; positive and negative recognition. Positive recognition occur when workers are praised or their idea accepted. Whereas negative recognition represents in blame, criticism or when good ideas are overlooked.
<i>Work itself</i>	This involves the employees' perception of whether the work is too difficult or challenging, too easy, boring or interesting.
<i>Responsibility</i>	This involves the degree of freedom an employee has to make their own decisions and implement their own ideas.
<i>Advancement</i>	This category was used only when the position or status of the person is changed in the enterprise.

<i>Supervision</i>	Supervisor is a person in work place who is responsible on some tasks within an enterprise and he guide or lead his workers to do right work.
<i>Personal Life</i>	Although people try to separate the two, work and personal life, it is inevitable that one will affect the other.
<i>Status</i>	A person who spoke having a secretary in his new position, allowed him to drive a company car, or to be able to use a company car and company facilities.
<i>Company Policy</i>	A policy is a statement that defines the behavioural expectations of employees, or sets a standard for how a procedure should be followed across the organisation.
<i>Interpersonal Relations</i>	Manners of the interaction between the staff members (mangers, subordinates, co-workers) of an enterprise during working hours.
<i>Salary</i>	This factor is fairly simple, the increase or decrease of wage or salary effects the dissatisfaction within a company a great deal.
<i>Job Security</i>	This includes such considerations as tenure and company stability or instability, which reflected in some objective way on a person's job security.
<i>Working Conditions</i>	Includes the physical conditions of work, the amount of work, or the facilities available for doing the work were mentioned in the sequence of events. Adequacy or inadequacy of ventilation, lighting tools, space etc.

7.2 Design and Development of a Work Environment Assessment Guide

The ISO 9000 standards (2008) and Norsok Standard (1997) both deal with work environment in the work place. The work environment definition in ISO 9001 standard includes physical, environmental and other factors (such as noise, temperature, humidity, lightning, or weather). The work environment should improve productivity, creativity and well-being of the employees in the enterprise. At the same time, the enterprise should confirm that its work environment conforms to the relevant statutory and regulatory requirements, and addresses applicable standards (BS EN ISO 9004:2009).

The Norsok Standard, on the other hand, determines that the working environment requirements include arrangements, ergonomics, technical appliances, chemical substances, noise, vibration, illumination, indoor climate, outdoor climate, and radiation.

Having the importance of providing a proper work environment to help enterprise to achieve its goals and increase its performance, the researcher designed a work environment assessment guide centred on assessing the work environment. The WEAG is an initiative to highlight the influence either positively or negatively of physical, physiological, and motivation factors, as well as other factors on the work environment in enterprise through measuring and evaluating these factors. The WEAG is a step to help the management of enterprise to investigate its work environment, which can then be improved.

The work environment assessment guide explains the data collection process and how the necessary data can be collected by using proper instruments to measure the physical factors (quantitative data) such as temperature, humidity, lighting, noise and vibration and how the results should be recorded in a physical measurement sheet (PFM-sheet). The qualitative data represented in motivation and hygiene factors, and safety needs can then be evaluated by using the work environment assessment questionnaire (WEAQ). WEAQ is divided into nine sections, including questions in the form of a 5-point Likert scale, with scale responses varying from Strongly disagree to Strongly agree.

The management of the enterprise should appoint a person or audit team to complete these measurements and collect the data concerned with the views of employees relating to the work environment. The auditor is defined by ISO 19011(2011) as ‘a person who conduct an audit’.

ISO 19011(2011) shows that top management should ensure that the audit programme objectives are established, and accordingly should assign one or more competent persons to managing the audit programme; this needs to include the information and resources necessary to organise and conduct its audits effectively and efficiently within the specified time frames. Figure 7.1 represents the audit process steps.

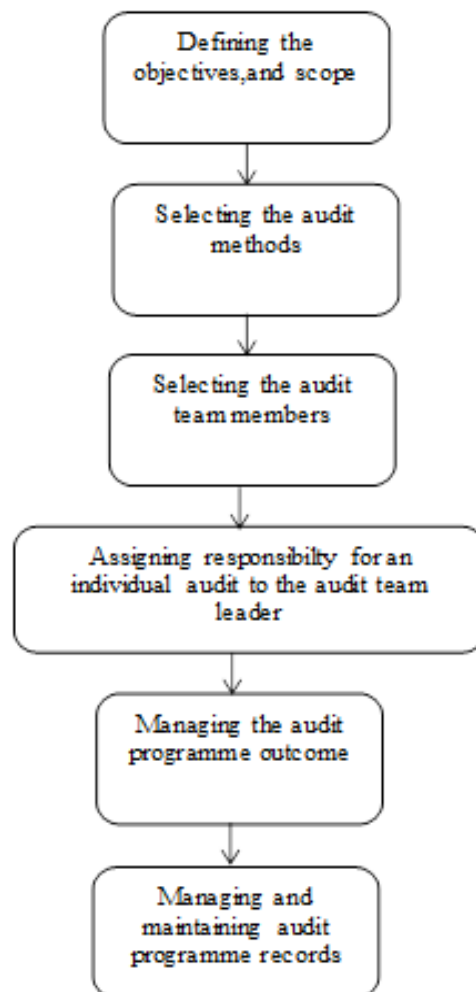


Figure 7.1: Audit Process Steps (Adopted from ISO19011:2011)

The implementation of the audit programme should be monitored and measured to ensure its objectives have been achieved. The audit programme should be reviewed in order to identify possible improvements. Figure 7.2 represents the audit programme elements.

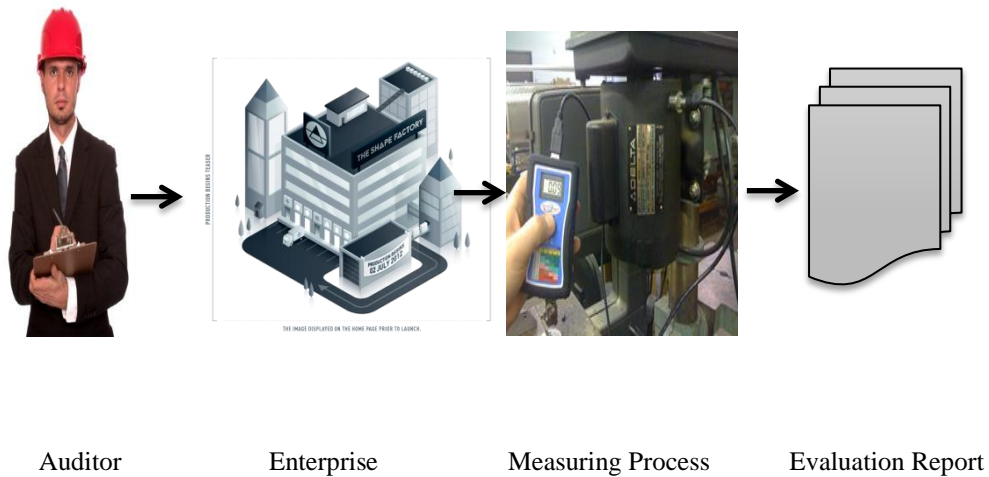


Figure 7.2: Audit Programme Elements

7.3 Data Collection Techniques

Figure (7.3) below describes the flow chart of the quantitative and qualitative components showing how they are measuring and evaluating the results and then to provide the management with a final evaluation report in order to be able to improve its work environment.

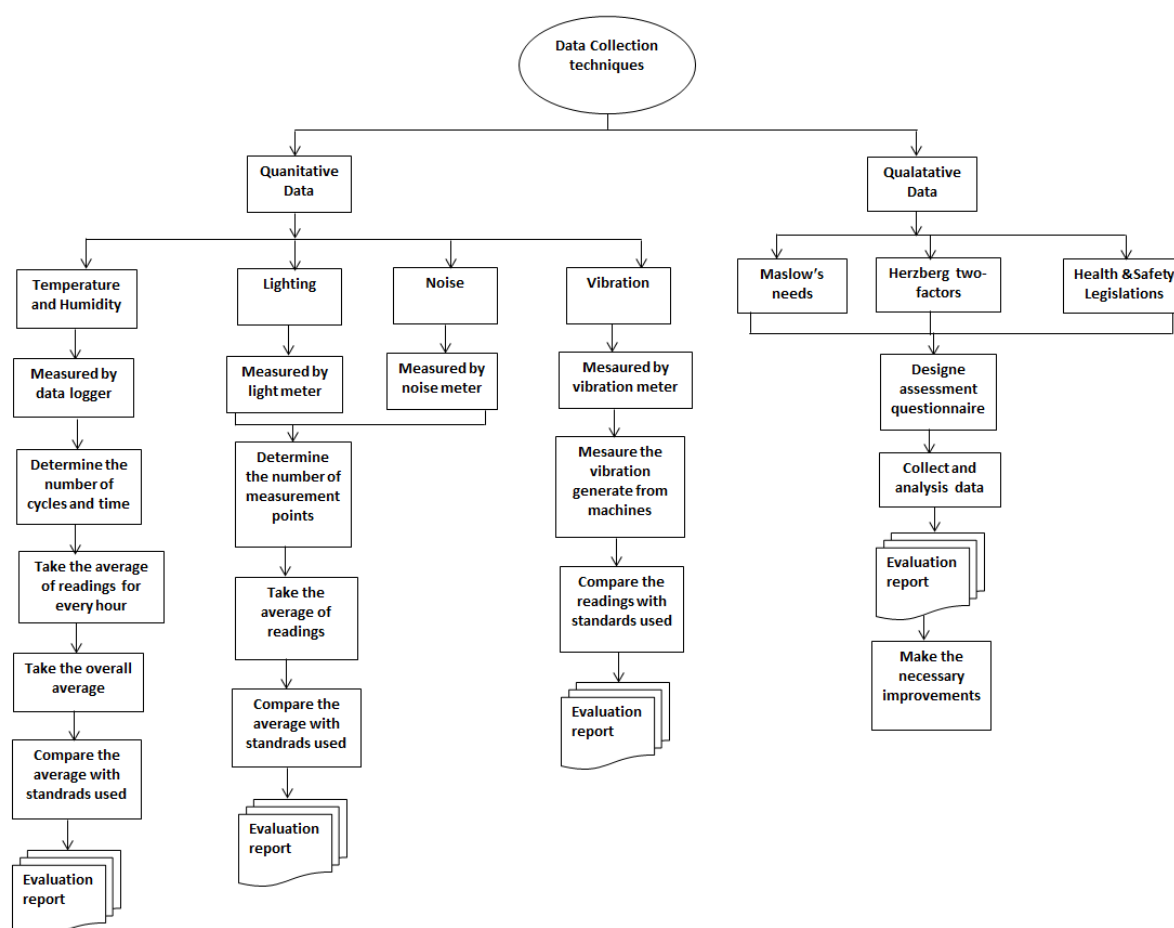


Figure 7.3: Flow Chart of Data collection Techniques

7.3.1 Quantitative Data Collection

The term 'quantitative data' is used to describe a type of information that can be counted or expressed numerically. This type of data is often collected in experiments, manipulated and statistically analysed. Quantitative data can be represented visually in graphs, histograms, tables, and charts. In this guide the quantitative data required represents the measurement of the physical factors which include temperature, humidity, lighting, noise and vibration and to evaluate their effect on the employees in the work place. The Physical factors measurements

sheet (PFM-sheet) is used to assess these factors and depending on the findings of data analysis the management can know and determine if these factors are in the permitted range in accordance with the international standards and legislations. The factors presented in physical factors measurement sheet are:

- **Temperature**

The minimum temperature in a workroom, as recommended by the *Health and Safety Executive*, should be 16 degrees Celsius unless much of the work involves severe physical effort in which case the temperature should be at least 13 degrees Celsius. There are certain exceptions to this, e.g. rooms that have to be open to the outside or rooms where food products have to be kept cold. Whilst, *The World Health Organisation* is recommends a maximum of 24 degrees Celsius for working in comfort place. The exposure of employees to high temperature this can lead to heat stress and heat exhaustion.

- **Humidity**

The optimum comfort range for relative humidity is 40–60 per cent. Low humidity can cause dryness of the eyes, nose and throat and may also increase the frequency of static electricity shocks. Relative humidity above 80 per cent can be associated with fatigue and reports of ‘stuffiness’. *Health and safety in the office guide 2004-Workcover New South Wales*.

- **Lighting**

The lighting should be sufficient to enable to work, use facilities and move about safely and without eye strain and other ill health effects. Legislation (*Health and Safety Executive*), requires that every work place has suitable and sufficient lighting and it shall, as far as it is reasonable practicable, be by natural lighting.

- **Noise**

Acceptable level to exposure to the noise during eight hours in the work place is 85 dB (A) according to (*National Standard for occupational noise NOHSC: 1007, 2000*). The exposing to high noise levels suffer from what is known as noise induced hearing loss (NIHL) which can lead to a number of social problems.

- **Vibration**

Vibration is often complex, contains many frequencies, occurs in several directions and changes over time. Exposure to whole-body vibration causes a complex distribution of oscillatory motions and forces within the body. There can be large variations between subjects with respect to biological effects. Whole-body vibration may cause sensations (e.g. discomfort or annoyance), influence human performance capability or present a health and safety risk (e.g. pathological damage or physiological change). The presence of oscillatory force with little motion may cause similar effects (*ISO 2631/1-1997*).

7.3.2 Qualitative Data Collection

Qualitative data is information which does not present itself in numerical form and is descriptive, appearing mostly in conversational or narrative form. Qualitative research concept is gathers information that is not in numerical form. According to Maslow theory (1954), human behaviour is related to his needs. In the hierarchy of needs theory, Maslow identified five types of human needs arranged in a hierarchy of their importance and priority. He concluded that when one set of needs is satisfied, it ceases to be a motivating factor. Thereafter, the next set of needs in the hierarchy order takes its place. These needs in the hierarchy can be compared to a pyramid. At the lowest level, there will be the first set of needs which can be described as physiological needs. When the physiological needs are fulfilled, there are other needs such as security needs, social needs, esteem needs and self-actualisation needs are equally important and essential for the motivation of different categories of employees. Maslow, in his theory, has referred to different needs and suggested that attention needs to be given to all such needs as attention to physiological needs alone is not adequate for motivating employees.

In 1959 Frederick Herzberg developed the Two-Factor theory of motivation. According to Herzberg, the Hygiene Factors when provided can create a favourable environment for

motivation and prevents job dissatisfaction. They are not an intrinsic part of a job, but they are related to the conditions under which a job is performed. When an employer is unable to provide enough of these factors to his employees, there will be job dissatisfaction. However, if they are provided, they will not necessarily act as motivators. They will just lead employees to experience no job dissatisfaction. The hygiene factors such as Company's Policies and Administration, Supervision, Working Conditions, Interpersonal Relations with superiors and other subordinates, Salary, Job Security, Status, and Personal Life. The Motivating factors motivate subordinates to take more interest in the work. They raise efficiency and productivity of employees. According to Herzberg, motivating factors are essential in order to provide job satisfaction and in order to maintain a high level of job performance. Employees will not have job satisfaction if the motivating factors are not provided in sufficient quality by the employer. The motivation factors are: Achievement, Recognition for Accomplishment, Increased Responsibility, and Opportunity for Growth and Development.

In this guide a group of questions are designed in the form of qualitative data, these questions represented in the work environment assessment questionnaire (WEAQ). The assessment questionnaire divided into nine sections including questions in the form of 5-point Likert-scale with scale responses varying between Strongly disagree to Strongly agree. These questions covered the motivation and hygiene factors for Herzberg, Maslow's needs and health and safety regulations that should be followed by employers to protect their employees from risks during working hours, and based on the employees feedback on the qualitative assessment questions the management can investigate the situation of work environment and it can suggests the suitable solutions to improve the work environment.

7.4 Implementation Processes

This guide is designed to measure the physical factors by using appropriate instruments and recording, the obtained readings in the physical factors measurement sheet (PFM-sheet), and also to assess the Herzberg motivation and hygiene factors and Maslow's needs by using work environment assessment questionnaire (WEAQ), and to implementing this program the management of the enterprise should create a suitable audit process which depends on internal

audit team. ISO 19011(2011) confirmed that roles and responsibilities of the person managing the audit programme should:

- establish the extent of the audit programme;
- identify and evaluate the risks for the audit programme;
- establish audit responsibilities;
- establish procedures for audit programmes
- determine necessary resources;
- ensure the implementation of the audit programme, including the establishment of audit objectives, scope and criteria of the individual audits, determining audit methods and selecting the audit team and evaluating auditors;
- ensure that appropriate audit programme records are managed and maintained;
- monitor, review and improve the audit programme.

The person managing an audit programme should inform the top management of the contents of the audit programme and, where necessary, request its approval. The person managing the audit programme should have the necessary competence to manage the program and its associated risks effectively and efficiently, as well as knowledge and skills in the following areas:

- audit principles, procedures and methods;
- management system standards and reference documents;
- activities, products and processes of the auditee.
- applicable legal and other requirements relevant to the activities and products of the auditee;
- Customers, suppliers and other interested parties of the auditee, where applicable.

The person managing the audit programme should engage in appropriate continual professional development activities to maintain the necessary knowledge and skills to manage the audit programme. The person who appointed from the management to conduct the audit programme should measure the physical factors represented in temperature, humidity, lighting, noise and vibration by using proper instruments and recording the obtained readings in PFM – sheet and then take the overall average for temperature, humidity, noise, and lighting. With respect to vibration he can take just one reading after fixed the probe of vibration instrument on the machine. Work environment assessment questionnaire (WEAQ) used to collect the data related

to Herzberg motivation and hygiene factors and Maslow's needs. The data collected analysis by using appropriate software. Figure (7.4) below illustrates the protocol of audit process.

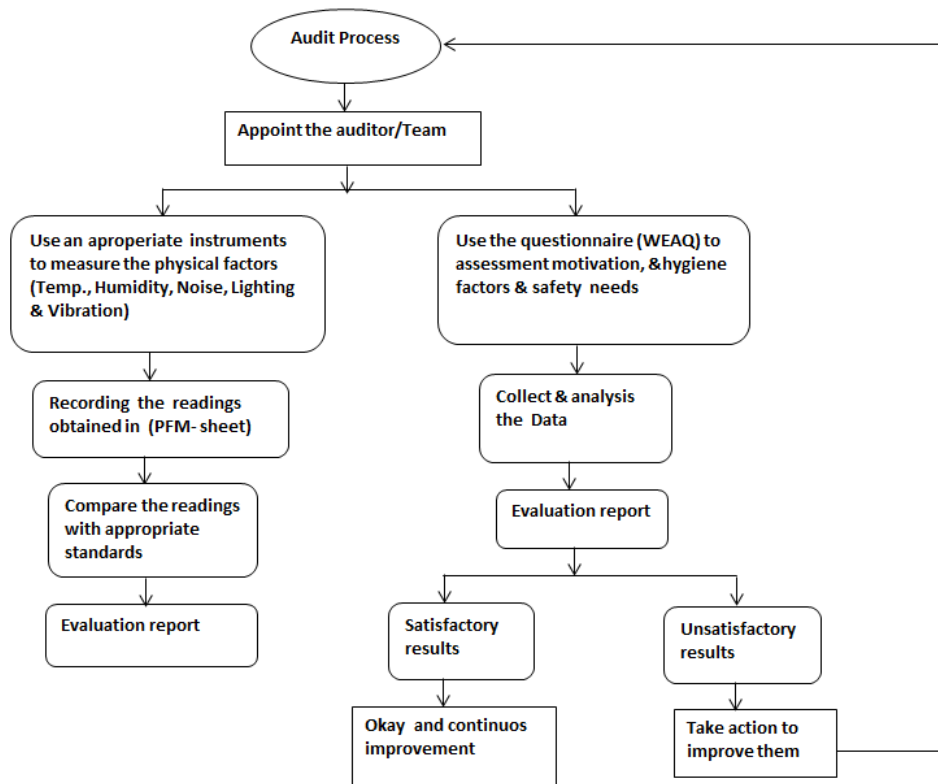


Figure 7.4: Protocol of Audit Process

7.5 Standards and Regulations used

A.1 Standards and Regulations used to assessment physical factors in the work place

Factor	Standards/ Regulations
Temperature	Health , Safety and welfare Reg.SI 1992/3004, The Chartered Institution of Building Services Engineers , The World Health Organisation
Humidity	Health and safety in the office guide 2004—Work cover New South Wales
Noise	National standard for occupation noise [NOHSC:1007(2003)
Lighting	Canada Occupational Health and Safety Regulations (SOR/86-304), Health and Safety Executive
Vibration	ISO 10816-1, ISO 2631/1-1997

A.2 Levels of Lighting according to Canada Occupational Health and Safety Regulations (SOR/86-304)

Item	Task position or area	Level in Lx
1	<ul style="list-style-type: none"> OFFICE WORK <p>Conference and interview rooms, file storage areas, switchboard or reception areas or other areas where ordinary visual tasks are performed .</p>	300
2	<ul style="list-style-type: none"> LABORATORIES <p>(a) Areas in which instruments are read and where errors in such reading may be hazardous to the health or safety of an employee .</p> <p>(b) Areas in which a hazardous substance is handled .</p> <p>(c) Areas in which laboratory work requiring close and prolonged attention is performed .</p> <p>(d) Areas in which other laboratory work is performed .</p>	<p>750</p> <p>500</p> <p>500</p> <p>300</p>
3	<ul style="list-style-type: none"> MANUFACTURING AND PROCESSING AREAS <p>(a) Major control rooms or rooms with dial displays .</p> <p>(b) Areas in which a hazardous substance is processed, manufactured or used</p> <p>(i) in main work areas .</p> <p>(ii) in surrounding areas .</p> <p>(c) Areas in which substances that are not hazardous substances are processed, manufactured or used or where automatically controlled equipment operates</p> <p>(i) in main work areas .</p> <p>(ii) in surrounding areas .</p>	<p>500</p> <p>500</p> <p>200</p> <p>100</p> <p>50</p>

7.6 Physical Factors Measurements Sheet (PFM-Sheet)

Name:

Location:

Date:

Place:	Readings taken every 5 minutes												Remarks
	Temperature °C	Assessment degree					Humidity. Rh%	Assessment degree					
Time	Avg. of 12 readings	1	2	3	4	5	Avg. of 12 Readings	1	2	3	4	5	
10-11													
11-12													
12-13													
13-14													
14-15													
Overall average													

1 = Most Uncomfortable, 2 = More Uncomfortable, 3 = Average, 4 = More comfortable, 5 = Most comfortable

Place	Lighting Readings (Lux)						Assessment degree					Noise Readings (dB)				Assessment degree				
	R1	R2	R3	R4	R5	Avg.	1	2	3	4	5	R1	R2	R3	Avg.	1	2	3	4	5

Lighting: 1 = Very poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Excellent. Noise: 1 = Noisiest, 2 = Nosier, 3 = Average, 4 = Quite, 5 = Silent

Place	Machine Class/Vibration Reading mm/sec								Remarks
	SM		MM		LRF		LSF		
	R	Assessment degree	R	Assessment degree	R	Assessment degree	R	Assessment degree	

SM= Small Machine, MM= Medium Machine, LRF= Large rigid foundation, LSF= Large soft foundation

1= Unacceptable, 2 = Unsatisfactory, 3 = Satisfactory, 4 = Good, [According to chart ISO 10816-1

7.7 Measurement Point Layout

1. Temperature and Humidity measurement steps

- Select the proper instrument to measure the temperature and humidity degree.
- Determine the number of cycles you need for example 25 cycles, 60 cycles etc.
- Identify the period of measurement may 5 hours or 6 hours or more.
- Take the average of readings every hour if you select 60 cycles this means the average of readings will be for 12 readings during one hour.
- Calculate the overall average for 5 hours you determined/selected.
- Take the opinion of employees who work in the area of measurement, asking how they are feeling with respect to temperature degrees and levels of humidity.

2. Lighting measurement steps

- Used the light meter to measure the light level.
- Leave one meter from the sides of the room/hall wall then determine measurement points.
- To determine the level of lighting in the place take the average of the five points.
- The unit of measurement is Lux.

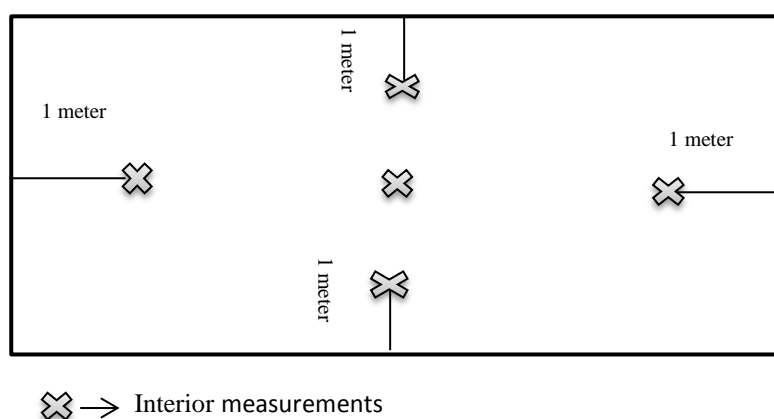
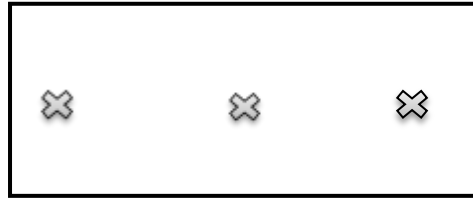


Figure 7.5: Typical lighting interior measurements

3. Noise measurement steps

- Used sound level meter to measure the noise level.
- In this case the number of points determined just three points in other cases may need more points depended on the sources of noise.
- Take the average of the three points represents the noise level in the place.
- The unit of measurement is dB (A).



✕ → Interior measurements

Figure 7.6: Typical Noise interior measurements

4. Vibration measurement steps

- Used the proper instrument to measure the vibration of machines in the work place.
- Take the vibration reading of the machine and compare it with standards to determine the level of vibration depended on the size of machine
- Compare measurement to vibration severity chart ISO 10816-1



Figure 7.7: Vibration measurement instrument

7.8 Processes Instructions

In this guide the instruments that used to measure the physical factors are shown below, really there are a lot of kinds of these instruments, but the general idea for most of them is similar.

A. Data logger testo 175 H1 Measurement Instructions

1. Insert the CD into the CD-ROM drive.
2. Install the software testo ComSoft.
3. Connect the data logger to the PC with a USB cable.
4. Start the software testo ComSoft and set up a connection to the data logger.
5. Press [GO] for approx. 3 seconds to start the measurement program.
6. The measurement program starts and **Rec** appears in the display.
7. Instrument is in operating status **Wait**.
8. Press [GO] in order to change between displays of upper alarm value, lower alarm value, battery life and last reading.

B. Light meter DVM 1300 Measurement Instructions

1. Select the desired scale with the operating switch and select the desired range ('lux', 'lux x 10' or 'lux x 100').
2. Hold the photo detector at a horizontal angle to the light source to be measured.
3. Read the nominal measured value from the LCD display.
4. Over range indication: if the instrument only display one '1' in the LCD, the input signal is too strong for the selected range.
5. Replace the photo detector when the measurement is completed.

C. Sound level meter 325 Measurement Instructions

1. Turn power ON and select the desired response time and weighting. If the sound source consists of short bursts, or the meter is only catching sound peaks, set response to FAST. To measure average sound levels, use the SLOW setting. Select A weighting for general noise sound level and C-weighting for measuring sounds with high low frequency content.
2. Select desired level.

3. Hold the instrument comfortably in your hand and point the microphone at the suspected noise source. Read the sound pressure level from the display.
4. When MAX/MIN (maximum/minimum hold) mode is chosen, the instrument captures and holds the maximum and minimum noise level values indefinitely. The MAX/MIN function operates on all settings, regardless of the response time, weighting, or range. Press the MAX/MIN button for two seconds to clear the MAX/MIN reading. The 'MAX/MIN' symbol will disappear.
5. Turn OFF the instrument.

D. VI- 1 Vibration meter Measurement Instructions

1. Select English or Metric units with switch on circuit board inside battery compartment.
2. Plug accelerometer into VI-1.
3. Place Magnet mount on or near bearing cap.
4. Depress button and wait for signal to settle.
5. Compare measurement to vibration severity chart ISO 10816-1.

7.9 Work Environnement Assessment Questionnaire (WEAQ)

Section 1: Safety Needs

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
My work place is free from hazards that may cause me injury.					
I am secure in my Job.					
I have opportunity to develop close friendships in my job.					
I believe safe at my work place.					
I believe my job is secure.					
My work place is located in the area where I feel comfortable.					

I have a health and safety posters at the work place on display.					
I visually inspect my electrical equipment's for obvious damage on a regular basis.					
I have a fire (smoke) alarm.					
My staffs wear appropriate footwear in areas of high slip or trip risk.					
I have a procedure for formally recording and reporting accidents, diseases and dangerous occurrence.					
All workers have access to protective equipment which is necessary to do their job safely					
I have provided the correct portable fire extinguisher(s) at the premises.					
Services such as mechanical ventilation systems in good conditions and regularly maintained.					

****Security and safety needs***

Security need is the need to feel secure and unthreatened by physical, psychological or economic harm in the service transaction such as life insurance, job security, and health care.

Section 2: Self-actualisation needs

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I have get a feeling of self-fulfilment—that is, the feeling of being able to use your own unique capabilities, to realise my potential.					

****Self-actualisation needs***

It is describe the on-going process of fully developing your personal potential

Section 3: Company Policy

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
The attitude of the administration is very accommodative in my company.					
I am proud to work in this company because the company policy is favourable to its workers.					
I completely understand the mission of my company.					
I have a well-documented health and safety policy.					

** Company Policy*

The company policies should not be too rigid. They should be fair and clear. It should include flexible working hours, dress code, breaks, vacation, etc.

Section 4: Esteem Needs

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I derive a sense of self-esteem from my job.					
I have get respect from others in my job.					

**Esteem needs*

Esteem needs are satisfied by recognition of contribution, status relative to the individual's peers and influence through power, authority or respect.

Section 5: Relationship with Supervisor and your Co-workers

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I feel satisfied at work because of my relationship with my Supervisor.					
My Supervisors are strong and trustworthy leaders.					
It is easy to get along with my colleagues.					
My colleagues are helpful and friendly.					
Colleagues are important to me.					

* *Interpersonal relations*

Relations are Manners of the interaction between the staff members (managers, subordinates, co-workers) of an enterprise during work hours

Section 6: Working Conditions

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I am proud to work for my company because of the pleasant working conditions.					
I have done everything possible to prevent employees from being exposed to high noise levels.					
I am satisfied that the range of the temperature in the work place is comfortable.					
I am satisfied that there is sufficient lighting to enable people to work and move about safely.					
My work is thrilling and I have a lot of variety in the tasks that I do.					
My job is challenging and exciting.					

* *Working conditions*

Includes the physical conditions of work, the amount of work, or the facilities available for doing the work

were mentioned in the sequence of events. Adequacy or inadequacy of ventilation, lighting tools, and space, etc

Section 7: Social Needs

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
My co-workers help each other.					
My Supervisor provides a sense of belonging to the employees.					

****Belongingness***

Belongingness needs represent in friendship and social interaction at work rather than isolation.

Section 8: Achievement and Recognition

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I am proud to work in this company because it recognises my achievements.					
I feel satisfied with my job because it gives me a feeling of accomplishment.					
I feel I have contributed to my company in a positive manner.					
I am proud to work in my company because I feel I have grown as a person.					
My job allows me to grow and develop as a person.					
My job allows me to improve my experience, skills and performance.					
I feel appreciated when I achieve or complete a task.					
My manager always thanks me for a job well done.					
I receive adequate recognition for doing my job well.					
I am empowered enough to do my job.					

****Achievement***

It means successful completion of a job, solutions to issues, and seeing the results of one's work are ignored.

Section 9: Advancement

Question statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	1	2	3	4	5
I will choose career advancement rather than monetary incentives.					
My job allows me to learn new skills for career advancement.					

** Advancement*

This category was used only when the position or status of the person is changed in the enterprise.

7.10 Work Environment Classification Prototype

Ax (1996) states that, ‘classification in science is done for the purposes of identifying individuals or items that are essentially the same; we also distinguish them from items that are essentially different’. The researcher in this study classifies the factors based on the findings deduced from the questionnaire survey and the case studies, with these findings indicating that these factors play a significant role if used positively to create a suitable work environment in the work place. This work aims to identify and analyse the significant work environment factors that have an influence on the success of the implementation of ISO 9000 standards in SMEs. It is envisioned by the author of this research that this will pave the way for the subsequent documentation of an informative and easy to use Work Environment Assessment Guide (WEAG) by novice quality practitioners to assess the current status and capability of an enterprise’s work environment, against a set of well-researched critical success factors. It is anticipated that this prototype classification-based WEAG will then allow partner enterprises to better implement work place improvement strategies for higher levels of ISO certificate attainment and maintenance success.

The aim of this prototype work environment classification is to: a) document the range of influencing factors affect the work environment; b) reference the studies that have been conducted in this field; and, c) examine identified weaknesses in the current academic thinking. This will address the limitation that contemporary studies have only been focused on a small range of potential factors, such as recognition, job satisfaction, salary, and job security. This

research aims to be novel in the way in which it will tackle the subject, but will also provide a contribution to the academic body of knowledge, through the integration of primary industrial research (exploratory survey and conducted case studies), Maslow's Hierarchy of Needs, Herzberg's Motivation and Hygiene Factors, and the current UK Health and Safety Legislations.

7.11 Analysis and Assessment of Critical Success Factors

One of the objectives of this research is to assess, analyse and prioritise critical success factors and barriers facing SMEs to implement the ISO 9000 standards with a high degree of success. The results obtained from the exploratory survey and case studies indicate that there exists a range of critical success factors that can potentially influence the work environment—either positively or negatively. The findings of this research reveal that SMEs face barriers when starting to implement ISO 9000 standards, such as internal resistance from employees, a lack of internal communication, a lack of knowledge relating to ISO 9000 standards, all of which is derived as a result of the absence of the training and development programmes that help to increase the awareness of employees with standards.

7.11.1 Leading-edge Academic Thinking

Many previous studies have been conducted on the implementation of ISO 9000 and on the motivation theories for Maslow, Herzberg, and Health, Welfare and Safety Executive in small, medium and large enterprises in this field. Briscoe et al. (2005) state that one of the most prominent challenges of ISO 9000 implementation comes from employees who resist change, whilst Psomas et al. (2010) report that employee resistance may stem from fear caused by a lack of information about ISO 9001 requirements, as well as from the belief that it will be difficult to change the mindset of employees regarding quality programmes. The findings of this research supported these conclusions and reveal that 21.57% of respondents state internal resistance facing SMEs when they implement ISO 9000 standards from their employees.

Chung-Herrera (2007) recognises that different industries and services have different needs: for example, for hotels and airlines security needs are more important than another needs, which refers to the importance of the security factor especially in the case of hotels and airplanes—and if there is any defect in security systems in such places, this in many cases, means the hotel residents or plane passengers could lose their lives or properties. Furthermore, (Ruthankoom &

Ogunlana, 2003) state that the major factors needing to be considered include interpersonal relations and salary, both of which have strong contributions to the satisfaction and dissatisfaction of employees. Leach (2000) mentions that giving employee's encouragement and recognition helps them to feel more valued within the enterprise, and also gives them a sense of achievement and responsibility.

The findings of this research reveal that 82.36% of the participants agree that individual recognition is very important in terms of improving the performance of employees. Hoyle (2009) suggests that motivation is key to high performance. In order to increase performance of work, employees need to work in a good environment and have the motivation to perform well.

7.11.2 High-level Exploratory Survey

The purpose of the exploratory survey conducted amongst SMEs in the UK was to explore the influence of the work environment on the degree of success of ISO 9000 standards implementation through answering questionnaire survey questions relating to ISO 9000 implementation and work environment awareness. Table 7.1 summarises the most important factors concluded from the questionnaire survey. The participants considered these factors to be important for creating an appropriate work environment, and most of these factors are represented in the work environment section of the questionnaire survey.

Table 7.1: Factors Concluded from the Exploratory Survey

S. No.	Factors	Findings based on the answers of the participants	Response Percentage %
1	Efficiency of the quality management system	<ul style="list-style-type: none">The participants said that the efficiency of QMS improved after the implementation of ISO 9000 standards	88.24%
2	Salary	<ul style="list-style-type: none">They satisfied about that their salary receivedUnsatisfied	84.31% 15.69%
3	Individual Recognition	<ul style="list-style-type: none">Agreed that individual recognition is very important to improve the performance of employeesDisagreed	82.36% 7.87%
4	Quality awareness	<ul style="list-style-type: none">They were satisfied that the quality awareness improved after implementation of ISO 9000They were unsatisfied	82.35% 17.65%
5	Job Security	<ul style="list-style-type: none">Agreed that job insecurity make employees worry about their futureDisagreed	74.51% 9.81%
6	External communications	<ul style="list-style-type: none">The participants said that the external communication became better after the implementation of ISO 9000 standards	62.70%
7	Internal communications	<ul style="list-style-type: none">The participants said that the internal communication became better after the implementation of ISO 9000 standards	58.80%
8	Reward systems	<ul style="list-style-type: none">They were satisfied about the reward systems followed by the management of enterprises	54.90%
9	Staff motivation	<ul style="list-style-type: none">The participants that reported satisfactoryThe percentage of participant who said that improved of staff motivation was Intangible	41.18% 19.61%
10	Money	<ul style="list-style-type: none">Disagreed that money is enough to motivate employees to achieve	39.21%

		a better performance	
11	Improved workers relations	<ul style="list-style-type: none">• The participants feel that the relations between them is extremely satisfactory	33.34%
12	Internal resistance	<ul style="list-style-type: none">• There was employees internal resistance prior and during the implementation of ISO 9000 standards	21.57%
13	Temperature	<ul style="list-style-type: none">• Temperature is too low• Temperature is too high	15.69% 5.88%
14	Noise	<ul style="list-style-type: none">• Noise is too high	3.92%

7.11.3 Contemporary Industrial Practice

The researcher administrated case studies amongst three SMEs in the UK, the purpose of which was to investigate the situation of the work environment in SMEs in the UK and to determine its effect on the implementation of ISO 9000 standards. The researcher conducted face-to-face interviews with the person responsible for implementing ISO 9000 standards. The findings of the case studies can be summarised in the following points:

1. The participants strongly disagree that money is enough to motivate employees to achieve a better performance, whilst they strongly agree that individual recognition is very important for high performance.
2. The participants are satisfied with salary, career and the reward system adopted in the enterprise.
3. The employees are encouraged by Supervisors through inviting them to attend the meetings and take their opinions.
4. The enterprises faced internal resistance from employees when they implemented ISO 9000 standards due to the absence of training programmes and a lack of knowledge with ISO 9000 standards.
5. The concept of the work environment is not well understood in respect to ISO 9000 quality standards.

6. The safety rules in enterprises require more interested and awareness in order to protect their employees from expected accidents.
7. To reduce the accidents that could happen as a result of scrap pieces' falling on the floor, workstations and emergency exits should always be kept clean.
8. Documentation does not always conform to ISO 9001 standard requirements in two enterprises of the case study.

The enterprises of the case study have implemented ISO 9000 standards, but they still need to take more interest in their work environment through making improvements related to some factors such as training programmes, documentation, motivation of employees, and safety needs. These factors have an impact on the degree of success of ISO 9000 implementation and if ignored may become a reason for withdrawal of the ISO 9001 certificate.

7.11.4 Critical Success Factors Classification

Guynes and Vanecek (1996) and (Antony & Douglas, 2007) state that critical success factors are what the enterprise should consider in order to achieve their mission by examination and categorisation of the impacts. According to Butler and Fitzgerald (1999), critical success factors are those areas where things should go right for the business to develop. From the questionnaire survey and case studies findings, the researcher concludes that there are a number of critical success factors can be identified from the questionnaire survey and case studies. The main reasons for considering these to be critical success factors are:

- They represent the highest response percentages of the participants' views (either positive or negative), and this reflects their importance in improving the work environment in work place.
- Some of these factors have a positive impact on the work environment. These include: job security, individual recognition, salary, reward systems, and relationships. Meanwhile, other factors have a negative impact on the work environment such as high and low temperature, and high noise levels. The responsibility of the management of the enterprise is to take interest in the factors having a negative influence and to work towards improving them.

The evaluation of critical success factors in this research was achieved through the analysis of the data collected from the exploratory survey and case studies. The software used to undertake the analysis of the data collected was Statistical Package for the Social Sciences Software (SPSS).

The critical success factors which concluded from the exploratory survey and case studies of this research comprise those discussed below:

CSF1—Temperature: A key consideration for employees in the work place, which is supported with UK Health, Welfare and Safety Legislations, and also with the conduction of the exploratory survey and case studies in this research: 15.69% of the respondents said the temperature is too low and 5.88% said the temperature is too high.

CSF2—Noise: Noise is one of the significant factors seen to have a negative effect on employees in the work place, and in which the standards and legislations are interested. They determined the maximum noise levels to which employees should be exposed in a working day or week. The findings of the exploratory survey indicate that 3.92% of the respondents said the noise level is too high in the work place.

CSF3—Individual Recognition: Recognition is one of the motivation factors addressed by the motivation theories, and it plays an important role in the motivating of employees. Markedly, there are two types of recognition: positive, such as when employees are praised or their ideas are accepted; and negative recognition, represented in terms of blame, criticism or when good ideas are ignored. Moreover, 82.36% of the respondents in the exploratory survey consider recognition as being very important in terms of improving the performance of employees.

CSF4—Job Security: Job security is one of the Hygiene factors for Herzberg, which works to decrease job dissatisfaction in the work place. Three quarters of the participants in the exploratory survey agreed that job security causes employees to worry about their future.

CSF5—Reward Systems: A reward system is defined as a structured method of evaluating and compensating employees based on their performance. The compensations and rewards are known as incentives to the employees. Such incentives may be bonuses in pay or added

vacations or sick days, amongst other things. Reward systems can help to boost enterprise morale and productivity levels, which increase overall revenue for the enterprise.

CSF6—Salary: Salary plays an important role in motivating employees, and makes them more stable in their jobs. Herzberg, in his theory, considers salary as being one of the hygiene factors helping to decrease job dissatisfaction. Importantly, 84.31% of the respondents in the exploratory survey were seen to be satisfied with the salary received.

CSF7—Quality Awareness: Awareness is a profound totality of physical, psychological and philosophical aspects of sensations, perceptions, ideas, attitudes, and feelings related to an individual or a group with knowledge of the abstract and comprehensive object of quality of a certain item, at any given time, or within a given time span.

CSF8—Workers Relationships: The way of interacting between the staff members of an enterprise during working hours is considered to be one of the hygiene factors for Herzberg. Findings of the exploratory survey indicate that 33.34% of the respondents feel that relations between them are extremely satisfactory.

7.11.5 Development of Work Environment Framework Model

The development of the work environment model depended on the findings obtained from the exploratory survey and case studies, which centred on SMEs in the UK in order to investigate the influence of the work environment on the implementation of ISO 9000 standards.

The work environment, as defined in the ISO 9001 standard, includes physical, environmental and other factors (such as noise, temperature, humidity and lighting) or weather. The concept of environmental factors and the weather is almost the same, and refers to mean temperature, humidity, wind and pressure. The research was based on motivation theories, health and safety legislations, and the findings obtained from an exploratory survey and case studies. The researcher identified other factors that play an important role in improving the work environment. As a result, redefinition of the work environment has been suggested by the researcher: “*The work environment relates to those conditions under which work is performed, including physical, environmental, motivation, and hygiene factors, along with safety needs*”.

The work environment model, as suggested by the researcher, integrates Maslow's needs Herzberg's factors, and Health, Welfare and Safety Legislations. All these factors will contribute to improvement of the work environment and to successful in implementation of ISO 9000 standards, if the management of an enterprise interested in them. Figure 7.8 shows the development of the work environment framework model.

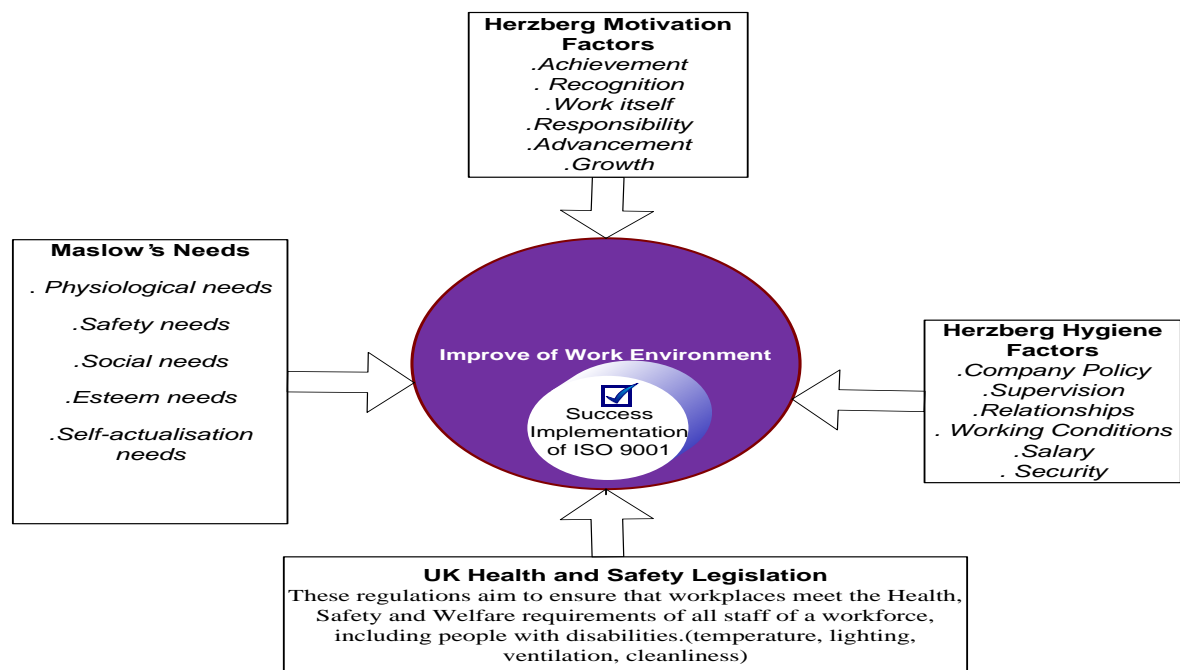


Figure 7.8: Development of the Work Environment Framework Model

7.12 Discussion

A number of critical factors can be concluded from this study; some of them have a positive impact on the work environment including job security, individual recognition, salary, reward systems, and relationships, while, other factors have a negative impact on the work environment such as high and low temperature and high noise levels.

This outcome is supported by Elywood (1999), who states that the work environment includes various factors that influence—either positively or negatively—employees’ productivity. Such factors include temperature, humidity, air flow, noise, lighting, and employee personal aspects.

Based on the previous studies and on the findings of this research, the researcher redefined the concept of the work environment and its definition, including factors such as motivation, and hygiene factors and safety needs which were not covered by the existing definition of work environment in ISO 9001 standard. The work environment assessment guide has a number of advantages and limitations as showed in Table 7.2.

Table 7.2: Advantages and Limitations of Work Assessment Guide

Advantages of work assessment guide	Limitations of work assessment guide
<ul style="list-style-type: none">▪ This guide can help the enterprise to evaluate its work environment and to identify shortcomings in environmental factors so , that the enterprise can work to improve the work environment	<ul style="list-style-type: none">▪ The limited number of standards and regulations used in the guide to evaluate the physical factors.
<ul style="list-style-type: none">▪ The instruments used in this guide are characterized by their ease of use, low costs and high quality.	<ul style="list-style-type: none">▪ The work environment assessment questionnaire has a limited number of questions in some sections.
<ul style="list-style-type: none">▪ By using the work environment assessment guide, the management of enterprise can protect its employees from the potential issues which may be caused by physical factors.	<ul style="list-style-type: none">▪ This guide focused only on the motivation theories of Maslow’s and Herzberg and the health and safety needs which were recommended by Health and Safety Legislations.

7.13 Summary

In this chapter, the researcher presents the work environment assessment guide designed to evaluate the factors related to the work environment and their impact on the employees in the work place. The researcher has classified the factors and needs mentioned in the motivation theories devised by Maslow and Herzberg, and in the Health and Safety Legislations. The findings obtained from the industrial survey and case studies have been used to develop the work environment model. These findings reveal that there are critical success factors which have a significant influence on the work environment in the work place.

In the next chapter, Chapter 8, the researcher will conduct the pilot study in one enterprise by using the work environment assessment guide to measure the physical factors, and assessment of the qualitative factors.

Chapter 8 : Pilot Study Conducted in SMEs by Using Work Environment Assessment Guide

8.0 Introduction

The purpose of the pilot study in this research is to assess Maslow's needs, Herzberg's motivation and hygiene factors, and the UK Health and Safety Legislations. Answering the pilot study questions and measuring the physical factors represented in temperature, humidity, noise, lighting and vibration, will help to determine the extent to which these needs and factors have an impact on the work environment. Statistical Package for the Social Sciences (SPSS) and Microsoft's Excel are used to analyse the data collected. The physical measurement sheet is used to record the findings of the physical factors obtained, and to draw a comparison between them and the standards followed; the work environment assessment questionnaire is used to evaluate the views of the respondents related to qualitative factors.

The pilot study examined the factors that may affect the work environment, because if the management of the enterprise creates a good work environment and takes into account the continuous improvements of the work environment, this will help the enterprise to adopt any development programmes successfully, for example, ISO 9000 standards.

The researcher has selected one enterprise as a case to measure and evaluate the physical factors and identified six places to do these measurements (offices, laboratories). The period required to make these measurements just in one place was in the range of 7-9 working hours. This means that if the researcher had taken these measurements on a larger scale in a number of enterprises, it might have taken months to complete them. The using of small scale is supported by Everitt (2006) who defined the pilot study as a 'small-scale investigation designed to test the feasibility of methods and procedures for later use on a large scale or to search for possible effects and associations that may be worth following up in a subsequent larger study'.

8.1 Pilot Study Approach

The pilot study can be divided into two parts. The first part is centred on measuring the physical factors (temperature, humidity, noise, lighting and vibration) by using the appropriate instruments. The targeted places to measure these factors were three laboratories and three offices in one enterprise. The obtained measurements of the physical factors are detailed in the Physical Factors Measurements Sheet (see Chapter 7, Section 7.6) in the work environment assessment guide. The second part was centred on assessing the qualitative factors by using work environment assessment questionnaire (see Chapter 7, Section 7.9) in the work environment assessment guide.

WEAG comprises nine sections covering safety needs, self-actualisation needs, company policy, esteem needs, relationships with Supervisors and co-workers, working conditions, social needs, achievement and recognition, and advancement. The participants that were chosen to answer these questions were Supervisors and employees, the reason for which was owing to the fact that they deal with the work environment more so than other groups as a result of their work nature. Fifteen copies of the pilot study questions were delivered by the researcher to the targeted people; the period determined for receiving responses was 15 days.

8.2 Pilot Study Protocol

Figure 8.1 below represents the pilot study protocol, which consists of eight steps. It started with identifying the place for conducting the pilot study which was in three laboratories and three offices in an enterprise. The researcher contacted the management of the enterprise to obtain approval for the conducting of the pilot study. The researcher then arranged appointments to visit the enterprise, measure the physical factors, and deliver the copies of the pilot study questions to the Supervisors of the laboratories and the offices.

The pilot study was based on the Maslow's needs, Herzberg's motivation and hygiene factors, and the Health and Safety Legislations. The data collected through the measurements of the physical factors and the work environment assessment questionnaire was analysed by using proper software, such as Statistical Package for the Social Sciences (SPSS) and Microsoft's Excel. The obtained readings of the physical factors were compared with standards and legislations to find out whether or not they are in the allowable ranges, whilst the motivation and

hygiene factors' assessment was based on the answers of the participants. Lastly, the researcher evaluated the findings obtained.

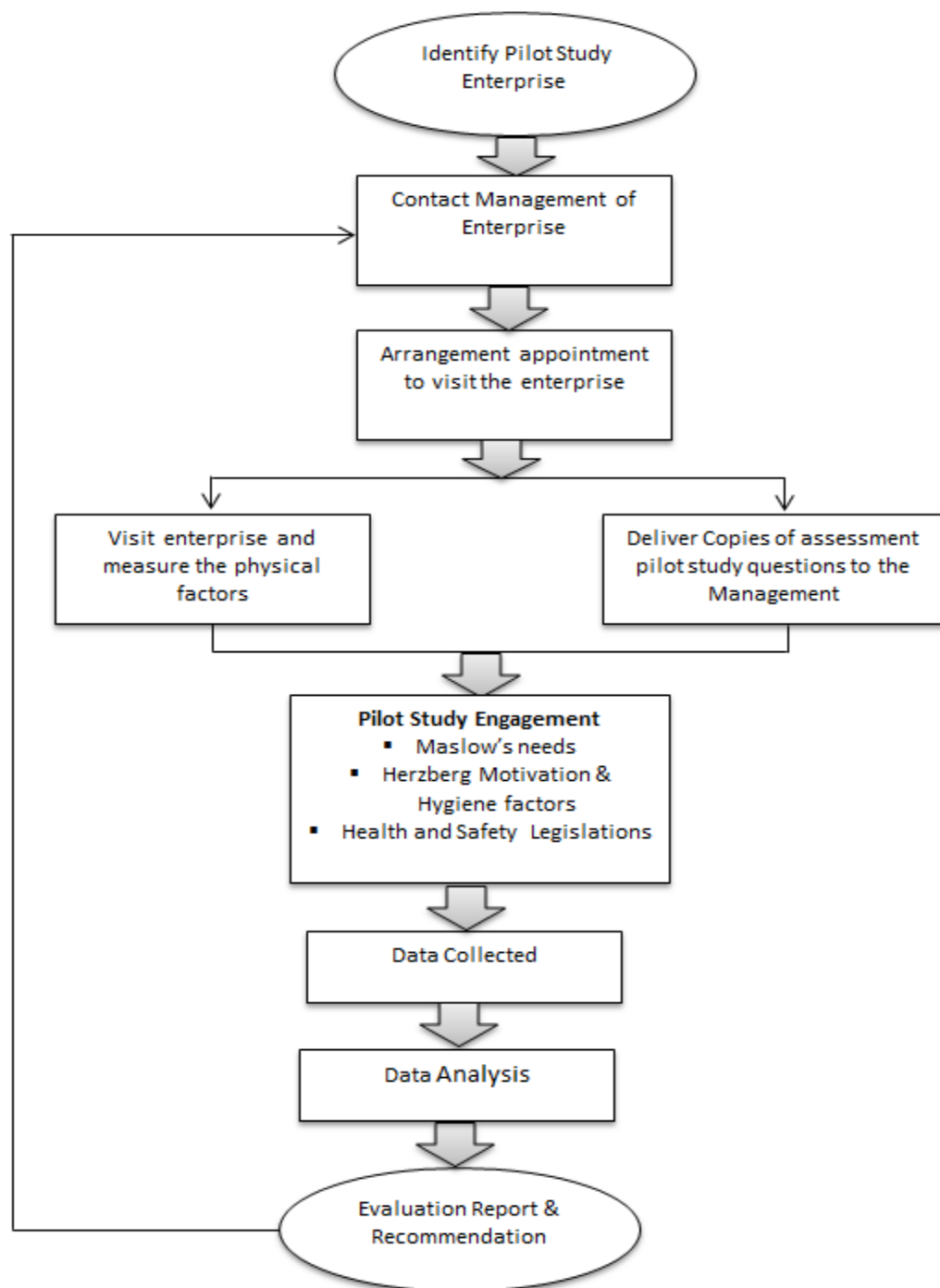


Figure 8.1: Pilot Study Protocol

8.3 Data Collection Techniques

8.3.1 Quantitative Data Collection

The researcher measured five physical factors as follows: temperature, humidity, lighting, noise and vibration through the use of proper instruments. The aim of these measurements was to assess whether these factors are convenient to employees in terms of achieving their tasks with high efficiency in the work place, or whether they may need further attention and control from management.

8.3.1.1 Equipment's Portfolio

To measure the physical factors in the work place, the researcher used four instruments, all of which are characterised by their ease of use, low costs and high quality. The instruments used are discussed below.

1. Temperature and Humidity Meter

The temperature and humidity meter is used to monitor ambient conditions, and is characterised with long-term monitoring in work and storage rooms. Table 8.1 shows the technical data 175 H1, 2-channel temperature and humidity data logger.

Table 8.1: Technical data 175 H1, 2-Channel temperature and humidity data logger

Technical Specifications	
Memory	1.000.000 readings
Storage temperature	-20 to +55 °C
Operating temperature	-20 to +55 °C
Dimensions	149 x 53 x 27 mm
Probe type NTC	
Meas. range	-20 to +55 °C
Accuracy	±0.4 °C (-20 to +55 °C)

Resolution	0.1 °C
Probe type humid. Sensor, cap.	
Meas. Range	0 to 100 %RH
Accuracy	±2 %RH (2 to 98 %RH) at +25 °C
Resolution	0.1 %RH



Figure 8.2: Testo 175 H1, 2-Channel Temperature and Humidity Data Logger

2. Digital Lux Light Meter(DVM 1300)

The digital lux light meter is used to measure light level from 0.01Lux to 50,000 Lux and is characterised by its ease of use with single-function switch, its light pocket-sized device, and 3.5 digit LCD displays with low-battery and over-range indication. Table 8.2 shows the technical specification for the instrument.

Table 8.2: Technical Data Digital Lux Light Meter

Technical Specifications	
Ranges	200, 2000, 20000lux (20000lux range reading x10) and 50000lux (50000lux range reading x100)
Accuracy	$\pm 5\%$ of rdg + 10 digits (<10000lux) $\pm 10\%$ of rdg + 10 digits (>10000lux)
Measurement rate	1.5 times per second, nominal
Storage temperature	-10°C to +60°C
Battery	1 x 12V A23 battery (included)
Dimensions	Photo detector: 115 x 60 x 27mm Body: 188 x 64.5 x 24.5mm



Figure 8.3: Digital Lux Light Meter

3. Centre 325 Sound Level Meter

Centre Sound Level Meter is used to measure noise, and is characterised by low cost and high performance. Table 8.3 shows the technical specification for instrument.

Table 8.3: Technical Specifications Centre 325 Sound Level meter

Technical Specifications	
Microphone	Electric condenser microphone
Accuracy	± 1.5 dB (ref 94dB @1KHz)
Level range	Low = 35 ~ 80 dB Medium = 50 ~ 100 dB High = 80 ~ 130 dB
Time weighting	Fast , Slow
Auxiliary outputs	AC signal output
Dynamic range	50 dB
Frequency range	31.5Hz to 8KHz
Battery type	9V Battery NEDA 1604, IEC 6F22, JIS 006P
Operation temp.	0°C~ 40°C (< 80% R.H.)
Storage temp.	-10°C~ 60°C (< 70% R.H.)
Dimension	232mm x 54mm x 34mm (9.1' x 2.1' x 1.3')
Weight	Approx. 200g



Figure 8.4: Centre 325 Sound Level Meter

4. Reliability Direct VI-1 Vibration Meter

The Reliability Direct VI-1 Vibration Meter is the easiest to use vibration meter, used by simply placing the accelerometer on the bearing and holding down the button to compare the reading to the integrated ISO vibration chart for severity. The 316 Stainless Steel Accelerometer is completely waterproof and can be used with either the included stinger or 2-pole magnet. The VI-1 comes complete with a silicone boot for protection and a handy zippered pouch to keep the parts together. Table 8.4 represents the specification of the instrument.

Table 8.4: Technical Specifications of Reliability Direct VI-1 Vibration Meter

Features	Vibration Severity chart ISO 10816-1																																																																								
<ul style="list-style-type: none">• ISO Standard 10 to 1 kHz• Integrates to velocity• Large LCD display• 100 mv/g waterproof accelerometer w/6' cable• Kit includes stinger and 2-Pole Magnet• Selectable English (in/sec) or metric units (mm/sec)• Simple easy to use, one button operation• Integrated vibration chart• Single long life 9 volt battery w/low battery indication• Silicone boot for protection• RDI Zipper pouch	<table><tr><th colspan="6">Vibration Severity Chart ISO 10816-1</th></tr><tr><th colspan="2">Machine</th><th>Class I</th><th>Class II</th><th>Class III</th><th>Class IV</th></tr><tr><th>in/s</th><th>mm/s</th><th>SM</th><th>MM</th><th>LRF</th><th>LSF</th></tr><tr><td>0.03</td><td>0.7</td><td></td><td></td><td></td><td></td></tr><tr><td>0.04</td><td>1.1</td><td></td><td colspan="2">GOOD</td><td></td></tr><tr><td>0.07</td><td>1.8</td><td></td><td></td><td></td><td></td></tr><tr><td>0.11</td><td>2.8</td><td></td><td colspan="2">SATISFACTORY</td><td></td></tr><tr><td>0.18</td><td>4.5</td><td></td><td></td><td></td><td></td></tr><tr><td>0.28</td><td>7.1</td><td></td><td colspan="2">UNSATISFACTORY</td><td></td></tr><tr><td>0.44</td><td>11.2</td><td></td><td></td><td></td><td></td></tr><tr><td>0.70</td><td>18.0</td><td></td><td colspan="2">UNACCEPTABLE</td><td></td></tr><tr><td>1.10</td><td>28.0</td><td></td><td></td><td></td><td></td></tr></table>	Vibration Severity Chart ISO 10816-1						Machine		Class I	Class II	Class III	Class IV	in/s	mm/s	SM	MM	LRF	LSF	0.03	0.7					0.04	1.1		GOOD			0.07	1.8					0.11	2.8		SATISFACTORY			0.18	4.5					0.28	7.1		UNSATISFACTORY			0.44	11.2					0.70	18.0		UNACCEPTABLE			1.10	28.0				
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Figure 8.5: Reliability Direct VI-1 Vibration Meter

8.3.2 Qualitative Data Collection

In an effort to evaluate the factors and needs mentioned in Maslow's and Herzberg's motivation theories, as well as in the UK Health and Safety Executive, the researcher designed work environment assessment questionnaire represents (see Section 7.9 in Chapter 7). This questionnaire divided into nine sections. The questions relating to Maslow's needs represented through Social needs, Safety needs, Esteem needs, and Self-actualisation needs were derived from Shoura et al. (1998). While the questions concerning motivation and hygiene factors for Herzberg were derived from Ewen et al. (1966), Graen (1966), Sergiovanni (1966), (House & Wigdor, 1967), Lindsay et al. (1967), Maiddani (1991), (Pizam & Ellis, 1999), Klassen et al. (2010) and Tang et al. (2004). All questions were measured on a 5-point Likert scale, with scale responses varying from 1 = Strongly disagree to 5 = Strongly agree.

8.4 Data Analysis and Evaluation

8.4.1 Analysis of Physical Factors in Laboratories

1. The Temperature

Table 8.5: Average Temperature in Laboratories

Place	Average temperature (°C)
Lab. 1	27.76
Lab. 2	24.37
Lab. 3	25.56

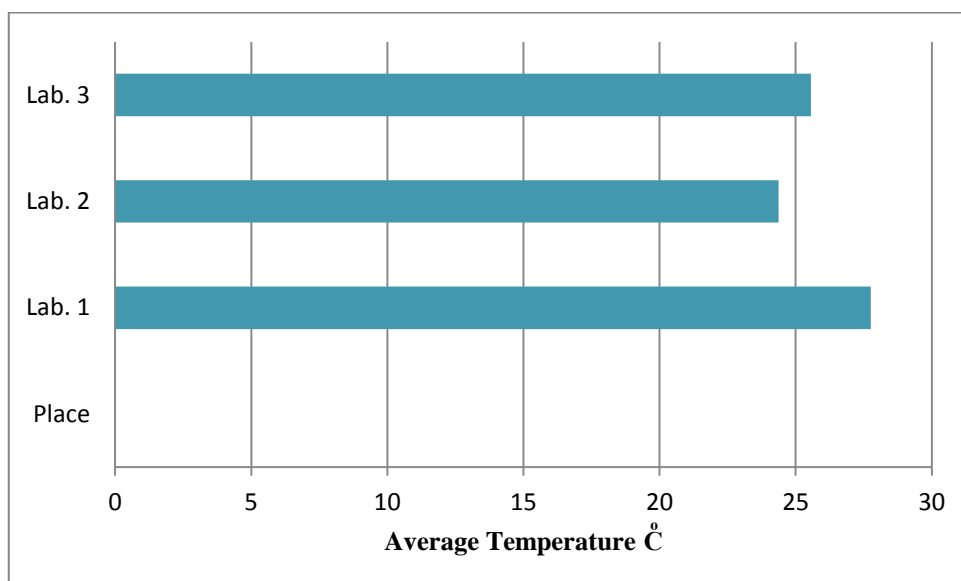


Figure 8.6: Laboratories' Average Temperature

Figure 8.6 shows the average temperature in three laboratories, which was in the range of between 24°C and 27°C. This exceeds the maximum temperature recommended by the World Health Organisation (WHO), which determines a maximum of 24°C for working in comfort. Supervisors in these laboratories were uncomfortable with the temperature, especially when all machines are in operation.

2. The Humidity

Table 8.6: Average Humidity in Laboratories

Place	Average humidity rh%
Lab. 1	33.10
Lab. 2	42.97
Lab. 3	39.26

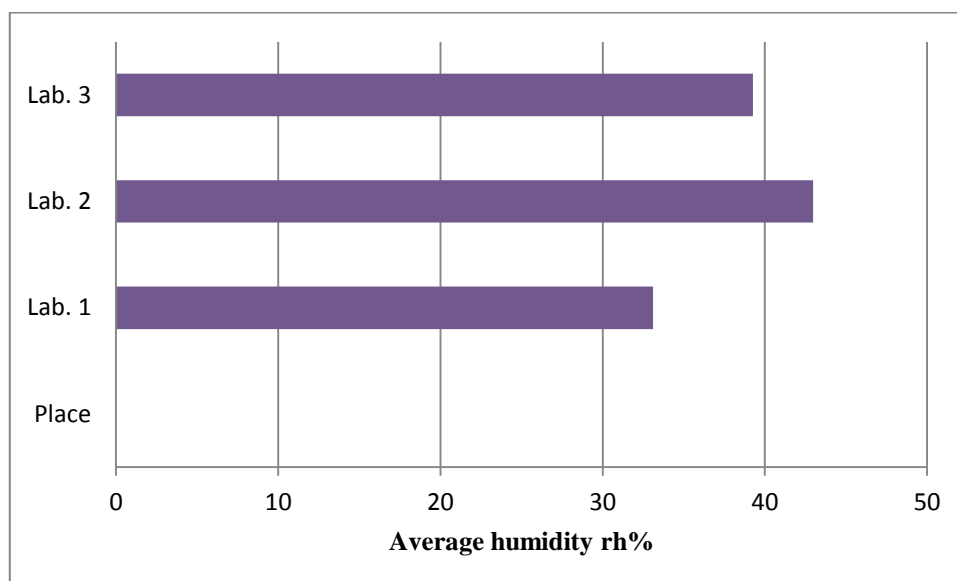


Figure 8.7: Laboratories' Average Humidity

Figure 8.7 indicates the average relative humidity (rh %) in three laboratories, which was in the range of between 33 and 43. The Supervisors in these laboratories stated that the humidity is between average and comfortable.

3. The Lighting

Table 8.7: Average Lighting in Laboratories

Place	Lighting average (Lux)
Lab. 1	662.60
Lab. 2	331.60
Lab. 3	314.80

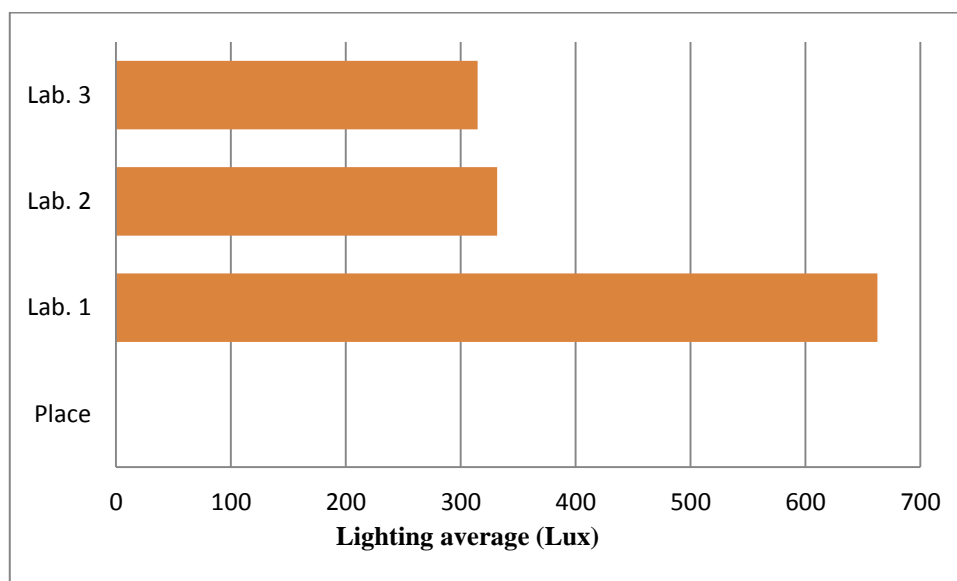


Figure 8.8: Laboratories' Average Lighting

Figure 8.8 shows the lighting average in three laboratories, which was in the range of between 315 and 663 Lux. This average is under the levels of lighting recommended by Canada Occupational Health and Safety Regulations (SOR/86-304), which state that it should be between 500 and 750 Lux.

4. The Noise

Table 8.8: Average Noise in Laboratories

Place	Noise average (dB)
Lab. 1	76.80
Lab. 2	74.50
Lab. 3	79.20

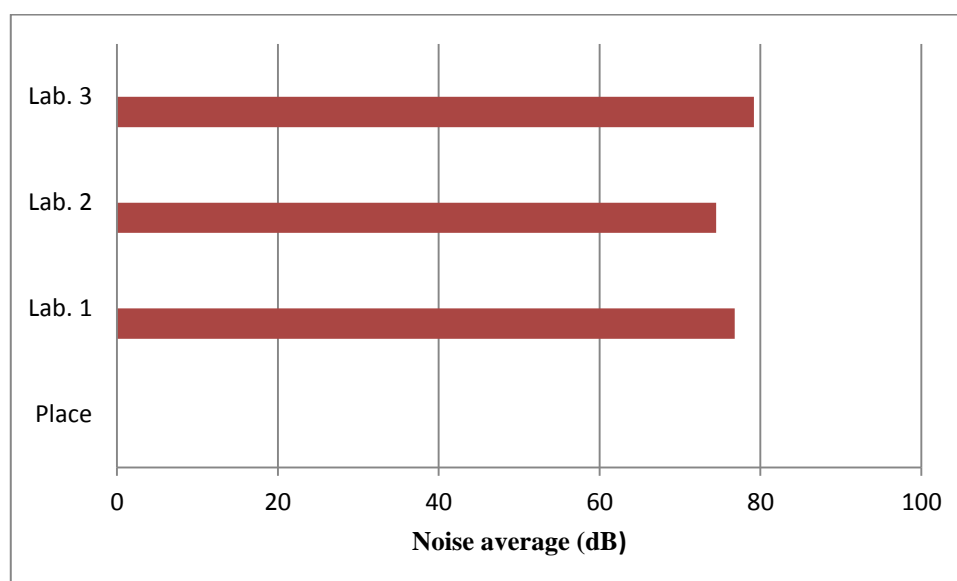


Figure 8.9: Laboratories' Noise average

Figure 8.9 shows the noise average level in three laboratories, which were in the range of between 74 and 79 dB (A). This range level indicates that the noise level in these laboratories is acceptable according to the National Standards for Occupation Noise [NOHSC: 1007(2003)], which determines the acceptable level to exposure to noise during an eight-hours period is 85 dB (A). The Supervisors in these laboratories said the laboratories become nosier when most of the machines are working.

5. The Vibration

The machines in the three laboratories were small machines (SM). The values of the vibration in two of them were between 0.5 and 0.7 mm/sec; these values are acceptable according to ISO 10816-1 standard. The values of vibration in one laboratory, however, were between 4.7 and 6.3 mm/sec; these values are unsatisfactory according to ISO 10816-1 standard.

8.4.2 Analysis of Physical Factors in Offices

1. The Temperature

Table 8.9: Average Temperature in Offices

Place	Average temperature (°C)
Office 1	22.40
Office 2	24.22
Office 3	25.20

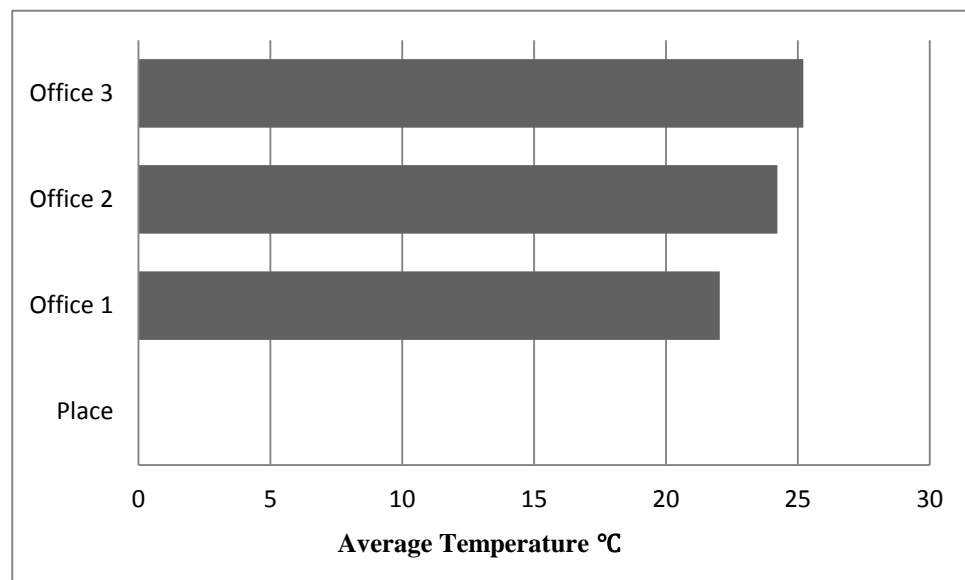


Figure 8.10: Offices' Average Temperature

Figure 8.10 represents the average temperature in three offices, which was in the range of between 22°C and 25°C. This exceeds the maximum temperature recommended by the World Health Organisation (WHO), which determines a maximum of 24°C for working in comfort. Moreover, according to the UK Health, Safety and welfare Legislations, the temperature in offices should normally be at least 16°C. If work involves physical effort, it should be at least 13°C.

2. The Humidity

Table 8.10: Average Humidity in Offices

Place	Average Humidity rh %
Office 1	41.84
Office 2	29.08
Office 3	38.57

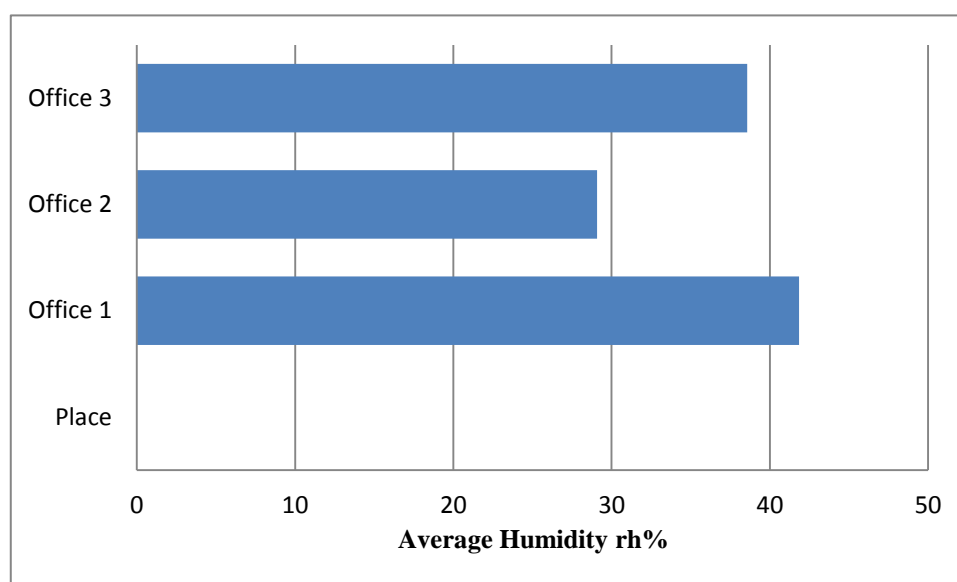


Figure 8.11: Offices' Average Humidity

Figure 8.11 indicates the average relative humidity (rh %) in three offices, which was in the range of between 29 and 42. The individuals in these offices assessed humidity as being between average and comfortable.

1. The Lighting

Table 8.11: Average Lighting in Offices

Place	Average Lighting (Lux)
Office 1	147.60
Office 2	329.20
Office 3	180.80

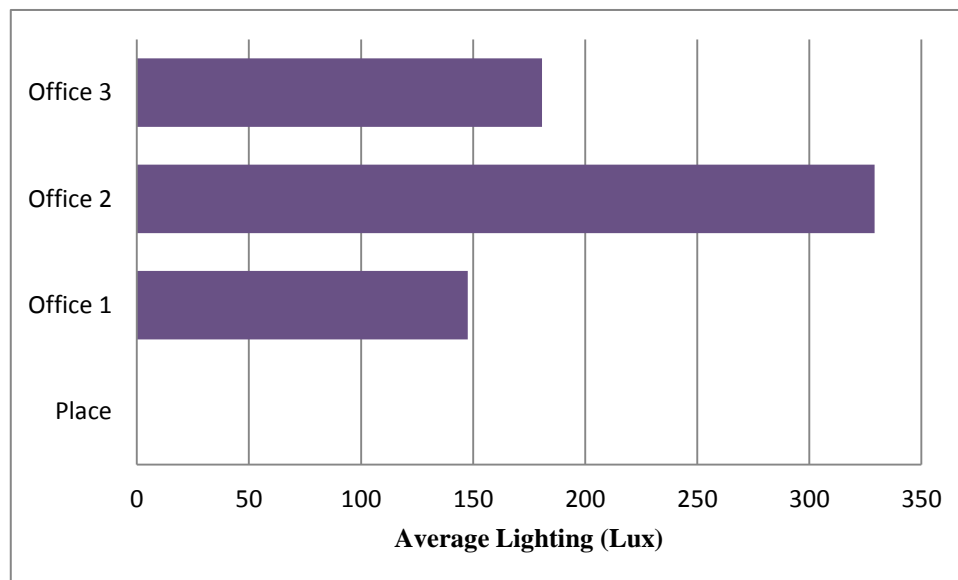


Figure 8.12: Offices' Average Lighting

In Figure 8.12, the lighting average for three offices was 147.60, 329.20 and 180.80 Lux. The level of lighting in office 1 and office 3 was very low; this result is also supported by individuals' assessments, all of whom stated that the level of lighting is poor. The average lighting in office 2 on the other hand was found to be acceptable according to the Canada Occupational Health and Safety Regulations (SOR/86-304).

2. The Noise

Table 8.12: Average Noise in Offices

Place	Noise average (dB)
Office 1	56.20
Office 2	40.96
Office 3	48.96

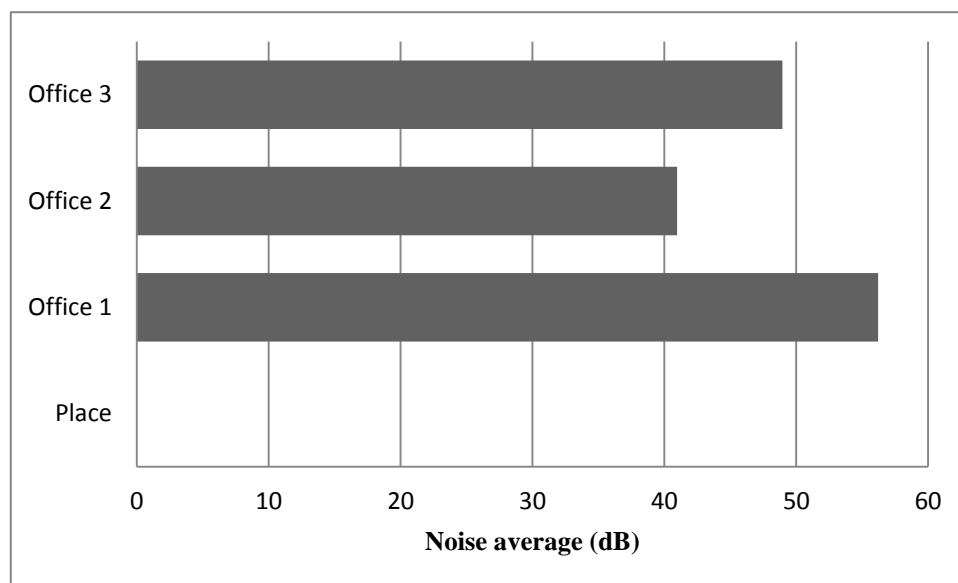


Figure 8.13: Offices' Noise Average

Figure 8.13 shows the noise average level in three offices, which was in the range of between 41 and 56 dB (A). This range level is acceptable according to the National Standards for Occupation Noise [NOHSC: 1007 (2003)], which determines the acceptable level to exposure to noise during an eight-hour period in the work place is 85 dB (A).

3. The Vibration

The values of vibration, as measured in the offices, were found to be between 0.3 and 0.5 mm/sec. These values were for desktop computers, which are considered small machines. This range of vibration is normal according to ISO 10816-1 standard.

8.4.3 Analysis Data of Work Environment Assessment Questionnaire

The researcher distributed 15 copies of the work environment assessment questionnaire, Section 7.9 in Chapter 7, to the heads of the laboratories, as well as amongst some of the staff members of the enterprise. The researcher received 10 copies filled in completely by the targeted persons. The collected data was analysed using SPSS software. The analysis and interpretation of the views of participants are shown below:

1. I am secure in my job

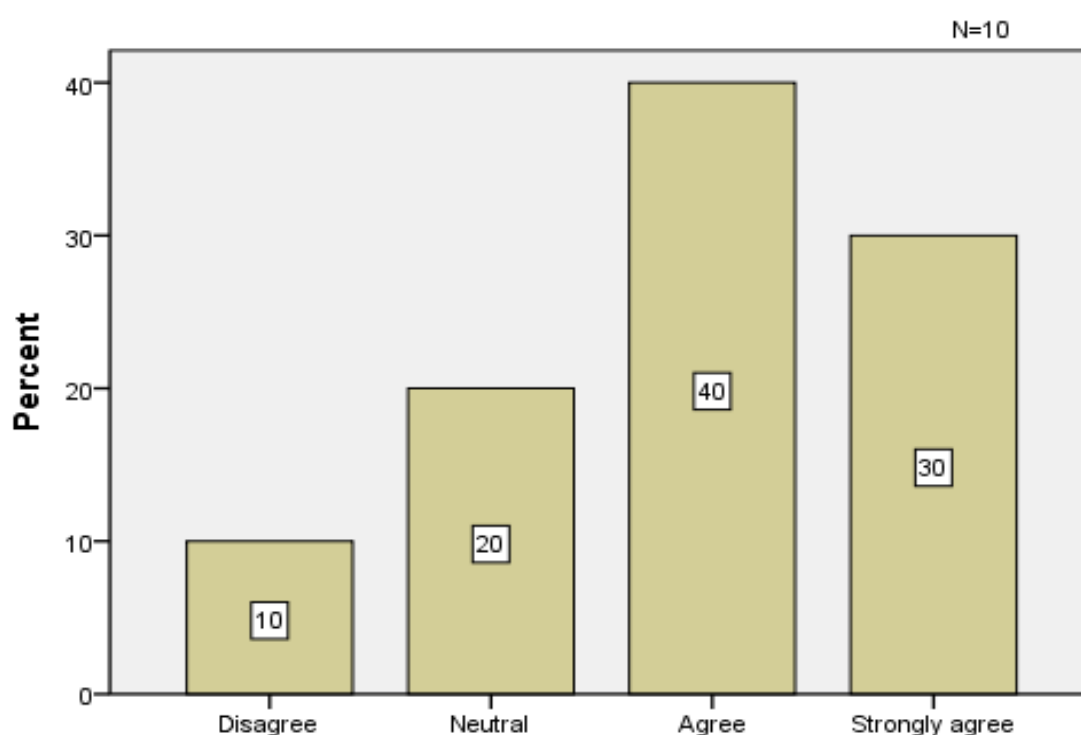


Figure 8.14: Security in Job

Figure 8.14 above shows that 70% of the participants agreed that they are secure in their job, whilst 10% of them they said they feel insecure in their job and they worry about their future.

2. I believe safe at my work place

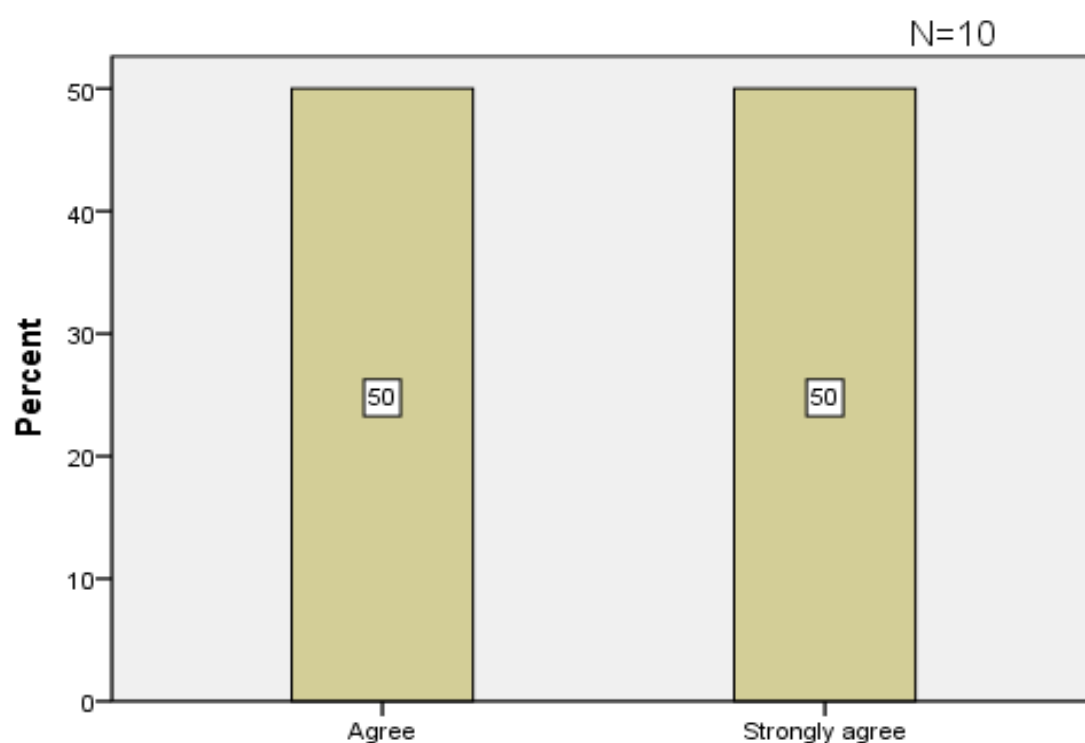


Figure 8.15: Safe Working Place

Figure 8.15 indicates that 100% of the participants agreed that their work place is safe; this reflects the management of the enterprise as showing an interest in safety rules so as to keep staff safe and protected from risks of accidents.

3. I have a health and safety posters at the work place on display

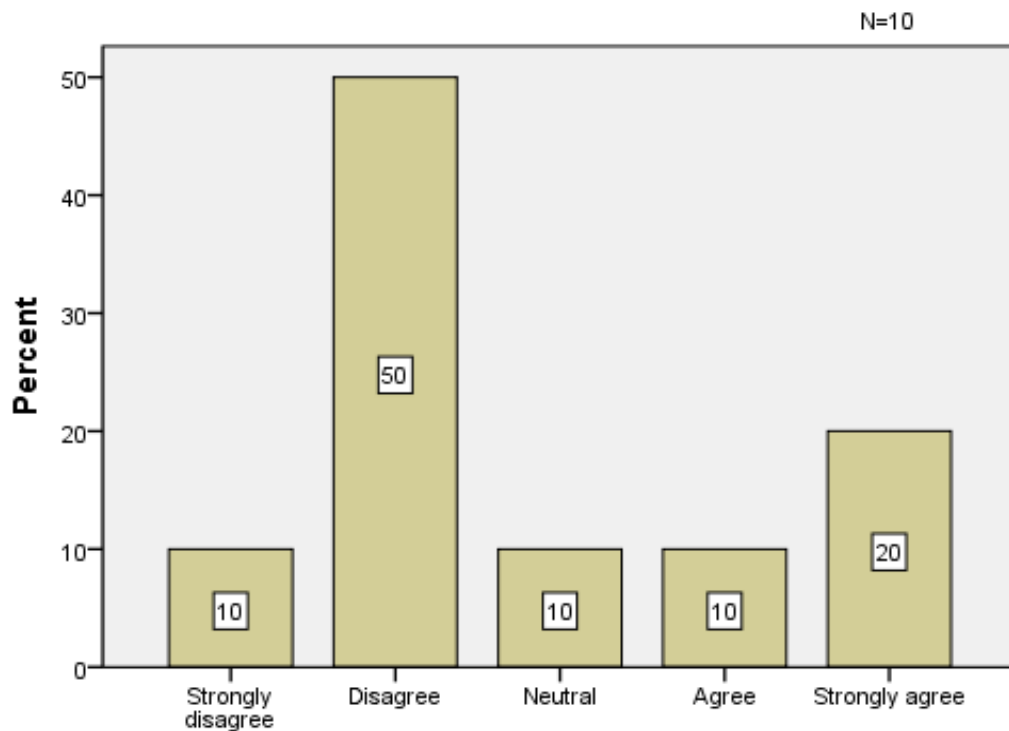


Figure 8.16: Health and Safety Posters

Figure 8.16 indicates that 30% of the participants agreed that the posters of health and safety instructions are available in the work place; 60% of them disagreed, stating that the posters of health and safety in the work place are not available. These posters contribute to increasing the knowledge of employees relating to health and safety roles, and further improve their awareness in terms of avoiding the risks and accidents that may happen in the work place. Those enterprises that have ignored the health and safety posters or other written instructions of health and safety will pay a fine for this ignorance.

4. I have got a feeling of self-fulfilment

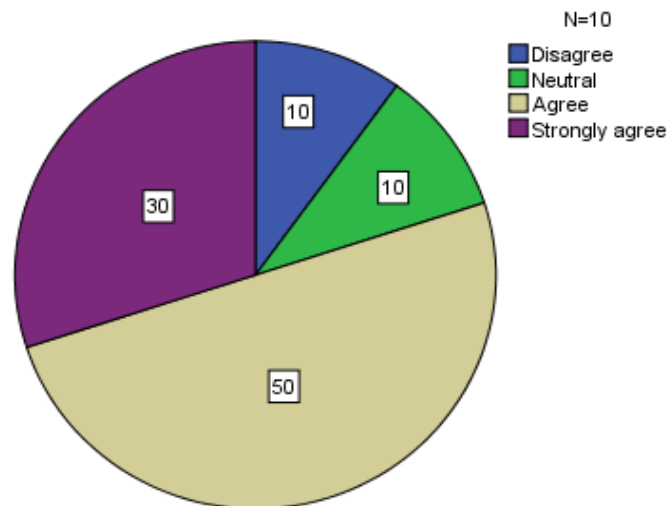


Figure 8.17: Feeling of Self-fulfilment

Figure 8.17 shows that 80% of the participants agreed that they have feelings of self-fulfilment (feelings of being happy and satisfied), whereas 10% of them they disagreed. This small percentage may be due to a lack of ambition and desire, and also owing to the activity of the employees themselves, or potentially owing to the absence of motivation from management, which could help to make the employee feel happy and satisfied in their job.

5. I am proud to work in this enterprise because the enterprise policy is favourable to its workers

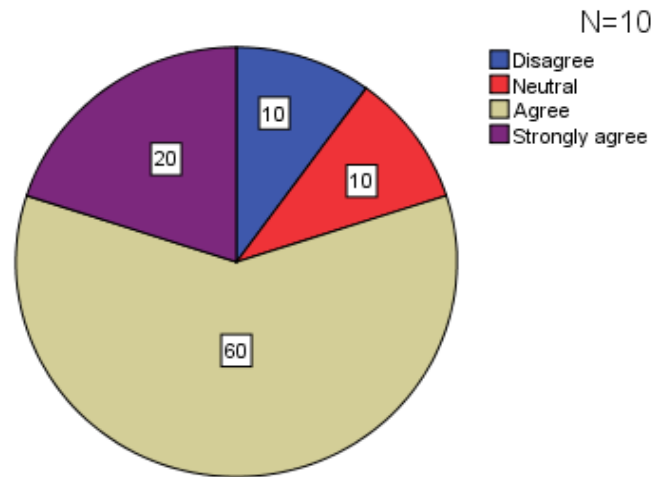


Figure 8.18: Favourable Enterprise Policy

Figure 8.18 shows that 80% of the participants agreed that the policy adopted by the enterprise is convenient for them, and that they can achieve their tasks easily. On the other hand, 10% of them disagreed and said that the policy of the enterprise is inconvenient. The responsibility of top management is to write a clear policy and illustrate the objectives of its policy for their employees, and it must confirm their understanding of the policy.

6. I have respect from others in my job

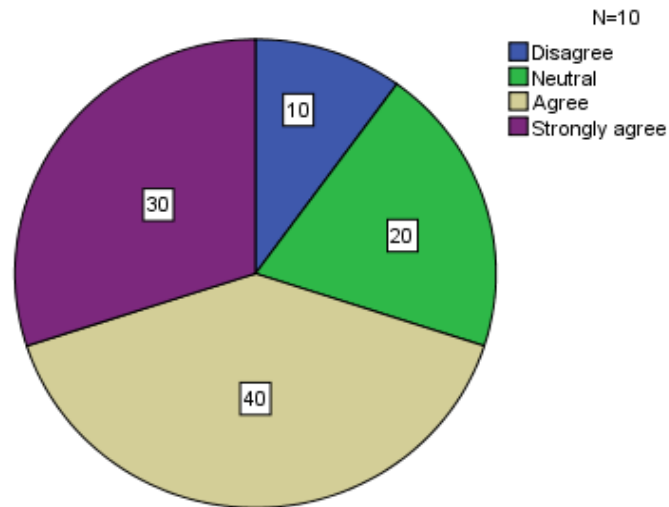


Figure 8.19: Respect from Others

Figure 8.19 shows that 70% of the participants agreed that they are appreciated and respected by Supervisors and their colleagues in the work place, which gives a good impression that the relationship between employees is strong. However, 10% disagreed, which may result from the employee's behaviour or to his/her Supervisor or both.

7. I am satisfied that the range of the temperature in the work place is comfortable

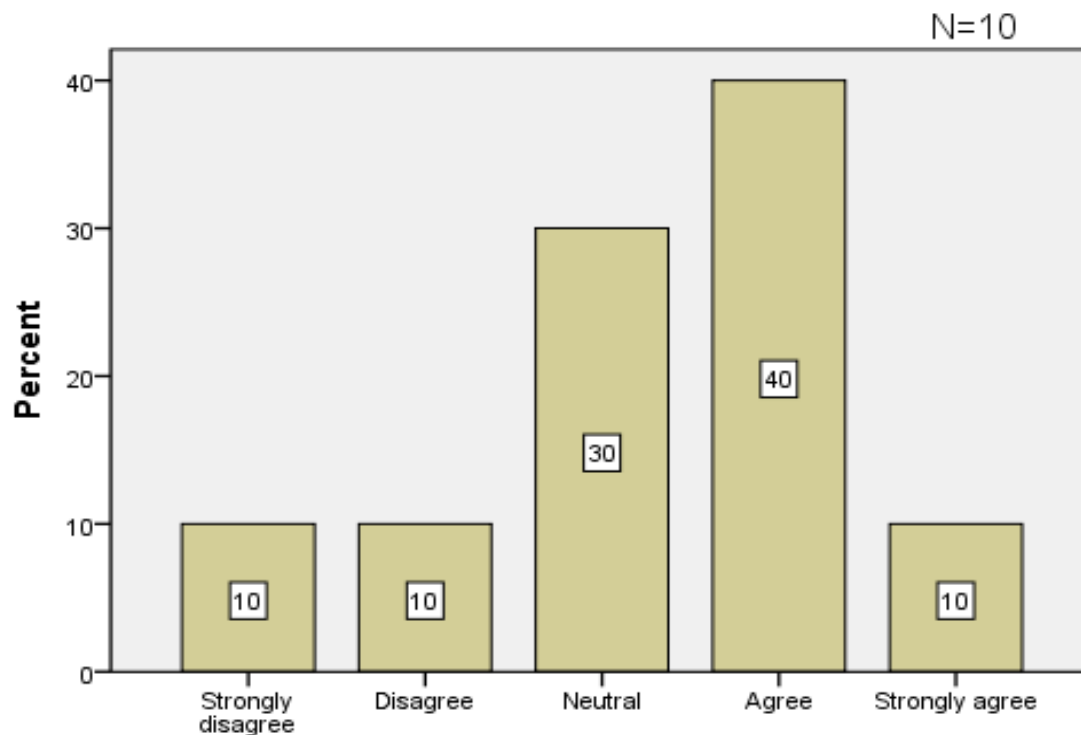


Figure 8.20: Satisfied with Work place Temperature

Figure 8.20 indicates that 50% of the participants agreed that they are satisfied with the degree of temperature in their work place, whereas 20% disagreed, said that the temperature is high, especially when all machines are in operation. The high temperature causes employees to feel uncomfortable, which subsequently impact their performance and health.

8. My Supervisor provides a sense of belongingness to the employees

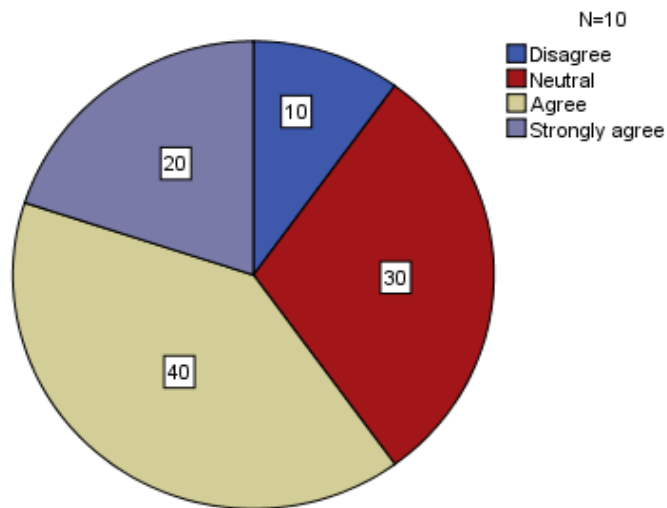


Figure 8.21: Provides a Sense of Belongingness

Figure 8.21 above indicates that 70% of the participants agreed that their Supervisors provide them with a sense of belongingness, and they consider themselves to be a member, which will encourage them to increase their performance. However, 10% disagreed.

9. My job allows me to improve my experience, skills and performance

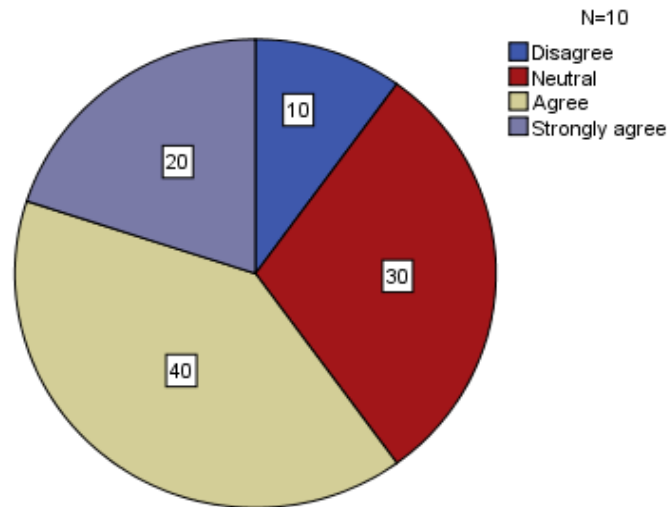


Figure 8.22: Job Allows Improving Experience, Skills and Performance

Figure 8.22 shows that 60% of the participants agreed that their jobs allow them to improve their experience, skills and performance, which reflects the extent to which the management of the enterprise are interested with training and development programmes to improve the skills of its staff. 10% disagreed and said they have not chance to improve their experience, skills and performance.

10. I feel appreciated when I achieve or complete a task

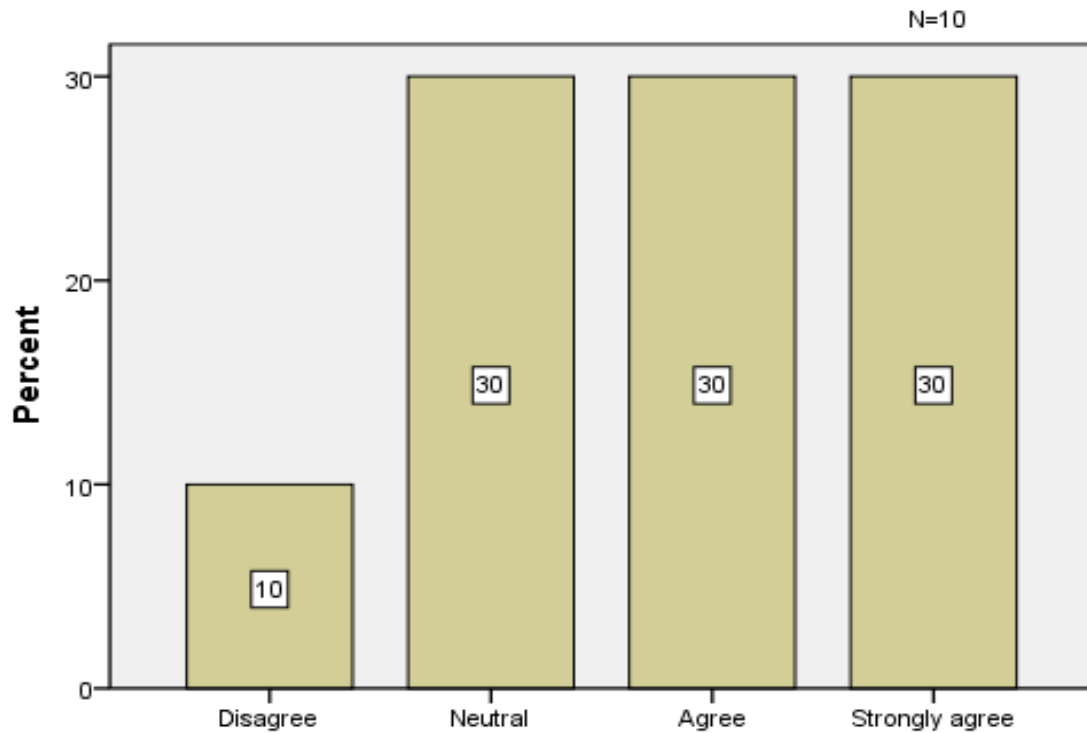


Figure 8.23: Feel Appreciated when Achieving a Task

Figure 8.23 indicates that 60% of the participants agreed that they feel appreciated when they achieve their tasks. This illustrates that the management of the enterprise follow a good reward system to motivate its staff; however, 10% disagreed, and they feel unappreciated which will impact their performance.

8.5 Discussion

The average temperature in the laboratories was 27°C, which is considered high according to the World Health Organisation (WHO), which recommends that temperature should not exceed 24°C. The relative humidity level in the laboratories is acceptable according to specifications. This finding is supported by the views of employees who said that they feel the temperature is too high, especially when all machines are in operation.

The average levels of lighting in the laboratories were in the range (331.60-662.60 Lux) and which is below the level of lighting determined by Canada Occupational Health and Safety Regulations (SOR/86-304), which is 750 Lux. The average levels of noise in the laboratories were acceptable in the range of 74 - 79 dB (A) (see standards and regulations section in Chapter 7).

The value of vibration for the small machines (SMs) in one laboratory was 4.7–6.3 mm/sec; this value of vibration is unsatisfactory according to ISO 10816-1 standard, which recommends vibration for SM not to exceed 1.8 mm/sec (see standards and regulations section in Chapter 7).

The average temperature in the offices was in the range of between 22°C -25 °C, which is considered high according to the UK Health and Safety Legislation, which recommends that temperature in offices should normally be at least 16°C. If work involves physical effort, it should be at least 13°C, and also it considered high according to the World Health Organisation, which recommends that temperature should not exceed 24°C.

The average levels of lighting (147.60,180.80 Lux) in two offices were very low compared with the levels of lighting , determined by Canada Occupational Health and Safety Regulations (SOR/86-304) i.e. 300 Lux. (see standards and regulations section in Chapter 7).

The average levels of noise in the offices were acceptable in the range of 40.69 dB (A) - 56.20 dB (A) (see standards and regulations section in Chapter 7)

70% of participants agree that the relationship among employees is strong, whilst 10% disagree and they feel the relationship with their supervisors are weak due to the lack of appreciation and motivating by Supervisors. 70% of the participants agreed that they are secure in their job, whilst 10% of them said they feel insecure in their job and they worry about their future.

100% of participants agree that they prefer advancement rather than monetary incentives. This finding is supported by Mol (1992) that money does not motivate, but rather moves a person to achieve a goal in order to obtain the reward.

8.6 Summary

The findings of the pilot study showed that the average of temperature exceeded the levels of temperature recommended by (WHO), and the levels of lighting were below the levels suggested by the Canada Occupational Health and Safety Regulations (SOR/86-304). Most of the participants were satisfied with training and development programmes and policy followed by their enterprise. Further results to pilot study reveal that the participants prefer advancement rather than the monetary incentives. 70% of them agree that the relationship between employees is strong.

The pilot study findings reveal that it is necessary to monitor the work environment in the enterprise of the pilot study. The management of enterprise should work to improve the work environment and ensure that the employees feel comfortable in their work place. This will help to increase the success of ISO 9000 implementation and to implement other development programmes successfully.

Chapter 9 : Conclusions and Further Work

9.0 Introduction

This chapter presents the conclusions that derived from the literature review and from the exploratory survey and case studies findings (conducted in Chapter 5 and Chapter 6, respectively), and answering the research aim and objectives determined in Chapter1. The researcher's work contributions and the recommendations for further research that might be conducted in the future will be presented.

9.1 Conclusions

From the literature review, the previous studies reveal that the number of enterprises pursuing the implementation of the ISO 9001 standard has increased steadily worldwide. This indicates the importance of the ISO 9001 standard in terms of improving performance and increasing profitability through the application of a quality management system. In this field, Hoyle (2009) confirms that the purpose of the ISO 9001 standard is to give confidence that products and services meet the needs and expectations of customers and other stakeholders. This improves the overall capability of the enterprise.

In addition, the previous studies have shown that SMEs represent 99.9% of all manufacturing enterprises in the UK (BIS, 2011). SMEs have faced difficulties in terms of adopting new technology, programmes or changes in their management systems. There are a number of challenges SMEs face in implementing effective ISO 9001 standard. These include a lack of financial and human resources, inadequate technical knowledge of quality management, a lack of knowledge concerning formalised systems, and a lack of experience in internal auditing (Smith, 1993). Brown et al. (1997) recognise that the most common problems facing SMEs in the application of ISO 9001 are employee commitment, documentation and paperwork consumption.

ISO 9001 standard is centred on the work environment. In this vein, Hoyle (2009) states that the concept of the work environment is a set of roles deemed necessary to achieving the work, and

includes physical, social, psychological and environmental factors. Opperman (2002), on the other hand, points out that the work environment is composed of three major sub-environments: the technical environment, the human environment and the organisational environment. Kyko (2005) states that there are two types of work environment, namely conducive and toxic; the conducive gives pleasurable experiences to employees and enables them to actualise their abilities and behaviour, while the latter gives unpleasant experiences and de-actualises employees' behaviour.

The research aim and objectives have been realised through the application of the selected research data collection methods, namely exploratory survey and case studies. The specific objectives of this research were defined accordingly as follows:

Objective 1: 'To review the relevant literature on enterprise strategy, ISO 9000 standards, and the organisational development that are seen to be directly related to the research'. This objective was achieved by building a good knowledge base through a comprehensive review of the literature of (i) enterprise strategy, (ii) ISO 9000 standards, and (iii) organisational development. It was identified that the previous studies focused only on a small range of factors such as, job satisfaction, performance, salary, and motivation, and dealt with them without consideration of how these factors can impact on the work environment. For example, Hoyle (2009) suggests that motivation is the key to high performance, and further states that the performance of work is almost always a function of three factors: environment, ability and motivation. Leach (2000) points out that giving the employee encouragement and recognition helps them to feel more valued within the enterprise, and gives them a sense of achievement and responsibility.

Objective 2: 'To conduct assessment, analysis and prioritisation of the critical success factors and barriers facing enterprises implementing the ISO 9000 standards'. This objective was achieved by reviewing the literature related to the common factors affecting the implementation of ISO 9001 standard in SMEs. The findings of the exploratory survey and case studies showed that there are critical factors playing an important role in the success or failure of the work environment. These factors include job security, recognition, salary, relationship, and temperature. Their influence depends on how the management of an enterprise controls and deals with them, For example, one of the findings of this research is that the internal resistance reduced after implementation of the ISO 9000 standards from 21.57% to 5.88%. Importantly,

this reduction happened as a result of the improved awareness of employees and their knowledge. Employees became more familiar with standards through the adoption of successful training programmes.

Objective 3: ‘To review the definition of the work environment in ISO 9001 standard, and redefine it’. This objective was realised by developing a new work environment definition based on the findings obtained from the exploratory survey and case studies. These findings indicated that there are important factors not covered by the work environment definition in ISO 9001 standard. These factors include relationships, job security, reward systems and recognition. The new definition further included physical, environmental, motivation and hygiene factors, and safety needs.

Objective 4: ‘To provide a revised work environment framework, and recommendations for the improved implementation of ISO 9000 standards’. This objective has been accomplished through the literature review and the findings obtained from the exploratory survey and case studies. In view of achieving the successful implementation of ISO 9001 standard and based on the findings obtained from this research, the researcher developed the work environment framework model. This was achieved by integrating the factors and needs detailed by Maslow, Herzberg motivation theories, and the Health and Safety legislations. This is illustrated in Figure 7.8 of Chapter 7.

Objective 5: ‘To develop of a work environment assessment guide and use this guide to conduct a work environment pilot study within contemporary SMEs.’ This objective was achieved by using a work environment assessment guide during a pilot study in one enterprise. The aim was to measure the physical factors and assess the other factors represented in terms of safety, working conditions, esteem, social, recognition, achievement, advancement and relationships. The findings of the pilot study showed that the average temperature exceeded the temperature levels recommended by World Health Organisation, and the levels of lighting were below the levels suggested by the Canada Occupational Health and Safety Regulations (SOR/86-304). Most of the participants were satisfied with training and development programmes and policy followed by their enterprise. The pilot study also showed that participants prefer advancement rather than monetary incentives, and 70% of them agreed that the relationship between employees was strong. In relation to job security, 10% of participants feel insecure in their job and worry about their future. The pilot study findings revealed that it is necessary to monitor the

work environment in an enterprise. The management of enterprise should work to improve the work environment and ensure that the employees feel comfortable in their work place. This will assist in increasing the success of ISO 9000 implementation and in the implementation of other development programmes successfully.

9.2 Research Contributions

The work environment has not previously been discussed in-depth in relation to ISO 9000 standards. There are few studies focused on a number of factors such as job satisfaction, employee performance, and salary. The contribution of this research is divided into two sections:

9.2.1 Theoretical Contributions

1. Redefining of the work environment definition particularly on factors such as motivation, hygiene and safety needs, in addition to physical, environmental factors commonly are included in the work environment definition in ISO 9000 standards.
2. Increased knowledge in the domain of ISO 9000 implementation and the work environment.

9.2.2 Practical Implications

1. The discovery of the additional factors that have an influence on the work environment in the work place, such as recognition, job security, quality awareness, etc. These were not included in the definition of work environment in the ISO 9001 standard.
2. Development of a work environment assessment guide. This guide will assist enterprises in realising and evaluating the importance of work environment and understanding its impact on the performance of employees through measurement of physical factors and assessment of qualitative factors.
3. Outlining some of the difficulties that SMEs face in implementing the ISO 9000 standards with a high degree of success. For example, a SME may encounter employee's internal resistance, due to the absence of training programmes, and lack of knowledge with the importance of ISO 9000 standards.

9.3 Recommendations for Further Work

The recommendations for further work are divided into two sections:

9.3.1 Limitations of the Work

1. The study focused on two of the motivation theories namely Maslow's theory and Herzberg two factors motivation theory.
2. The sample size of the questionnaire survey and the pilot study was relatively small (51 and 10 respectively).
3. The enterprises selected to do this research were small and medium sized.
4. The case study was conducted only in three small medium sized enterprises in the UK.
5. The measurements of the physical factors were made on a small scale and were restricted to the pilot study only.

9.3.2 Future Research Directions

Future research should, therefore, investigate the relationship between the work environment and success of ISO 9000 implementation in the context of large enterprises.

Moreover, further research could examine the relationship between the work environment and success of ISO 9000 implementation in the context of small, medium and large enterprises in developing countries.

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Appendices

Appendix 1

Exploratory Survey Questions

Appendix 1: Exploratory Survey Questions

Questionnaire Covering Letter



Dear Sir/Madam, I am writing to you as a Research Student within the Department of Engineering and Technology at the University of Huddersfield to ask your kind assistance with my industrial research through the completion of a short survey questionnaire. currently undertaking an investigative project entitled '*An Exploratory Study to Examine Relationships between the Work Environment and Success of ISO 9000 Implementation in the Context of Small-to-Medium sized Enterprises (SMEs)*'. The main objective of this research work is to develop a richer definition and classification of its concept of '*work environment*' for the ISO 9000 Standard, together with an analysis of the current barriers facing SMEs success of this research is dependent upon your response, which will be treated as highly confidential and will be used only for academic purposes.

I would highly appreciate your participation in the success of this research, by answering the following questions, which are grouped into three sections: General Background; ISO 9000 Standard implementation; and Work Environment.

If you have any queries about the completion of the questionnaire, in particular, or about the research, in general, please contact me on the telephone number or via the e-mail address listed below.

Thank you very much for your help and participation.

Yours Sincerely,

Musbah Kharis Maatgi

Department of Engineering and Technology,
Huddersfield University,
Queensgate, Huddersfield
HD1 3DH, UK
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Section (1): General Background

This section focuses on the activities of enterprises, organisational structures, employee numbers and qualifications, and product markets. Please answer the following questions related to this section:

1.1 Does your enterprise provide product or service activity?

Product	
Service	

1.2 Your enterprise age?

0-5 years	6-10 years	11-15 years	≥ 16 year

1.3 Annual sales turnover for your enterprise for last financial year?

£.....

1.4 What type of operation does your enterprise trade as?

Sole Trader	
Partnership	
Limited Partnership	
Private Limited Company	
Public Limited Company	

Other, please specify _____

1.5 What is the organisational structure of your enterprise?

Functional organisational structure	
Matrix organisational structure	
Geographical organisational structure	
Hybrid organisational structure	

1.6 Number of employees in your enterprise?

< 10 employees	
11–49 employees	
50–249 employees	
> 250 employees	

1.7 Average experience of your employees? Please enter the number in each range.

Period	Employee Numbers
0–5 years	
5–10 years	
More than 10 years	

1.8 Qualification levels of employees in your enterprise?

	Director	Manager	Head of Section	Foreman	Employee	Total
Doctoral degree						
Master's degree						
Bachelor degree						
Professional qualification						
Secondary/high school qualification						

Other, please specify

1.9 Where does your enterprise trade?

Locally	
Nationally	
Internationally	

1.10 What type of product strategy does your enterprise employ? (Make-to-stock, Make-to-order, or other)

1.11 How many categories of product does your enterprise produce?

One item	
Two items	
Three items	
Or more	

1.12 From where is your enterprise provided with raw materials?

Local	
National	
International	

1.13 Who are your customers?

A manufacturing unit within the same enterprise	
Other enterprises	
Both	

Section (2): ISO 9000 Standards Implementation

ISO 9000 is a family of standards for quality management systems and any enterprise wishing to implement this standard should demonstrate commitment with all requirements of this standard and prepare its employees appropriately through adequate training and development. In relation to the standard, please answer the following questions:

2.1 The main reason for your enterprise acquiring the ISO 9000 certificate?

Pressure from customers	Pressure from market	Pressure from authorities	Our own initiatives	No answer

2.2 Who is the responsible for implementing ISO 9000 standards?

Managing director	Internal project leader	External consultant	Another person	No answer

2.3 Has your enterprise an internal resource (an individual or team) dedicated to the implementation and maintenance of ISO 9000 standards?

Yes	No

If No, please specify the reason if possible

2.4 Did you face internal resistance from employees when you implemented ISO 9000 standards in your enterprise?

a	Prior implementation	Yes	No
b	During implementation	Yes	No
c	After implementation	Yes	No

2.5 The period taken to prepare and implement ISO 9000 standards?

Less than 1 year	1–2 years	More than 2 years	No answer

2.6 For how long your enterprise has been adopting ISO 9000 standards?

Less than 6 months	6 months	One year	More than 1 year	No answer

2.7 What was the estimated total cost of registration and implementation of ISO 9000 standards?

2.8 To what extent are employees aware of the ISO 9000 standards?

Much better	Better	No difference	Worse	No answer

2.9 In what way has the number of customer complaints changed after implementation of the ISO 9000 standards?

Much better	Better	No difference	Worse	No answer

2.10 To what extent has the implementation of ISO 9000 standard changed the design process?

Much better	Better	No difference	Worse	No answer

2.11 In what way has the implementation of ISO 9000 standards changed the production process?

Much better	Better	No difference	Worse	No answer

2.12 To what extent has the implementation of ISO 9000 improved communication between the units or departments within the enterprise?

Much better	Better	No difference	Worse	No answer

2.13 What is the influence of implementing ISO 9000 standards on the following factors below? Please cross (X) in the box that reflects your answer where:

1 = I do not know	2 = Very little	3 = Only slight	4 = Quite well	5 = Very well
-------------------	-----------------	-----------------	----------------	---------------

Evaluation of influence	1	2	3	4	5
Improves documentation					
Improves the efficiency of the quality system					
Improves profitability					
Improves employee relations					
Increase quality awareness					
Improve employee productivity					
Reduce costs					
Reduce production time					
Increased employee participation					
Internal communication					
External communication					

2.14 Since your enterprise received the ISO 9000 certificate, what level of performance improvements have been judged? Please cross (X) in the box that reflects your answer where:

1 = I do not know	2 = Very little	3 = Only slight	4 = Quite well	5 = Very well
-------------------	-----------------	-----------------	----------------	---------------

Performance	1	2	3	4	5
Customer satisfaction					
Employee satisfaction					
Market share					

2.15 Has your enterprise encountered problems with re-certification processes?

Yes	No

If yes, what were the main problems?

2.16 Benefits gained from ISO 9000 implementation. To what extent the implementation of ISO 9000 standards made improvement on the following statements. Please cross (X) in the box that reflects your answer where:

1 = Very Poor	2 = Poor	3 = Average	4 = Good	5 = Excellent
---------------	----------	-------------	----------	---------------

Statements	1	2	3	4	5
Improved the quality of products					
Improved customer service					
Reduced costs					
Increased quality awareness in the enterprise					
Improved workers relations					
Improved staff motivation					
Reduced defective rate and wastes					
Improved supplier relations					
Improved productivity					
Increased exports					
Improved the process of products delivery					
Improved the efficiency of the quality system					
Reduced customer complaints					
Improved inspection methods for incoming materials and finished products					

Section (3): Work Environment

Work Environment is defined as ‘those conditions under which work is performed including physical, environmental and other factors (such as noise, temperature, humidity, lightning, or weather)’ (ISO 9001:2008). This section IS divided into five sub-sections: work place, satisfaction, motivation, supervision, and training and development. Please answer the questions below:

3.1 Work place

3.1.1 Is the lighting in your work place?

Excellent	Good	Average	Poor	Very poor

3.1.2 Is the temperature in your work place?

Too high temperature	Medium temperature	Too low temperature

3.1.3 Is the noise level in your work place?

Too high noise	Medium Noise	Too low noise

3.1.4 Do work rooms or corridors in your enterprise have enough space to allow employees to move with ease?

Yes	No

If No, please specify the reason(s), if possible:

3.1.5 Do you feel safe in your work environment?

Yes	No

If No, please specify the reason(s), if possible:

3.1.6 Are you confident of your work place's safety procedures?

Yes	No

If No, please specify the reason(s), if possible:

3.1.7 Do you feel your work place is comfortable?

Yes	No

If No, please specify the reasons, if possible:

3.1.8 What external activities are provided by the management of enterprise to its employees?

Sport	
Music	
Trips/Journeys	
Visits to another enterprise	
Others	
There are no activities	

If others, please state:

3.1.9 How far is your work place from your home?

No. of Miles

3.1.10 Please specify how you generally travel to your work place each day?

Walk	
Cycle	
Own car	
Bus	
Coach	
Train	

3.2 Supervision

3.2.1 Does your Line Manager or Supervisor provide you with the information necessary for you to adequately achieve your work objectives?

Yes	No

3.2.2 Does your Line Manager or Supervisor accept welcome employee opinions from you, when you believe them to be valid?

Yes	No

3.2.3 Does your Line Manager or Supervisor hold employee meetings to discuss problems and work issues?

Yes	No

3.2.4 Does your Line Manager or Supervisor encourage the employees to create the confidence between them?

Yes	No

3.2.5 Does your Line Manager or Supervisor provide you with clear instructions to your work?

Yes	No

3.2.6 Is your Line Manager or Supervisor interested with social relationship outside working hours?

Yes	No

3.3 Motivation

3.3.1 To what extent do you agree or disagree with the following statements? Please cross (X) in the box that reflects your answer where:

1 = Strongly disagree	2 = Disagree	3 = Not sure	4 = Agree	5 = Strongly agree
-----------------------	--------------	--------------	-----------	--------------------

Question statement	1	2	3	4	5
Only money is enough to motivate employees to achieve a better performance					
Individual recognition for high performance is very important to employees					
Pension and health insurance are of the most important things to motivate the employees					
Job security causes employees to worry about their future					
Having good facilities such as furniture, transportation and modern equipment motivates employees to increase their performance					

3.3.2 Is the level of your salary acceptable to you?

Yes	No

3.4 Satisfaction

3.4.1 Are you satisfied with the personal statements below? Please cross (X) in the box that reflects your answer where:

1= Dissatisfied	2 = Slightly dissatisfied	3 = Neither	4 = Satisfied	5 = Extremely Satisfied
-----------------	---------------------------	-------------	---------------	-------------------------

Question statement	1	2	3	4	5
With your career					
With your salary					
Training programme for your current job					
Your relationship with your Line Manager or Supervisor					
Your relationship with your co-workers					
Reward system applying in your enterprise					

3.4.2 Are you happy about career progression opportunities within your enterprise?

Yes	No

If No, please specify the reasons: _____

3.5 Training and Development

3.5.1 To what extent do you agree or disagree with the following statements about training and development? Please cross (X) in the box that reflects your answer where:

1 = Strongly disagree	2 = Disagree	3 = Not sure	4 = Agree	5 = Strongly agree
-----------------------	--------------	--------------	-----------	--------------------

Question statement	1	2	3	4	5
The management of the enterprise has a formal plan for training and development programmes					
The management of the enterprise is interested in supporting and providing all the facilities necessary for appropriate training and development of its staff					
Provision of a training and development budget is enough to achieve development and training objectives alone					
Training and development programmes help the employees to understand the technical and procedural changes within the enterprise					
Training improves the behaviour and attitudes of employees					
Training increases the motivation and commitment of employees					

-- End of the Questionnaire --

Appendix 2

Case Study Questions

Part One

Work Environment Case Study

Pre-Interview Data Capture Form

- a) Company Name: _____
- b) Employee Name: _____
- c) Position: _____

Q1. Does your enterprise provide product or service activity?

Product	
Service	

Q2. In what year was your enterprise founded?

Q3. Number of employees in the enterprise

< 10 employees	
11–49 employees	
50–249 employees	
> 250 employees	

Q4. Where does your enterprise trade?

Locally	
Nationally	
Internationally	

Q5. How many categories of product does your enterprise produce?

One item	
Two items	
Three items	
Or more	

Q.6 What type of operation does your enterprise trade as?

Sole Trader	
Partnership	
Limited Partnership	
Private Limited Company	
Public Limited Company	

Other, please specify _____

Q7. What type of product strategy does your enterprise employ? (Make-to-stock, Make-To-order, or other)

Q8. From where is your enterprise provided with raw materials?

Local	
National	
International	

Q9. Who are your customers?

A manufacturing unit within the same enterprise	
Other enterprises	
Both	

Part Two

ISO 9001 Implementation

The implementation of the ISO 9001 standard is a becoming very important strategy for many enterprises, either large or SMEs.

Q1. What was the main reason to implement ISO 9001 standards in your enterprise? Was it:

- a) Pressure from customer
What was the pressure?

- b) Pressure from market
What was the pressure?

- c) Pressure from Authorities
What was the pressure?

- d) To improve your operations/processes
What was the pressure?

- e) Another reason
What was the pressure?

Q2. When you implemented ISO 9001 standard, did you depend on external consultants or did you create an internal team?

External consultant	Internal team

If you depended on external consultants, please clarify why?

Q3. Did you face internal resistance from employees when you were implementing ISO 9001 standards?

Yes	No

If yes, please if you can, detail the type of this resistance and why they were not happy to implement ISO 9001 standard?

Q4. Did you believe your employees understand the policy of the enterprise to implement ISO 9001 standard?

Yes	No

Please support your answer:

Q5. What is the influence of implementing ISO 9000 standards on the following factors below?
Please cross (X) in the box that reflects your answer where:

1 = Very well	2 = Quite well	3 = Only slight	4 = Very little	5 = I do not know
---------------	----------------	-----------------	-----------------	-------------------

Evaluation of influence	1	2	3	4	5
Improves documentation					
Improves the efficiency of the quality system					
Improves profitability					
Improves employee relations					
Increase quality awareness					
Improve employee productivity					
Reduce costs					
Reduce production time					
Increased employee participation					
Internal communication					
External communication					

Q6. Benefits gained from ISO 9000 implementation. To what extent did the implementation of ISO 9000 standards make improvements on the following statements? Please cross (X) in the box that reflects your answer where:

1 = Excellent	2 = Good	3 = Average	4 = Poor	5 = Very Poor
---------------	----------	-------------	----------	---------------

Statements	1	2	3	4	5
Improved the quality of products					
Improved customer service					
Reduced costs					
Increased quality awareness in the enterprise					
Improved workers relations					
Improved staff motivation					
Reduced defective rate and wastes					
Improved supplier relations					
Improved productivity					
Increased exports					
Improved the process of products delivery					
Improved the efficiency of the quality system					
Reduced customer complaints					
Improved inspection methods for incoming materials and finished products					
Enhanced communication & coordination among individuals & departments within enterprise					

Part Three

Work Environment

Q1. Do you have a job description, including your responsibility, in your work place?

Yes	No

If No, are you doing more than one task in your work place?

Q2. Do you know the quality policy, which enterprise management follows to implement ISO 9001 standards?

Q3. Did you receive any training about the concept and purpose of ISO 9001 standard?

Yes	No

If yes, did you believe it was enough for you to understand ISO 9001 requirements?

Q4. Does your Line Manager or Supervisor provide you with the information necessary for you to adequately achieve your work objectives?

Yes	No

Q5. Does your Line Manager or Supervisor accept welcome employee opinions from you, when you believe them to be valid?

Yes	No

Q6. Does your Line Manager or Supervisor hold employee meetings to discuss problems and work issues?

Yes	No

Q7. Does your Line Manager or Supervisor encourage the employees to create confidence between them?

Yes	No

Q8. Does your Line Manager or Supervisor provide you with clear instructions to your work?

Yes	No

Q9. To improve the work environment the management should motivate the employees. To what extent do you agree or disagree with the following statements? Please cross (X) in the box that reflects your answer where:

1= Strongly disagree	2= Disagree	3= Not sure	4= Agree	5= Strongly agree
----------------------	-------------	-------------	----------	-------------------

Question statement	1	2	3	4	5
Only money is enough to motivate employees to achieve a better performance					
Individual recognition for high performance is very important to employees					
Pension and health insurance are of the most important things to motivate the employees					
Job security causes employees to worry about their future					
Having good facilities such as furniture, transportation and modern equipment's motivates employees to increase their performance					

Q10. Some parameters may increase employee satisfaction. Are you satisfied with the personal statements below? Please cross (X) in the box that reflects your answer where:

1 = Extremely Satisfied	2 = Satisfied	3 = Neither	4 = Slightly dissatisfied	5 = Dissatisfied
-------------------------	---------------	-------------	---------------------------	------------------

Question statement	1	2	3	4	5
With your career					
With your salary					
Training programme for your current job					
Your relationship with your Line Manager or Supervisor					
Your relationship with your co-workers					
Reward system applying in your enterprise					

Appendix 3

Survey Questions Analysis

Appendix 3- Survey Analysis Section One: General Background

Categories	Product	Service		Categories	0-5 year	6-10 year	11-15 year	≥ 16 year
Enterprise activity *Sample No. 51	35 (68.62%)	16 (31.37%)		Your enterprise age	0	3 (5.88%)	21 (41.17%)	27 (52.94%)
Categories	Sole Trader	Partnership	Ltd Partnership	Private Ltd enterprise	Public Ltd enterprise			
Enterprise Trade *Sample No. 51	2 (3.92%)	2 (3.92%)	9 (17.64 %)	38 (74.50%)	0 (0.00%)			
Categories	Functional Structure	Matrix Structure	Geographical Structure	Hybrid Structure	<10 employees	11-49 employees	50-249 employees	>250 employees
Organizational Structure	35	8	6	2				
Number of employees					8 (15.68%)	33 (64.7 0 %)	10 (19.60 %)	0 (0.00%)
Categories	0-5 years	5-10 years	>10 years	Doctoral deg.	MSC deg.	BSC deg.	Professional qualification	Secondary School/ high qualification
Average experience	274	381	754					
Qualification Levels				35	93	122	499	900

✓ The annual sales turnovers for the enterprises participated in industrial survey for last financial year was in the range between: £500,000- £43 million.

Categories	Locally	Nationally	Internationally	Make-to Stock	Make-to Order	Others*	
Enterprise trade	21	32	32				
Enterprise product strategy				10	33	8	
Categories	One item	Two items	Three items	>Three items	Local	National	International
Categories of product	13	8	0	30			
Source of enterprise raw materials					24	31	27
Categories	Manufacturing unit within the same enterprise	Other enterprises	Both				
Enterprise Customers	2	24	28				

*Others Enterprise Product Strategy- Bespoke and mass production

Section Two: ISO 9000 standard Implementation

Question	Pressure from customers	Pressure from market	Pressure from authorities	Our own initiatives	No answer
Main reason for enterprise acquiring the ISO 9000 certificate	8	9	3	28	3
Question	Managing director	Internal project leader	External consultant	Another person	No answer
Who is the responsible for implementing ISO 9000 standards?	10	32	2	4	3

Question	Yes	No	Total
Has your enterprise an internal resource dedicated to the implementation and maintenance of ISO 9000 standards?	43 (84.31%)	8 (15.68%)	51 (100%)
Has your enterprise encountered problems with re-certification processes	0 (0.00%)	51 (100%)	51 (100%)

Question	Prior implementation			During implementation			After implementation		
	Yes	No	Total	Yes	No	Total	Yes	No	Total
Did you face internal resistance from employees when you implemented ISO 9000 standards in your enterprise?	11 (21.56%)	40 (78.43%)	51 (100%)	11 (21.56%)	40 (78.43%)	51 (100%)	3 (5.88%)	48 (94.11%)	51 (100%)

Question	<1 year	1-2 years	>2 years	No answer
The period taken to prepare and implement ISO 9000 standards	6	23	7	15

Question	<6 months	6 months	One year	> One year	No answer
For how long your enterprise has been adopting ISO 9000 standards	0	1	3	43	4

- ✓ Estimated total cost of registration and implementation of ISO 9001 standards was in the range: £ 1000-£ 5000 and it depends on the size of enterprise, variety of products, and number of departments and units

Question	Much better	Better	No difference	Worse	No answer	Total
To what extent are employees aware of the ISO 9000 standards	12 (23.53%)	37 (72.54%)	2 (3.92%)	0 (0.00%)	0 (0.00%)	51 (100%)
In what way has the number of customer complaints changed after implementation of the ISO 9000 standards	5 (9.80%)	26 (50.98%)	16 (31.37%)	0 (0.00%)	4 (7.84%)	51 (100%)
To what extent has the implementation of ISO 9000 standard changed the design process	7 (13.72%)	27 (52.94%)	7 (13.72%)	0 (0.00%)	10 (19.61%)	51 (100%)
In what way has the implementation of ISO 9000 standards changed the production process	6 (11.76%)	34 (66.66%)	4 (7.84%)	0 (0.00%)	7 (13.72%)	51 (100%)
To what extent has the implementation of ISO 9000 improved communication between the units or departments within the enterprise	4 (7.84%)	41 (80.39%)	6 (11.76%)	0 (0.00%)	0 (0.00%)	51 (100%)

<i>The influence of implementing ISO 9000 standards on:</i>	Very well	Quite well	Only slight	Very little	I do not know	Total
Improves documentation	25 (49.01%)	23 (45.09%)	3 (5.88%)	0 (0.00%)	0 (0.00%)	51 (100%)
Improves the efficiency of the quality system	23 (45.09%)	20 (39.01%)	7 (13.72%)	0 (0.00%)	1 (1.96%)	51 (100%)
Improves profitability	9 (17.64%)	10 (19.60%)	14 (27.45%)	9 (17.64%)	9 (17.64%)	51 (100%)
Improves employee relations	4 (7.84%)	12 (23.52%)	12 (23.52%)	18 (35.29%)	5 (9.80%)	51 (100%)
Increase quality awareness	13 (25.49%)	29 (56.86%)	7 (13.72%)	2 (3.92%)	0 (0.00%)	51 (100%)
Improve employee productivity	9 (17.64%)	16 (31.37%)	15 (29.41%)	10 (19.60%)	1 (1.96%)	51 (100%)
Reduce costs	6 (11.76%)	16 (31.37%)	11 (21.56%)	15 (29.41%)	3 (5.88%)	51 (100%)
Reduce production time	5 (9.80%)	10 (19.60%)	25 (49.01%)	9 (17.64%)	2 (3.92%)	51 (100%)
Increased employee participation	5 (9.80%)	14 (27.45%)	26 (50.98%)	5 (9.80%)	1 (1.96%)	51 (100%)
Internal communication	9 (17.64%)	21 (41.17%)	13 (25.49%)	6 (11.76%)	2 (3.92%)	51 (100%)
External communication	10 (19.60%)	22 (43.13%)	8 (15.68%)	2 (3.92%)	9 (17.64%)	51 (100%)
Employee relations	4 (7.84%)	10 (19.60%)	14 (27.45%)	13 (25.49%)	10 (19.60%)	51 (100%)

<i>Since your enterprise received the ISO 9000 certificate, what level of performance improvements have been judged?</i>	Very well	Quite well	Only slight	Very little	I do not know	Total
Customer satisfaction	16 (31.37%)	18 (35.29%)	3 (5.88%)	8 (15.68%)	6 (11.76%)	51 (100%)
Employee satisfaction	5 (9.80%)	10 (19.60%)	18 (35.29%)	10 (19.60%)	8 (15.68%)	51 (100%)
Market share	10 (19.60%)	8 (15.68%)	9 (17.64%)	0 (00.00%)	24 (47.05%)	51 (100%)

<i>Benefits gained from ISO 9000 implementation.</i>	Excellent	Good	Average	Poor	Very Poor	Total
Improved the quality of products	15 (29.41%)	23 (45.09%)	5 (9.80%)	6 (11.47%)	2 (3.92%)	51 (100%)
Improved customer service	20 (39.21%)	21 (41.17%)	8 (15.68%)	1 (1.96%)	1 (1.96%)	51 (100%)
Reduced costs	9 (17.64%)	10 (19.60%)	24 (47.05%)	5 (9.80%)	3 (5.88%)	51 (100%)
Increased quality awareness in the enterprise	15 (29.41%)	31 (60.78%)	4 (7.84%)	0 (0.00%)	1 (1.96%)	51 (100%)
Improved workers relations	10 (19.60%)	7 (13.72%)	24 (47.05%)	8 (15.68%)	2 (3.92%)	51 (100%)
Improved staff motivation	10 (19.60%)	11 (21.56%)	20 (39.21%)	8 (15.68%)	2 (3.92%)	51 (100%)
Reduced defective rate and wastes	12 (23.52%)	22 (43.13%)	13 (25.49%)	4 (7.84%)	0 (0.00%)	51 (100%)
Improved supplier relations	12 (23.52%)	27 (52.94%)	10 (19.60%)	1 (1.96%)	1 (1.96%)	51 (100%)
Improved productivity	12 (23.52%)	14 (27.45%)	21 (41.17%)	2 (3.92%)	2 (3.92%)	51 (100%)
Increased exports	7 (13.72%)	19 (37.25%)	13 (25.49%)	2 (3.92%)	10 (19.60%)	51 (100%)
Improved the process of products delivery	10 (19.60%)	25 (49.01%)	14 (27.45%)	2 (3.92%)	0 (0.00%)	51 (100%)
Improved the efficiency of the quality system	22 (43.13%)	23 (45.09%)	5 (9.80%)	0 (0.00 %)	1 (1.96%)	51 (100%)
Reduced customer complaints	8 (15.68%)	27 (52.94%)	13 (25.49%)	0 (0.00%)	3 (5.88%)	51 (100%)
Improved inspection methods for incoming materials and finished products	8 (15.68%)	21 (41.17%)	14 (27.45%)	1 (1.96%)	7 (13.72%)	51 (100%)

Section Three: Work Environment

3.1 Work place

Question	Excellent	Good	Average	Poor	Very poor
Is the lighting in your work place	14	27	10	0	0
Question	To high	Medium	Too low		
Is the temperature in your work place	3 (5.88%)	40 (78.43%)	8 (15.68%)		
Is the noise level in your work place	2 (3.92%)	48 (94.11%)	1 (1.96%)		

Question	Yes	No	Total
Do work rooms or corridors in your enterprise have enough space to allow employees to move with ease	51 (100%)	0 (0.00%)	51 (100%)
Do you feel safe in your work environment	51 (100%)	0 (0.00%)	51 (100%)
Are you confident of your work place's safety procedures	51 (100%)	0 (0.00%)	51 (100%)
Do you feel your work place is comfortable	44 (86.27%)	7* (13.72%)	51 (100%)

*The reasons for answer with No refers to the premises are very cold in winter and warm in the summer.

Question	Sport	Music	Trips/ Journeys	Visits to another enterprise	Others*	There are no activities
What external activities are provided by the management of enterprise to its employees	17	17	20	15	5	16
Question	Walk	Cycle	Own car	Bus	Coach	Train
Please specify how you generally travel to your work place each day	3	4	44	0	0	0

*Others: Christmas party, Social events, gym, various clubs and training party.

Question	2-8 mile	9-15 mile	16- 22mile	23-29mile	30-36 mile	37-42 mile	43-49 mile
How far is your workplace from your home	32	11	4	2	0	0	2

3.2 Supervision

Question	Yes	No	Total
Does your Line Manager or Supervisor provide you with the information necessary for you to adequately achieve your work objectives	51 (100%)	0 (0.00%)	51 (100%)
Does your Line Manager or Supervisor accept welcome employee opinions from you, when you believe them to be valid	50 (98.03%)	1 (1.96%)	51 (100%)
Does your Line Manager or Supervisor hold employee meetings to discuss problems and work issues	51 (100%)	0 (0.00%)	51 (100%)
Does your Line Manager or Supervisor encourage the employees to create the confidence between them	47 (94%)	4 (6%)	51 (100%)
Does your Line Manager or Supervisor provide you with clear instructions to your work	49 (96.07%)	2 (0.392%)	51 (100%)
Is your Line Manager or Supervisor interested with social relationship outside working hours	27 (54%)	24 (46%)	51 (100%)

3.3 Motivation

<i>To what extent do you agree or disagree with the following statements?</i>	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	Total
Only money is enough to motivate employees to achieve a better performance	0 (00.00%)	16 (31.37%)	15 (29.41%)	15 (29.41%)	5 (9.803%)	51 (100%)
Individual recognition for high performance is very important to employees	20 (39.21 %)	22 (43.13%)	5 (9.80%)	2 (3.92%)	2 (3.92%)	51 (100%)
Pension and health insurance are of the most important things to motivate the employees	4 (7.84%)	11 (21.56%)	13 (25.49%)	20 (39.21%)	3 (5.88%)	51 (100%)
Job security causes employees to worry about their future	20 (39.21%)	18 (35.29%)	8 (15.68%)	2 (3.92%)	3 (5.88%)	51 (100%)
Having good facilities such as furniture, transportation and modern equipments motivates employees to increase their performance	3 (5.88%)	20 (39.21%)	12 (23.52%)	10 (19.60%)	6 (11.47%)	51 (100%)

Question	Yes	No	Total
Is the level of your salary acceptable	43 (84.31 %)	8 (15.68%)	51 (100%)
The main reasons to answer with No were: <ul style="list-style-type: none"> Limited due to a small family run business. Family business with little chance of progressing. Lack of career development, training and guidance. 			

3.4 Satisfaction

<i>Are you satisfied with the personal statements below?</i>	Extremely Satisfied	Satisfied	Neither	Slightly dissatisfied	Dissatisfied	Total
With your career	16 (31.37 %)	29 (56.86%)	4 (7.84%)	2 (3.92%)	0 (0.00%)	51 (100%)
With your salary	11 (21.56%)	26 (50.90%)	7 (13.72%)	6 (11.47%)	1 (1.96%)	51 (100%)
Training programme for your current job	12 (23.52%)	15 (29.41%)	20 (39.21%)	3 (5.88%)	1 (1.96%)	51 (100%)
Your relationship with your Line Manager or Supervisor	20 (39.21 %)	24 (47.05%)	4 (7.84%)	1 (1.96%)	1 (1.96%)	51 (100%)
Your relationship with your co-workers	19 (37.25%)	31 (60.78%)	1 (1.96%)	0 (0.00%)	0 (0.00%)	51 (100%)
Reward system applying in your enterprise	15 (29.41%)	13 (25.49%)	11 (21.56%)	10 (19.60%)	2 (3.92%)	51 (100%)

Question	Yes	No	Total
Are you happy about career progression opportunities within your enterprise	42 (82.35%)	9 (17.65%)	51 (100%)

3.5 Training and Development

<i>To what extent do you agree or disagree with the following statements about training and development?</i>	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	Total
The management of the enterprise has a formal plan for training and development	10 (19.60%)	14 (27.45%)	9 (17.64%)	11 (21.56%)	7 (13.72%)	51 (100%)
The management of the enterprise is interested in supporting and providing all the facilities necessary for appropriate training and development of its staff	9 (17.64%)	19 (37.25%)	10 (19.60%)	7 (13.72%)	6 (11.47%)	51 (100%)
Provision of a training and development budget is enough to achieve development and training objectives alone	6 (11.47%)	12 (23.52%)	19 (37.25%)	8 (15.68%)	6 (11.47%)	51 (100%)
Training and development programmes help the employees to understand the technical and procedural changes within the enterprise	9 (17.64%)	27 (52.94%)	7 (13.72%)	0 (0.00%)	8 (15.68%)	51 (100%)
Training improves the behavior and attitudes of employees	6 (11.47%)	24 (47.00%)	11 (21.56%)	7 (13.72%)	3 (5.88%)	51 (100%)
Training increases the motivation and commitment of employees	7 (13.72%)	25 (49.01%)	8 (15.68%)	7 (13.72%)	4 (7.84%)	51 (100%)