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THE APPLICATION OF TOTAL QUALITY MANAGEMENT WITHIN SMALL AND MEDIUM ENTERPRISES.

by

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DECLARATION

I, Ntombekaya Nonxuba, hereby declare that the contents of this dissertation represent my own unaided work, and that the dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

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Signed   Date

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ABSTRACT

Since 1996, the South African clothing and textile industries have been under tremendous pressure to improve the competitiveness of the industry. Various attempts to save the industry have been considered by both industry and Government. The attempts included the introduction of quotas with the aim to limit imports, the formulation of clusters, and improving the value chain between the clothing manufacture textile companies and the clothing retail companies. More specific, focus was leveled at the improvement of the industry's productivity and quality management systems. In spite of these efforts, sectors of the South African clothing and textile industries are closing down.

Although the clothing and textile industries are experiencing a decline in large companies, there has been a steady increase in the number of emerging Small Medium Enterprises (SME's) commonly referred to as CMT's (Cut Make and Trims) within the context of the clothing industry. The research question which was researched within the ambit of this dissertation read as follows: What actions are required for Total Quality Management (TQM) to be successful implemented within South African clothing manufacturing SME's?" The objective of this research was to determine what challenges are facing South African clothing manufacturing SME's, and the reasons for the lack of successful implementation of TQM systems within the South African clothing manufacturing SME's. Furthermore, to determine if there is a relationship between the planning behavior of SME's and lack of TQM implementation and to what extent the accreditation process impact upon TQM implementations within SME's.

The survey conducted within SME's provided positive feedback with respect to quality processes being followed. In spite of this the following challenges were identified: The lack of employee involvement in decision-making, miscommunication between management and employees, and the dissatisfaction of employees.

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CHAPTER 1: SCOPE OF THE REASERCH

1. INTRODUCTION AND MOTIVATION

Since 1996, the clothing and textile industries in South Africa has been declining with companies being liquidated and jobs being lost at an alarming rate. Vlok (2006:228) reported an increase in clothing and textile imports of 335% from 2002 to 2004. Furthermore, the South African Labor Research Institute (SALRI), recorded job losses of more than 55,500 in the clothing, textile and foot wear industries in 2003, 2004 and the first nine months of 2005 through retrenchments, closures and liquidations in unionised workplaces (Vlok, 2006:228).

Although the clothing and textile industries experience a decline in large companies, there has been a steady increase in the number of emerging Small Medium Enterprises (SME) commonly referred to as CMT's (Cut Make and Trims) within the context of clothing industry. These enterprises culminated because of retrenched workers from the clothing and textile industry starting their own businesses. This paradigmatic shift, in the clothing industry, places pressure onto clothing and textile SME to be more competitive.

A Rapid Appraisal of Local Innovation Systems (RALIS) was conducted in the Western Cape clothing and textile sector. The results returned that the industry needed to focus on mini projects to address issues of quality improvement. It was recommended that various aspects should be addressed in the sector, namely SME development, quality, and productivity (GTZ, Tshumisano and Meso Partners, 2002:5).

1.2 BACKGROUND TO THE RESEARCH PROBLEM

The South African clothing and textile sector is currently under pressure to become more competitive. More textile and clothing companies are closed down due to imports from China and other foreign countries. While there is decline in

the number of large clothing manufacturing companies, there is a significant increase in the number of SME's emerging. For the clothing and textile SME's to be competitive, the clothing and textile industries need to develop the industry by improving quality and increasing productivity.

1.3 STATEMENT OF THE RESEARCH PROBLEM

Against the above background, the research problem to be researched within the ambit of this dissertation reads as follows: The lack of successful implementation of Total Quality Management (TQM) in the South African clothing manufacturing SME's is culminating in a degradation of the quality of the industry."

1.4 THE RESEARCH QUESTION

The research question to be researched within the ambit of this dissertation, reads as follows: "What actions are required for TQM to be successfully implemented within South African clothing manufacturing SME's?"

1.5 INVESTIGATIVE (SUB-) QUESTIONS

The investigative questions to be researched in support of the research hypothesis reads as follows:
➢ What are the challenges facing South African clothing manufacturing SME's
➢ Is the lack of successful implementation of TQM within the South African clothing manufacturing SME's due to internal or external factors?
➢ Is there a relationship between the planning behaviour of SME's and lack of TQM implementation in SME's?
➢ To what extent does the accreditation impact upon TQM implementation in SME's?

1.6 PRIMARY RESEARCH OBJECTIVES

The primary research objectives of this dissertation read as follows:

➢ To determine the constraints to TQM implementation within South African clothing manufacturing SME's.

➢ To determine the relationship between the planning behaviour of clothing manufacturing SME's and the lack of TQM implementation in clothing manufacturing SME's.

➢ To determine the relationship between the accreditation process and lack of TQM implementation within clothing manufacturing SME's.

1.7 SIGNIFICANCE OF THE PROPOSED RESEARCH

There has been various attempts to improve the competitiveness of the clothing and textile sector, however most of these attempts have failed. In addition, there has been a change in South African clothing manufacturing industry from large formal organizations to small informal organizations in the form of SME's. These SME's are the future of the South African clothing and textile sector, and there is a need for them to improve their product quality and their competitiveness in the industry. The findings from this research will not only assist the clothing manufacturing SME's to understand their processes, but will also assist accreditation bodies in aligning the accreditation process to best suit SME environmental circumstances.

1.8 THE RESEARCH PROCESS

The research process provides insight into the process of 'how' the research will be conducted from developing the proposal to submitting the dissertation. Remenyi, Williams, Money and Swartz (2002:64-65), explains that the research process as consisting of eight specific phases, which will be applied to this research study. The phases include:

➢ Reviewing the literature.
➢ Formalizing a research question.
➢ Establishing the methodology.
➢ Collecting evidence.
➢ Analyzing the evidence.
➢ Developing conclusions.

- ➢ Understanding the limitations of the research.
- ➢ Producing management guidelines or recommendations.

1.9 RESEARCH DESIGN AND METHODOLOGY

Experimental case study research will be conducted in this dissertation. The research will be examining the impediments to the implementation of a quality management system in a number of clothing manufacturing SME's. Case study research mainly falls in the qualitative research paradigm, but it could also be applied within the quantitative research paradigm. According to Yin (2003:1) case study research, can be applied in the following areas:
- ➢ Policy, political science and public administration research.
- ➢ Community psychology and sociology research.
- ➢ Organizational and management studies.
- ➢ City and regional planning research.
- ➢ Research into social science, the academic disciplines as well as professional fields such as business administration, management sciences, and social work.

Case studies essentially investigate events in its real-life context and it addresses the following: It answers 'How' and 'Why' questions, and explore events and aids the understanding thereof in a particular context. It is seen as an all-inclusive research strategy when contextual conditions are the subject of the research.

Four types of case studies can be identified namely, descriptive, illustrative, experimental, and explanatory case studies. Collis and Hussey (2003:68-70), implies that case studies are used in areas where there is an inadequate amount of knowledge. Yin (2003:20-27), focuses on the important elements of case study research design, namely:
- ➢ Study questions.
- ➢ Study propositions.
- ➢ Unit of analysis.
- ➢ Linking data to propositions.
- ➢ Criteria for interpreting findings.

1.10 DATA COLLECTION DESIGN AND METHODOLOGY

Questionnaires will serve as the data collection methodology, as it falls within the broader definition of 'survey research' or 'descriptive survey'. Remenyi *et al.* (2002:290), defines the concept of 'survey' as: ". . . the collection of a large quantity of evidence usually numeric, or evidence that will be converted to numbers, normally by means of a questionnaire". A questionnaire consists of a list of questions compiled in order to elicit reliable responses from a chosen sample with the aim to determine what the participants do, think or feel. There are two approaches in structuring questions namely, positivistic (structured 'closed' questions), and phenomenological (unstructured 'open-ended questions). The sample frame will consist of SME owners, managers, and line supervisors.

1.11 DATA VALIDITY AND RELIABILITY

According to Collis and Hussey (2003:186), 'validity' is concerned with the extent to which the research findings accurately represents what is happening. More specific, whether the data is a true picture of what is being studied. According to Cooper and Schindler (2006:318-320), three major forms of validity can be identified, namely 'content validity', 'criterion-related validity' and 'construct validity'.

Reliability (also referred to as 'trustworthiness'), is concerned with the findings of the research (Collis & Hussey, 2003:186). The findings can be said to be reliable if you or anyone else repeated the research and obtained the same results. Cooper and Schindler (2006:318-320), define the content validity of a measuring instrument as the extent to which it provides adequate coverage of the investigative (sub-) questions guiding the study. Criterion- related validity according to Cooper and Schindler (2006:318-320), reflects the success of the measures used for prediction or estimation. Constructive validity according to (Collis & Hussey, 2003:59), refers to the problem that there are number of phenomena, which are not directly observable. In this respect, Collis and Hussey (2003:59), cite satisfaction, motivation, ambition and anxiety as examples.

1.12 ETHICS

In the context of research, according to Saunders, Lewis and Thornhill, (2001:130), "… ethics refers to the appropriateness of your behaviour in relation to the rights of those who become the subject of your work, or are affected by it". The following ethics will be observed in the research study:

➢ **Informed consent:** Participants should be given the choice to participate or not to participate, and furthermore be informed in advance about the nature of the study.

➢ **Right to privacy:** The nature and quality of participants' performance must be kept strictly confidential.

➢ **Honesty with professional colleagues:** Findings must be reported in a complete and honest fashion, without misrepresenting what has been done or intentionally misleading others as to the nature of it. Data may not be fabricated to support a particular conclusion.

➢ **Confidentiality/Anonymity:** It is good research practice to offer confidentiality or anonymity, as this will lead to participants giving more open and honest responses (Saunders, Lewis, & Thornhill, 2001:130).

1.13   RESEARCH ASSUMPTIONS

The following assumption applies to the research:

➢ The decline of South African clothing and textile sector is due to increased imports from China.

➢ Although there is a decline in large clothing manufacturing companies, there is significant number of emerging clothing manufacturing SME's.

1.14   RESEARCH CONSTRAINTS

The following constraints apply to the research:

➢ The research will only include Western Cape clothing manufacturing SME's.

➢ The research will furthermore only include clothing manufacturing SME's, who are employing between twenty and one hundred employees.

➢ Availability of SME owners or managers when required for interviews.

1.15 CHAPTER AND CONTENT ANALYSIS

Chapter 2 - Holistic perspective of the research environment: In this chapter, the South African clothing and textile industries background will be elaborated upon, with specific reference to the formation of SME's in the clothing industry.

Chapter 3 – Total Quality management (A literature review): In this chapter, an in depth literature review will be conducted on the concept of TQM.

Chapter 4 - Data collection design and methodology: In this chapter, the survey environment will be elaborated upon and the de-limitations of the survey listed. The approach to data collection will be explained and the target population defined. The measurement scales to be used in the survey and the survey design will be explained in detail. The chapter will be concluded with a list of questions to be posed to the target population.

Chapter 5 - Data analysis and interpretation of results: In this chapter, data gleaned from the survey conducted within the ambit of chapter 4, will be analyzed in detail and interpreted in terms of the primary theme of the dissertation. In addition, the results from the survey will be mapped to the literature review conducted within the ambit of chapter 3.

Chapter 6 – Conclusion: In this chapter, the research will be concluded. The research problem, research question and investigative questions and survey findings are revisited and final conclusions drawn. In addition, a holistic reflective overview will be provided of the research.

CHAPTER 2: HOLISTIC APPROACH OF THE SOUTH AFRICAN CLOTHING AND TEXTILE SECTOR

2.1 INTRODUCTION AND BACKGROUND

The South African clothing and textile industry is an established industry that covers the entire value chain from fibre production to non-woven's, spinning, weaving, knitting, finishing, and apparel manufacturing. Textiles form the basis of towels, bed linen, hosiery socks, and almost all clothing. The clothing and textile industry come second to the mining industry in employment opportunity.

The clothing and textile industries in South Africa are significant sources of employment for women. This industry is concentrated mainly in the Western Cape, Kwazulu Natal, Free State, and Gauteng. The clothing textile industries went through two phases, the first phase being when it was highly protected, and the second phase, when it had to compete with international trade. There has been a steady decline of the textiles and clothing sector since South Africa joined the World Trade Organization (WTO) in 1994, and opened its market to international trade.

The reported reason for the above decline in employment was due to firstly imports of yarn, which had increased over the years. Historically South Africa has been importing from a number of countries, of which Taiwan, South Korea, and Europe are the primary sources. However, since 2001, the bulk of all made up textile products (blanket, bed sheet, linen, towels, and curtains) originate from China.

2.2 CHALLENGES FACING SOUTH AFRICAN CLOTHING AND TEXTILE SECTOR

2.2.1 Imports

Since South Africa opened its trade to international markets the clothing imports from China grew by 89% from 2001-2006 (Textile Federation, 2007: Online). The geographical position of South Africa makes it difficult to compete with China and India. The countries close to the European Union and America are likely not to be affected by the competition from China. The subsidies for Chinese clothing and textile industries make the competition even harder for the South African clothing and textile industries to compete with (Vlok, 2006:233).In this respect see Figure 2.1 which represents clothing and textile imports.

Figure 4: **SA Total Imports of Textile and Clothing, 1995-2004**

US $ (million)

Source: www.tips.org.za
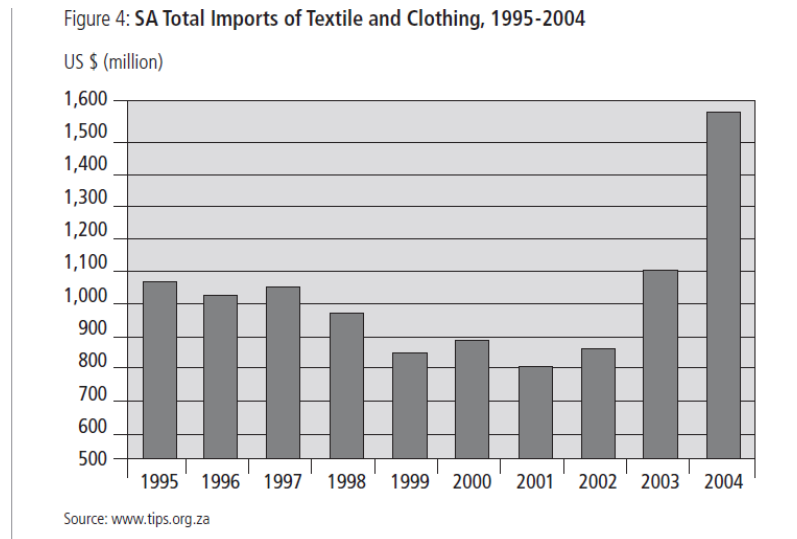
Figure: 2.1 China imports of clothing and textiles (**Source**: Vlok, 2006:233)

2.2.2 Economy

The merging of the market economy has impacted adversely on the South African economy making the Government reform and restructuring process difficult (Vlok, 2006: 233). The impact was first mooted by the financial crisis in Asia as Japan and Taiwan are two of the largest trade and investment partners. This directly impacted on the South African Rand which lost its value by 25%

against the US dollar since 1998 (Vlok, 2006:233). According to Edwards and Morris, (2006:11), strengthening of the Rand did not help the industry either, during the last few years. Clothing apparel performed more impressively in 2002 with a percentage level of 227% higher than in 1995. However, 2003 and 2004 also saw export levels decline significantly. Contracting by Clothing manufacturing companies owned by the Chinese had to relocate back to China. Part of its relocation back to China was due to strengthening of Rand, which had a negative impact on exports, also because of the low priced imports from China of finished goods, which were imported at a price below the yarn and fabric prices (Vlok, 2006:234). Figure 2.2, depicts export figures in Rand for the period between 1995-2004.
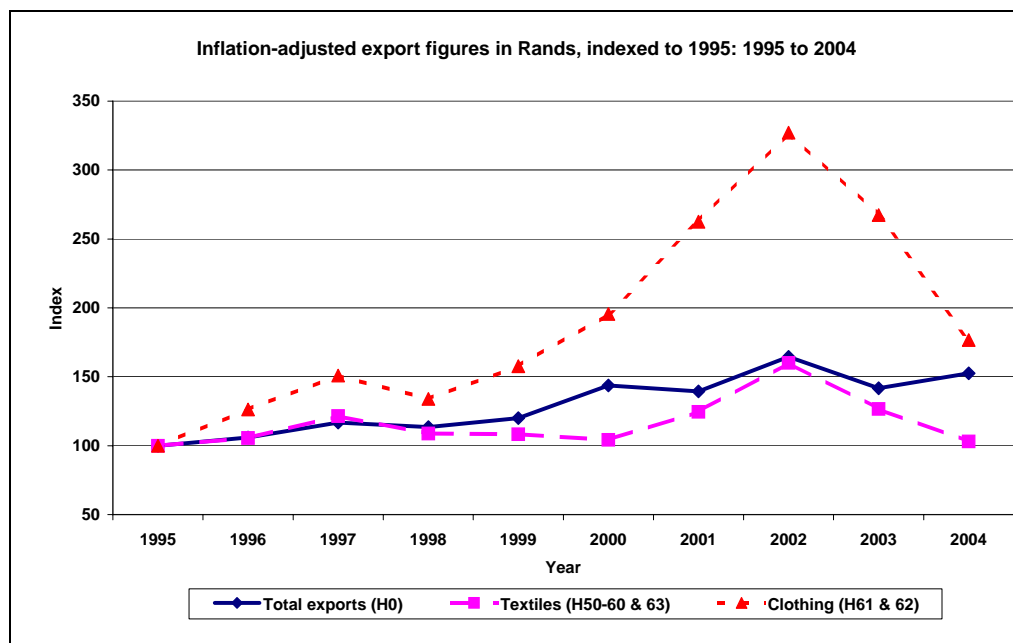
Figure 2.2: Clothing and Textile Exports 1995 - 2004 (**Sources:** Edwards & Morris, 2006:11)

2.2.3 Absenteeism and Labour Turnover

Another problem reported by Edward and Morris (2006:11), is absenteeism above 20%, which have a negative impact to the industry. Due to retrenchment and companies closing down there has been uncertainty in the clothing and textile industries. According to Edward and Morris (2006:11), the clothing and textile employees for the past years have been moving out of the industry to seek employment in other industries. This high labour turnover affected the

competitiveness of the industry, due to highly skilled and most experienced labour force moving out of the industry. Labour turnover for Kwazulu Natal and Western Cape clothing and textile industries is tabulated below in Table 2.1, which represents labour turnover in clothing and textile.

Table 2.1 Labour turnover

	KwaZulu-Natal	Western Cape	Totals
Re-Engagements	3,228	8,463	**11,691**
New Entrants	3,672	2,976	**6,648**
Total Engagements	6,900	11,439	**18,339**
Terminations	9,874	15,156	**25,030**
Movements (+/-)	(-) 2,974	(-) 3,717	**(-) 6,691**
Average Employment Strength for 2005	36,326	31,724	**68,050[1]**
% Terminations vs Employment Strength	27.18%	47.77%	**36.78%**

(**Source**: Edward & Morris, 2006:11)

2.2.4 Productivity and remuneration

According to Kaplan (2004:626), prior to 1990, manufacturing employment exhibited a slow but persistent increase, with cyclical fluctuations. Since 1995, manufacturing employment has been in a downward trend, with rapid growth in 2002, while manufacturing employment rose marginally, a slow rise in Manufacturing Value Added (MVA) and a significant decline in employment resulted in a steady rise of labour productivity, which in turn resulted in a steady increase in labour remuneration (Kaplan, 2004:26). Figure 2.3, illustrate manufacturing remuneration, 1990-2002.
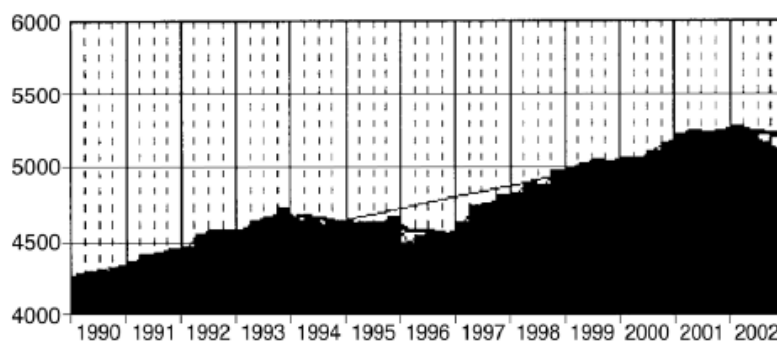
Figure 2.3: Manufacturing Remuneration, 1990-2002 (**Source:** Kaplan, 2004:626).

2.3 MITIGATION OF CHALLENGES

The clothing and textile industries have introduced major adjustments to improve its competitiveness. According to the South African Department of Trade and Industry (DTI) (2005:5) Annual Report, lower interest rate, coupled with lower inflation, has fuelled domestic demand; however the strengthening of the Rand had an adverse effect on the export sector, while imports started to compete fiercely with exporting manufactures. Furthermore, the gap between the retail sales and manufacturing performance is a concern as the demand is met by imports (DTI, 2005:5). Figure 2.4, represents manufacturing production volumes.
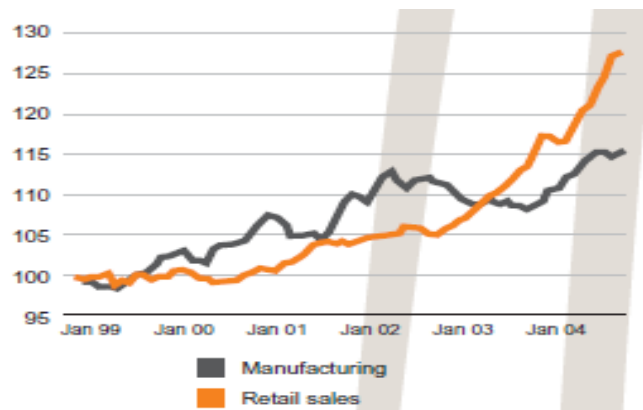
Figure 2.4: Manufacturing production volume (**Source:** DTI, 2004-2005:8)

The DTI had to introduce supply side measures designed to facilitate worker re-training and technology innovation. According to the Textile Federation (2007: Online), the following programs were introduced in the clothing and textile industries to address the clothing and textile challenges:

➢ Tariff structures.
➢ Customized Sector Program (CSP).
➢ Clothing and Textile Interim Development Program (CTIDP).
➢ Trade Agreement.
➢ Quotas. (Textile Federation, 2007: Online)

2.3.1 Tariff Structure

As early as 1992 the South African Government had to institute a Tariff Phase-Down program that would drastically reduce tariffs for textile and apparel over a twelve-year period, with the aim to give the non-competitive domestic producers a grace period to increase efficiency (Textile Federation, 2007:Online).

2.3.2 Customized Sector program

According to the Textile Federation (2007: Online), the Customized Sector Program (CSP) was finalised in August 2006, the clothing retail industry withdrew its support and consequently the program was not introduced. The CSP intended to develop and modernise the clothing and textile industries (Textile Federation, 2007: Online). Moreover, to place them on a more advantage position and to compete by embracing the following:

➢ Domestic market development.
➢ Promoting exports.
➢ Competitiveness by upgrading technology and investment.
➢ Upgrading skills.
➢ Empowerment and pursuing partnership approach.

2.3.3 Clothing and Textile Interim Development Program

According to the Textile Federation (2007:Online), the Clothing and Textile Interim Development Program (CTIDP) was an export promotion scheme for the clothing and textile industry, which was a duty credit certificate scheme, that expired at the end of March 2007, with no replacement of the scheme being offered, culminating in having a negative impact on exporters.

2.3.4 South African Trade Agreement

According to South African .Infor (2009: Online), South Africa participated in a number of preferential trade relationships, both regionally and bilaterally. The following trade agreements are currently in effect:

- African Growth and Opportunities Act (AGOA).
- South Africa / Europe Union (EU) Trade Development and Cooperation Agreement (TDCA)
- South African Development Community (SADC) free trade agreement.

2.3.4.1 African Growth and Opportunities (AGOA)

AGOA is the preferential trade agreement between South Africa and the United States. In this agreement countries unilaterally provide access to their markets through lower tariffs and increased / remove quotas. These arrangements are not negotiated and can be unilaterally amended by the providing countries, and are therefore not strictly agreements (South African .Infor, 2009).

2.3.4.2 Trade, Development and Co-operation Agreement (TDCA)

TDCA governs the trade relations and development co-operation between European Union and South Africa. The TDCA agreement was signed in 1999; the main objective being to create a free trade area between South Africa and the European Union over a 12 years period (South African .Infor, 2009).

2.3.4.3 SADC Free Trade Agreement

South Africa become a member of SADC in 1994 with 13 other African countries. The SADEC agreement consist of general objectives rather than specific obligations, the key policy is to strengthen trade and investment linkages between South Africa and other SADC countries (South African .Infor, 2009).

2.3.5   Quota

In late 2006, South Africa unilaterally imposed quotas on the importation of selected clothing lines from China (Edwards & Morris, 2006: Online). This was delayed until January 2007, the motivation being that the quota implementation culminated in job losses in the industry. The aim of the quotas was to give South

African clothing, and textile firm's latitude hoping that in the process they will improve competitiveness in domestic and export market in the end. In this respect, see Figure 2.5, which represents quota line imports.
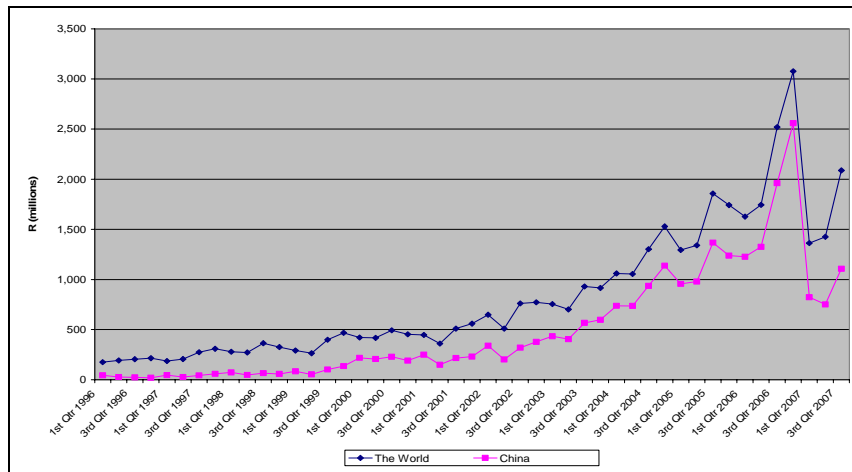
Figure 2.5: Quota line imports (**Source**: Fundira, 2007: Online)

2.4 PRINCIPAL COMPETITIVENESS CHALLENGES

According to Vlok (2006:238), the previous protection of the industry prior democracy did not do justice to the industry, as it seemed not to be coping after 1996 with more textiles and clothing companies closing down, the situation before allowed the industry to neglect production plant and equipment upgrading and the local manufacturers being unfamiliar with the international trading scenes (Vlok, 2006:238). Figure 2.6; illustrate employment trends in clothing and textile between 1993-2005.
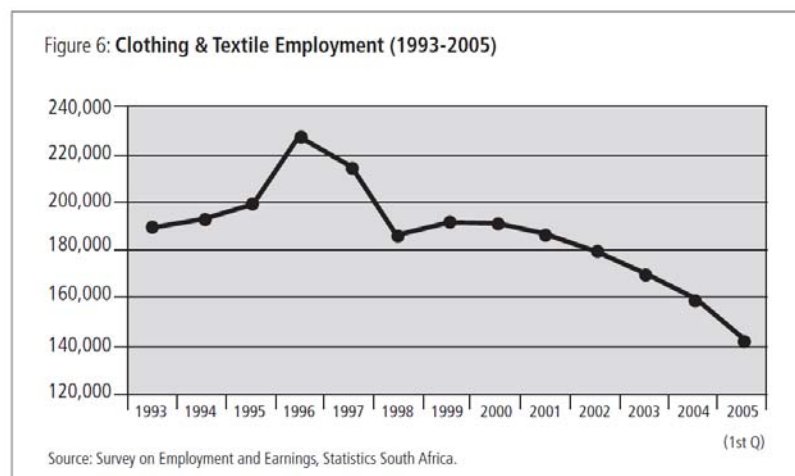
Figure 2.6: Clothing and textile employment levels (**Source**: Vlok, 2006:238)

Following the South African transition to democracy in 1994, the trading scope of the industry began to liberate, this lead to extensive investment in the textile pipeline through modernizing and expansion (Vlok, 2006:241). It is ten years down the line from the transition stage and the industry it's still unable to cope with the environment of more liberation and strong currency, this is due to number of factors, and both strategic and structural, in addition the following services remain the major concern for the textiles and clothing industry:

➢ Training and development.
➢ Technology upgrade.
➢ Small business development and support.

2.4.1   Training and development

Training and development became the focus point for the clothing and textile industries, because they realized that it required skilled and high-leveled educated staff for modern manufacturing. Although these needs were identified in the industry, it is still reported that the investment in the clothing and textile sector has not significantly expanded the pool of highly skilled workers and technicians (Vlok, 2006:241). Controversially, the Sector Education and Training Authorities (SETA) a South African Government initiative to address training and development needs reported to have made a progress in skills development (Vlok, 2006:241).

The SETA program works hand in hand with the industry and academic institutions to address the skills shortages utilizing the linkages between the SETA, industry stakeholders, and academic institutions. The aim is to initiate the following programs:

➢ Learner ships, and
➢ Bursaries for management and supervisors.

According to Vlok (2006:241), the current training efforts are not bringing large numbers of workers into learner ships and the industry itself is not able to finance a major skills upgrade, nor has it a management capability. The reason being that the clothing and textile industry is regarded as a 'sunset industry' due to inability

to attract young graduates. The industries themselves are not willing to either take new graduates who happen to be interested in the industry, neither are there any trainee vacancies to draw new graduates to the industries. Everyone in the industry is looking for experienced staff that does not exist. What exacerbates matters is the lack of investment in skills development by the industry itself (Vlok, 2006:241).

2.4.2 Technology upgrade

Investment in equipment has been non-existent in the industries. The state of the equipment for both the clothing and textiles industries results in inefficiency of output processes. The South African Government through the Department of Trade and Industry (DTI) introduced various initiatives to assist the industries in upgrading their equipment, by means of 100% grants and subsidies for investing in equipment (Textile Federation, 2006:Online). In spite of the expansive initiatives, the industries still find it difficult to invest in the latest equipment or in plant upgrading (Textile Federation, 2006: Online).

2.4.3 Development of Small Medium Enterprise (SME)

Although the clothing and textile industries experienced a decline in large companies, there has been a steady increase in the number of emerging SME's commonly referred to as CMT's (Cut Make and Trim) within the context of clothing industry (Edward & Morris 2006:11). This change in the clothing industry has resulted in more pressure being put onto SME's to be more competitive and more attempts have been made from the industry and government assisting with various funds to improve the competitiveness of the SME sector.

In 2002, the Technology Station in Clothing and Textiles (TSCT) in conjunction with Cape Town clothing and textile sector conducted a Rapid Appraisal of Local Innovation System (RALIS) program (GTZ. Tshumisano and Meso Partner, 2002:5). The aim of the program was to identify opportunities to improve the competitiveness of the sector primarily by means of innovation. The RALIS methodology promoted a focus on a limited number of practical solutions, which

consist of mini projects. Some of the priority initiatives were to identify a potential niche markets, benchmarking of the sector across the value chain, and the implementation of quality and productivity management systems. The RALIS program gave the industry an opportunity to critically identify the gaps within the industry, and to implement an action plan to address the gaps.

2.4.4   Concluding remarks

The challenges facing the South African clothing and textile industries were elaborated upon in this chapter. Of importance is the approach of the South African Government to save the manufacturing industry, through the introduction of various initiatives. In particular, the creation of trading opportunities through trading agreements within the SADC region, and EU serves as an example. The initiatives taken by the clothing and textile sector to save the industry however is not that evident, as the reason for the decline in the clothing and textile manufacturing companies cannot only be blamed on imports, but also points to inefficiencies, lack of technology investment, ability to attract graduates, productivity and quality management expertise.

CHAPTER 3: TOTAL QUALITY MANAGEMENT

3.1 DEFINITIONS OF QUALITY

According to Lozano (1997:148), the definitions of quality depend on the role of the people defining it. As a result, according to Lozano (1997:148), there is no single universal definition of quality, and the more common definitions of quality are elaborated below:

- ➢ **Conformance to specifications:** Measures how well the product or service meets the target and tolerance determined by its designer (Crosby,1979)
- ➢ **Fitness for use:** Focuses on how well the product performs its intended function or use (Juran, 1951).
- ➢ **Value for price paid:** Is a definition of quality that consumers often use for products or service usefulness (Garvin,1984)
- ➢ **Support service provided:** Often refers to the quality of a product or service is judged. Quality does not apply only to the product or service itself, it also applies to the people, processes, and organisations environment associated with it (Ishikawa, 1985).
- ➢ **A psychological criterion:** Is a subject definition that focuses on the judgmental evaluation of what constitutes product or service quality (Garvin, 1984). (Lozano, 1997:148)

3.1.1 Quality management principles

Quality Management principles as defined by Goetsch and Davis (2002:5-7), are listed in Table 3.1.

Table 3.1: Quality management principles

Principles	Description
➢ **Customer focus**	Understanding their needs, striving to exceed their expectations.
➢ **Leadership**	Establishing direction, unity of purpose, and a supporting work environment.

➢ **Involvement of people**	Ensuring that all employees at all levels are able to fully use their abilities for the organization's benefit
➢ **Process approach**	Recognizing that all work is done through processes, and managed accordingly.
➢ **System approach**	Expands on the previous principle in that achieving any objective requires a system of interrelated processes
➢ **Continual improvement**	As a permanent organizational objective, recognizing and acting on the fact that no process is so good that further improvement is impossible.
➢ **Factual approach**	Acknowledging that sound decisions must be based on factual data and information.
➢ **Mutually beneficial supplier relationships**	Synergy can be found in such relationships

(**Source:** Goetsch & Davis, 2002:5-7)

The above principles are drawn from Total Quality Management (TQM), and have been included in the revised standard (International Organization for Standardization (ISO 9000:2000). In addition, ISO considers the following as major changes in the revised standard:

➢ Increased focus on top management commitment.

➢ Customer satisfaction.

➢ Emphasis on processes.

➢ Continual improvement (ISO 9000L: 2000).

T**he ISO 9001:2000 TQM principles**

As a results of the implementation of ISO 9000:2000, customers worldwide can expect that the goods or services provided by organizations that are registered, will conform to a recognized set of standards (Goetsch & Davis 2002:7). According to Lozano (1997:148), the fundamental differences between ISO 9000 standards and TQM is that the latter, as a philosophy of management has a broader spectrum. The basic differences between ISO 9000 standards and TQM which were adapted from Rahman (2001: Online), are tabulated below in Table 3.2

Table 3.2: Differences between TQM and ISO 9000:2000

ISO:9000	TQM
ISO: 9000 standards are directed	TQM searches for excellence
Centered on completing contractual commitments with the customer	Basic priority is to achieve customer satisfaction and efficiency
Concentrate on management of quality in suppliers and in all manufacturing processes, including the design and the specification that the product or service should have, and rigorous application of procedures and the adequate composition and motivation of personnel.	Management commitment and the co-operation of all the people form part of the organisation.
ISO 9000 limits itself to the productive or service process and serve a basis for continuous improvement, understood as being the continuous reduction of non- conformities.	Acts on the process of the business, procuring continuous improvement and incorporating the best practice of the leading sector or companies outside the sector

(**Adapted** from: Rahman, 2001: Online)

3.2 THE ORIGINS OF TOTAL QUALITY MANAGEMENT

According to Mote (2009:Online), although TQM techniques were adopted prior to World War II by a number of organisations, the creation of the total quality management philosophy is generally attributed to Dr. W. Edwards Deming (1900-1993). In the late 1920s, while working as a summer employee at Western Electric Company in Chicago, Deming found worker motivation systems to be degrading and economically unproductive; incentives were tied directly to quantity of output, and inefficient postproduction inspection systems were used to find flawed goods.

Deming teamed up in the 1930s with Walter A. Shewhart (1891-1967), a Bell Telephone Company statistician whose work convinced Deming that statistical control techniques could be used to support traditional management methods.

Using Shewhart's theories, Deming devised a statistically controlled management process that provided managers with a means of determining when to intervene in an industrial process and when to leave it alone. Deming was availed the opportunity to put Shewhart's statistical quality-control techniques, as well as his own management philosophies to the test during World War II. Government managers found that Deming's techniques could easily be taught to engineers and workers, and then quickly implemented it in overburdened war production plants (Mote, 2009:Online).

According to Kujalo (2002:33), the origin of total quality management can be traced back to 1949, when the union of Japanese Scientists and Engineers (JUSE) formed a committee of scholars, engineers, and government officials devoted to improve Japanese productivity and quality of life. TQM is general considered Japanese industry practices, which are heavily influenced, by Deming (1986) and Juran (1993) (Kujalo 2002:33). Three-quality theorist whose work influenced the quality planning processes initiated by U.S. business was: W. Edwards Deming (1986), Joseph M. Juran (1993), and Phillip B. Crosby (1979) (Lankard, 1992:125).

According to Goh and Ridgway (1994:54), and Krasachol,Willey and Tannock, (1998:40-44), the concept of TQM is based from the work of the quality guru's, Deming (1986), Crosby (1979), Feigenbaum (1991), and Ishikawa (1985). Their particular areas of focus are summarised below:
 Management leadership and employee participation in the new philosophy (Deming, 1986). Make quality the concern of everyone in the company (Crosby, 1979 & Feigenbaum, 1991).
 Emphasis on meeting the requirement of both the internal (Crosby 1979, Feigenbaum, 1991), and the external customer (Ishikawa, 1998).
 Eliminate non-conformance, appraise conformance to standards, have zero defects standards of performance (Crosby, 1979). Reduce cost of appraisal, prevention, and failure (Feigenbaum, 1991).
 Use statistical and quantitative control methods. Implement problem solving using quality control circles, Shewart /PDCA cycle and quality assurance (Ishikawa, 1985, and Deming, 1986).

➢ Search continually to improve processes and products (Deming, 1986). Develop new products and processes; quality is a continuous programme (Crosby, 1979 & Feigenbaum, 1991 cited by Goh & Ridgway, 1994:54 and Krasachol *et al.,* 1998:40-44).

According to Spanbauer and Hillman (1987) cited by Lankard (1992:125), Deming (1986), Juran (1993) and Crosby (1979) have a common theme namely, participatory management that involves input, problem solving and decision making by all members of an organisation and its customers. The three themes of each of the authors are discussed below (Lankard, 1992:125).

Deming (1986): Promotes the role of management as one of facilitating workers to do their best by removing the barriers that prevent high quality work and by involving workers in decision making. This theory emphasizes process improvement as crucial to product improvement (Lankard, 1992:125).

Juran (1993): Suggest that management problems are related to human element errors. The theory promotes management training in quality concepts and the use of quality circles to improve employee communication across levels. Juran's theory furthermore focuses on understanding customer needs (Lankard, 1992:125).

Crosby (1979): Promotes a prevention process whereas requirements for quality conformance are jointly written by managers and workers and address the needs of the customers, Crosby's theory focuses on zero defect standards in which the cost of non-conformance to the standards are eliminated (Lankard, 1992:125).

Lankard (1992:125), emphasizes that although these theories focuses on specific themes, they are reflected in a general way in Crosby's model, which present four pillars that support the quality process in any organisation. According to Goh and Ridgway (1994:54), there are five components, or pillars of TQM, all of which are paramount for the complete establishment of TQM in a company, namely:
➢ Management commitment,
➢ customer focus,

> quality costs,

> quality systems, and

> Continuous improvement (increase growth and profitability) (Ridgway, 1994:54).

Each of the TQM pillars is elaborated upon below:

Management commitment: Management commitment is essential for a company to implement TQM successfully as resources and management leadership is required.

Customer focus: Requires the following elements:

> Customer survey and trials.

> Working closely with key customers.

> Competitor analysis.

> Analysis of customer complaints and compliments.

> Trade survey and trials.

Quality costs: Cost is incurred ensuring that products and services meet the customer requirements.

Quality systems: Any company can develop its own quality system to ensure that its principles, processes, and procedures are appropriate and adequate for its business operation.

Continuous improvement: This is continual search for excellence and customer satisfaction (increase growth and profitability) (Goh and Ridgway, 1994:56).

3.3 THE CONCEPT OF TOTAL QUALITY MANAGEMENT

According Lozano (1997:148), the concept TQM represents the timeline of the old and new concepts of quality. The concept of quality has existed for many years though its meaning has changed over years. In the early twenties, quality management meant inspecting a product to ensure that it met with the specification. In 1940's, it become more statistically based, while in the 1960's, quality took a broader meaning and the concept began to be viewed as something that encompasses the entire organisation. Since the 1970's, quality was used as a competition base, with companies focusing more on improving quality in order to be more competitive (Lozano, 1997:148).

TQM is one of the most important management innovations of the 20th century, and it has more influence on contemporary management practices than any other management movement (Kujalo, 2002:8). According to Lankard (1992:125), TQM is a concept introduced by business and industry to establish standards and techniques that ensures the quality of products leaving and reaching firms through continuous action rather than through one final inspection.

TQM is a philosophy in its own right embracing many areas. With, high emphasis on training, continuous improvement, loyalty and commitment, teams and quality circles, statistical process control and Just In Time (JIT) production. Parkin (1996: 6), views the TQM approach as a "…continuous improvement that comes about by involving everyone in a company, from the boardroom to the mailroom, in a daily search for incremental improvements".

Mersha (1997:164-183), views TQM, "as an approach to doing business that attempts to maximize the competitiveness of an organization through the continual improvement of the quality of its products, services, people, processes, and environments". Furthermore according to Mersha (1997:164-183), TQM provides, customers with defect free products and service. Although, the ultimate goal is to satisfy external customers, TQM recognizes that it will be difficult to satisfy external customers without meeting the requirements of internal customers as well. Therefore, it seeks to meet or exceed the expectations of both internal and external customers (Mersha, 1997:164-183).

According to Martin and Saygili (2001: Online), quality is the key factor in improving a company's competitiveness in local and international markets, and for long-term survival. TQM is a state of mind and a philosophy, rather than specific set of procedure or methodology. Moreover, TQM ensures that organisational performance is maximized with the sharing of knowledge within a culture of continual learning, innovation, and improvement (Martin & Saygili, 2001: Online).

TQM refers to the method used to enhance quality and productivity in an organisation (Gunasekaran, 1999 cited by Hughes 2006: Online). TQM is a comprehensive systems approach that works horizontally across an organisation

involving all departments and employees including suppliers and customers (Kurtus, 2007: Online). Unlike ISO9000:2000, TQM is not defined by international standards and there is no single correct way to implement TQM processes. It can be an approach to business, or even a philosophy or a state of mind, shared by management and staff (Tannock, Krasachol & Ruangpermpool, 2002: Online).

According Williams (1997: Online), TQM can be defined as a holistic management philosophy that seeks continuously to maximize customer satisfaction and continually to identify and eliminate non-value adding activities from the organisation. TQM is a management philosophy for continuously improving quality of goods and service delivered through participation of all organisational members; it is a process of making quality a concern of everyone in the organisation (Zelealem & Getachew, 2002:3). The TQM philosophy emphasises lower costs by reducing waste, helping suppliers provide quality products, and satisfying the customer with quality goods and services. Furthermore, TQM foster organisational performance characterised by competitiveness and long-term profitability (Hansson, 2002:12).

Currently TQM is an accepted practice within enterprises regardless of size and financial status (Hodgetts, 1996: Online cited by Hansson, 2002:12). TQM is considered by many organisations to be a management paradigm capable of facilitating the attainment of continuous process improvement and external focus (Gobadian & Gallear, 1997: Online).

According to Psychogios and Priporas (2007: Online), TQM is in contrast to other quality management initiatives, It involves everyone in an organisation and the overall participation to quality strategy brings an increase flow of information and knowledge. Furthermore, it contributes in the distribution of intelligence to the bottom of the organisation for resolving problems (Powell, 1997 cited by Psychogios & Priporas 2007: Online). TQM is an essential way of organising, and involving the whole organisation. (Oakland, 1998 cited by Psychogios & Priporas, 2007: Online). In addition, the best way to improve organisation output is by

continually improve performance (Dale, 1996, Goetsch & Davis, 1994, Ho & Fung, 1994 cited by Psychogios & Priporas, 2007: Online).

According to Psychogios and Priporas (2007: Online) citing Dale (1996), the emphasis on seeking improvement opportunities, in addition focusing on planning, prevention, and participation requires the development of generations of managers who are dedicated to continuously improve the internal and the external customer needs.

According to Foster (2001:28), PDCA (Plan-Do-Check-Act) describes the activities a company needs to perform in order to incorporate continuous improvement in its operations. The concept represents a cycle that consists of a four-stage checklist that coordinates organisations continuous improvement efforts. The PDCA Cycle is commonly referred to as the Shewhart cycle or Deming Wheel. The nature of this cycle indicate that continuous improvement is never ending process (Refer Figure 3.1)
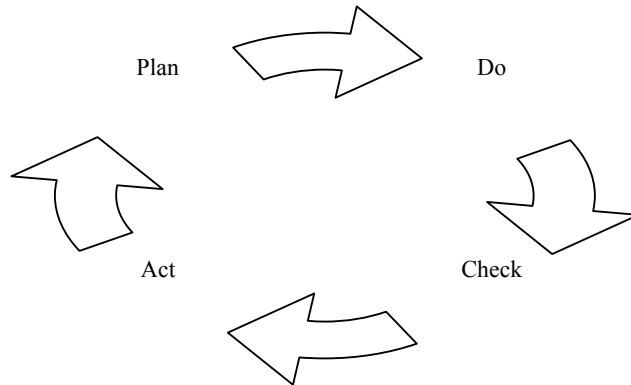
Figure 3.1: The PDCA CYCLE (**Source**: Adapted from Foster, 2001:28)

According to Foster (2001:28), the four stages of the PDCA Cycle describe the activities an organisation needs to perform in order to incorporate continual improvements in its business processes. The specific steps in the PDCA cycle are elaborated upon:

➢ **Plan:** Organisations need to determine where the problem areas are.
➢ **Do:** Testing on a small scale in order to check whether the changes are solving the problems.

➢ **Check:** Check whether the results from the above testing are delivering the desired improved outcome.

➢ **Act:** Once the organisation is satisfied with the outcome of the testing, then it should be implement it on a large scale.

3.4 TOTAL QUALITY MANAGEMENT PRINCIPLES

The principles of TQM and quality function deployment can assist in developing objectives and measures. Furthermore, resources and strategic planning areas which require focus can also be identified (Vasudeva, 2009: Online).

According to Goh and Ridgeway (1994:54), TQM hold that the customer is the most important factor in any organisation. TQM is not merely about implementing dynamic management systems; it is also about embedding a culture of continuous improvement and customer focus within an organisation. In addition Williams (1997: Online), provide the following basic principles of TQM, namely:

➢ Performance measurement.

➢ customer orientation,

➢ continuous improvement,

➢ employee involvement,

➢ purchasing and supplier management

The above principles are expanded upon below:

➢ **Performance measurement:** Whether at the organisational, departmental, or individual level, are the values that enable management to effectively plan, monitor, and control and make decisions within an organisation. According to Williams (1997: Online), the performance measures in a TQM environment should be linked to the achievement of organisational and TQM objectives. These measures also need the ability to support a proactive management style.

➢ **Customer orientation:** Focus on the customer is a critical element of TQM. An organisation must continually and actively conduct market research and measure customer satisfaction. In addition, this information must be utilised in the design of the organisation's products and services.

➢ **Continuous improvement:** The aim of continuous improvement is continuously to identify and eliminate those activities that add little or no value to the product or service provided, i.e. waste. Several categories of waste have been identified. In addition to these classifications, the waste of human potential is also considered. Continuous quality improvement (CQI) has emerged as a dominant theme for survival and growth in today's fiercely competitive business environment (Prybutok & Ramasesh, 2004: Online).

➢ **Employee involvement:** To progress towards TQM, it is essential that the abilities and experience of all employees are utilized. Most work and customer contact takes place at the lower end of the organisation. As a result, these employees are the most likely source of improvements within the organisation. TQM also requires that there are clearly defined methods of gaining employee involvement and that the way in which the performance of employees is measured, is in terms of meeting the objectives of TQM and the organisation.

➢ **Purchasing and supplier management:** The output of any process is dependent on the nature of its inputs. When an organisation is viewed as a single process, the impact of supplied products and services becomes apparent. As a result, a TQM environment requires that purchasing decisions are made with quality (i.e. fitness for purpose) as the main determinant. Supplier relations should progress in the direction of supplier partnerships that embrace the following principles:

➢ Both parties are to benefit from the relationship.
➢ Both parties should seek to improve quality.
➢ The number of suppliers used should be minimized.
➢ There should be an intention to form long-term relations.

The aim is to integrate suppliers into the organisation's TQM process. The measurement of supplier performance should also be linked to the achievement of TQM and organisational objectives (Williams, 1997: Online). According to Mc Adam (2000: Online) citing Ghobadian and Gallear (1996) and Wiele and Brown (1998), TQM principles are sufficiently generic that they can be applied in both large and small organisations. Mc Adam (2000: Online), discusses a five point

base framework which is elaborated upon below and encompasses the principles of TQM that could be used within a quality related model in the implementation of TQM in Small, Medium Enterprises (SME's):

TQM is a strategically linked to the business goals.
➢ Strategy must be linked to resources and infrastructure.
➢ There is a need for a systematic measurable process to implement strategies.
➢ The link between strategy and business improvement must be clear.
➢ A mechanistic inflexible approach must be avoided.
➢ Approaches must cope with rapidly changing environments and be adaptable..
➢ The focus must be wider than simply financial.
➢ There must be adequate short-term benefits in addition to long-term potential.
➢ All improvement initiatives must be synthesized, because of scares resources.

Customer understanding and satisfaction are vital.
➢ A wider range of products and services could be developed.
➢ The customer focus is not subsumed within the financial focus.
➢ There is no substitute for a close customer relationship.
➢ Nothing can replace talking to the customers.
➢ The mechanisation approach must not replace the flexibility within personal relationships with customers.
➢ Improved target setting for markets and customers.

Employee participation and understanding at all levels are required.
➢ There is an increase focus on training and development.
➢ There is an increased emphasis on helping employees learn, innovate, and improve.
➢ Employees are recognized as source of innovation.
➢ Appropriate measures are developed for learning and growth.
➢ Reward and recognition for employee's efforts.
➢ The danger of unhealthy focus on employee akin to taylorism.
➢ The need for careful communication to employees.
➢ Balancing the flexible demands of the job with the relatively inflexible

The need for management commitment and consistency of purpose.
➢ The strong central focus SME management and implementation.
➢ Management commitment is vital.

➢ Learn to create future value as well as short-term gain.

➢ It is difficult to convince SME managers about long-term goals in a fast changing environment.

➢ Managers must avoid using the balance scorecard as a tool against employees.

➢ The balance scorecard can have an overly dominant effect on an SME.

➢ Long implementation time is a test of management resolve.

➢ Managers must communicate regularly and effectively.

➢ Managers should allocate appropriate resources, training, and development.

The importance of process measurement.

➢ Processes and measurements must continuously align with strategy in a fast moving environment.

➢ There is a danger of developing too many measurements.

➢ There is a constant tension between the need for flexibility and constrains of processes and measures.

➢ SME's prefer doing rather than measuring.

➢ Considerable scares resources are required to capture measurements on an ongoing basis.

➢ Training and development is needed for effective process management.

➢ Targets can be established for processes.

➢ Process benchmarking can help overcome the parochial nature of SME's

The principles of TQM are to seek to satisfy the external customer with quality goods and services, as well as the internal customers. In addition the principles are aimed to satisfy external and internal suppliers and continuously improve processes by working smarter and using special quality methods (Kurtus, 2001: Online). Not only does TQM encompasses the entire organisation, but it stresses that quality is customer driven, characterized by focusing on identifying the root cause of problems and correcting them at source, as oppose to inspecting the final product after it has been made, (Lozano, 2003:147).

According to Baidoun and Zairi (2003:1) citing Crosby (1979) and Oakland (2000), quality is an important consideration for executive management. The increased awareness of senior executives, who recognizes that quality is an

important strategy, will in return result in all levels of the organisation focusing on the importance of quality.

Williams (1997: Online), lists four basic principles of TQM, namely:

➢ **Performance measurements:** Are the values that enable management to effectively plan, monitor, and make decision within organisation.

➢ **Customer orientation:** An organisation must continually and actively conduct market research and measure customer satisfaction.

➢ **Continuous process improvement:** Identifies and eliminate those activities that add little or no value to the product or service

➢ **Employee involvement:** It is important that the liability and experience of all employees are utilized.

Foster (2001:23), is of the opinion that the essence of quality management can be defined with the aid of the three spheres of quality namely, quality control, quality assurance and quality management. The terms 'quality management' 'quality control' and 'quality assurance' are often used interchangeably, regardless if the function is directly responsible for the continual evaluation of a system (Weiss & Gershon, 2008: Online).
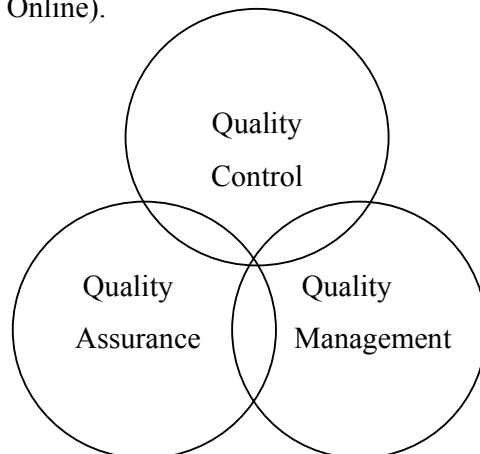
Figure 3.2: Three Spheres of Quality (**Source:** Adapted from Foster, 2001:23)

'Quality Control' involves monitoring capability, measuring performance, reducing variability and maintaining control charts. 'Quality Assurance' in turn, relates to guaranteeing the quality of products or services, while 'Quality Management' is the 'adhesive' that keeps the control and assurance activities

together. From the above, the analogy can be drawn that management is an important factor in assuring quality within organisations.

According to Weiss and Gershon (2008: Online), citing Deming (2000), the following principles are the cornerstones of total quality management philosophy, namely:

➢ Policy, planning, and administration.

➢ Product design and design change control.

➢ Control of purchased materials.

➢ Production quality control.

➢ User contact and field performance.

➢ Corrective action.

➢ Employee selection, training and motivation.

According to Kelce and Lee (2004: Online) citing Lee (1998), there are nine elements of TQM, which can be identified, validated and established, namely:

➢ Customer focus,

➢ top management commitment,

➢ quality data and reporting,

➢ training,

➢ roles of quality department,

➢ employee involvement,

➢ process management,

➢ product and service design, and

➢ Supplier quality management.

According to Kelce and Lee (2004: Online), the above nine elements of TQM are matched with four major principles for the successful implementation of TQM namely:

➢ Top management commitment,

➢ employee involvement, and

➢ Supplier participation and quality program.

The third and the fourth requirements map to the relationship with customers and suppliers. It is in these relationships that SME's may be disadvantaged when compared with large organisations, because they do not have as many resources or much influence. However, SME's may have an advantage over large organisations in the second requirement, as it is believed to be easy for SME's to get employees involved since most of the employees are more centralized and there are fewer lines of communication than in larger organisations (Kelce & Lee, 2004: Online).

According Williams, (1997: Online), there is evidence that the implementation of both TQM practice and ISO 9000 standards has influenced organisational performance. However, there seems to be no general agreement on how ISO and TQM are to be linked. Some researchers support the idea of starting with ISO as the first step towards TQM (Bradley 1994: Online), while others prefer to focus only on TQM.

3.5 THE REASONS FOR A TQM IMPLEMENTATION

According to Zhang, Waszink, and Wijngaard (2000:730-755), writers such as Deming (1986), Crosby (1979), Juran and Gryna (1993), Feigenbaum (1991), Ishikawa (1985), and others have developed certain propositions in the area of quality management. Their insight into quality management provides a good understanding of quality management principles. Worldwide, there are several Quality Awards, such as the Deming Prize in Japan, the European Quality Award in Europe, and the Malcolm Baldrige National Quality Award in the USA. Each award is based on a perceived model of TQM. They do not focus solely on product, service perfection, or traditional quality management methods, but consider a wide range of management activities, behaviour and processes that influence the quality of the final offerings. These award models provide a useful audit or assessment framework against which organisations can evaluate their quality management methods, the deployment of these methods, and the end business results (Zhang *et al.,* 2000:2).

According to Williams and Sussman (2009:7), the ability to produce and deliver quality products and services in hyperactive competitive, global markets is no longer a high order goal achieved by few industry examples, rather a price of admission to compete. Furthermore, for an organisation to achieve excellence, it must seek and implement effective tools and techniques to transform quality from a concept, to an organisation-shared value embedded in the fabric of every part of the organisation (Williams & Sussman, 2009:7).

According to Bardoel and Sohal (1996: Online), the major benefit to a TQM implementation is to increase awareness and focus of all employees on satisfying internal and external customers. According to Williams (1997: Online), TQM implementation should be an opportunity to involve staff and review the processes and organisation operations.

According to Idris, Mcewan, and Belvendram (1996:66-68), the main benefits of TQM had been improved customer satisfaction, teamwork, productivity, communication and efficiency. As long as TQM in an organisation is adopted fully and practiced effectively in an organisation, many advantages will be delivered. It will strengthen the organisational business performance and competitive advantage (Antony, Knowles & Gosh, 2002:551-566).

The successful implementation of TQM will result in:

Improved employee involvement. TQM ensures that everyone in the organisation have a clear understanding of what is required and how processes relate to the business as a whole. Through the practice of TQM, teamwork is employed and the employees are motivated and encouraged to control, manage and improve the processes, which are within their responsibility (Dale, 1994 cited by Antony *et.al.,* 2002:551-566).

Improved communication. A better communication can be accomplished through the effective implementation of TQM principles in any organisation. More open and frequent communication among people will be established, and

they will view and treat one another as customers and suppliers (Anjard, 1998 cited by Antony *et al.,* 2002:551-566).

Increased productivity. TQM changes the organisational culture and creates a happy working environment. Due to effective delegation, empowerment, and total staff involvement, problems are identified and solved at lower levels. The working process will become more efficient. Consequently, productivity can be increased by reducing cycle times (Antony *et al.,* 2002:551-566).

Improved quality and less rework. Within the context of a TQM implementation, work processes and improvements are focused upon. Employees will place more emphasis on the elimination of root cause relines rather than the correction of problems. In addition, more up-front effort is applied to clarify requirements and prevent proactively the occurrence of defects and errors. Problems will be identified and tackled at lower levels, by the people closest to the work who are empowered to deal with the problems. As a result, the quality of the products/services will be improved and product rework will be reduced (Antony *et al.,* 2002: 551-566).

Improved customer satisfaction. Through open communication among employees, customers and suppliers, the true voice of the customers can be more readily understood. Since quality operations also focus more on the work process and improvement, the company will provide a better quality product/service to the market. As a result, enhanced customer satisfaction is achieved.

Reduced costs of poor quality. Effective implementation of TQM will lead to significant reduction in costs of poor quality such as scrap, rework, late deliveries, warranty, replacement, etc. (Antony *et al.,* 2002: 551-566).

Improved competitive advantage. A further, benefit is to strengthen the competitive advantage of the organisation to survive in the market. If TQM is successfully implemented, it will result in better customer satisfaction (Antony *et al.,* 2002: 551-566).

Bardoel and Sohal (1996:263), list the following benefits of a TQM implementation, namely:

➢ Better control of processes resulting in consistency from design to delivery.
➢ Reduced production time.
➢ Reduced damaged goods.
➢ Reduced delivery time.
➢ Decreased set up time.
➢ Increased performance measurements.
➢ Improved customer perception to company

According to Kotelnikov (2009: Online), there are five main advantages of an TQM implementation, namely:

➢ It encourages a strategic approach to management at the operational level, through involving multiple departments, in cross- functional improvement and systematic innovation processes.
➢ It provides a high return on investment through improved efficiency.
➢ It works equally well for the service and manufacturing sector.
➢ It allows organisations to take advantage of development that enables managing operations as a cross functional process.
➢ It fits an orientation towards inter- organizational collaboration and strategic alliances through establishing a culture of collaboration among different departments within organisations.

3.6 THE APPLICATION OF TOTAL QUALITY MANAGEMENT WITHIN SME's

Small and Medium Enterprises (SME's) play an important role in modern economies because of their flexibility and ability to innovate. In nearly every country, SMEs play a significant role in providing employment opportunities and supporting large-scale manufacturing firms (Gunasekaran, Forker & Kobus, 2000:316-336).

It is important for SME's to remain competitive as they are considered the lifeblood of a modern economy (Ghobadian & Gallear 1996: Online). Furthermore, SME's do not only contribute to outputs and employment, they also affect the competitive power of large organisations (Mendes, 2002:16-19). SME's are often suppliers of products and services to large organisations and therefore a lack of product quality and or service from SME's could affect the competitiveness of the larger organisation (Chileshe & Watson, 2000:Online). TQM is considered as a way for SME's to improve the quality of their products and services (Quazi & Padibjo, 1998: Online).

TQM as a philosophy is of particular importance to SME's operating in a developing region, since it can foster continual improvement through a systematic, integrated, consistency (Lewis, Pun & Lalla, 2005: Online).

The continuously growing competition on the market place has forced many SME's to start focusing on quality improvements and cost reduction in order to stay competitive (Wiklund, 1999: Online). According to Hughes (2006: Online), there is potential to improve the competitive performance of small to medium-sized companies (SMEs). In addition, TQM has been widely applied for improving competitiveness around the world (Samson & Terziovski, 1999:393).

Although the interest and the use to implement TQM continue to be high among large organisations, small organisations are still lacking behind in TQM implementation (Hansson, 2002:31). Research has shown that TQM can be used by SME's with considerable success (Ghobadian & Gallear, 1996 cited by Zelealem & Getchew, 2002:184). An introduction of TQM to SME's can help to sharpen SME market focus, to become more efficient, to harness their human resources better, and to improve their competitiveness (Ahirea & Gohlar, 1996 cited by Zealealem & Getachew 2002:184).

According to Tannock *et al.,* (2002:Online), the importance, of quality and the adoption of TQM in SME is not restricted to their relationship with larger customer. Furthermore, the adoption of TQM can help SME's to manage the transfer from incubation stage to maturity stage effectively, because the

implementation of TQM creates as much stronger focus on customer needs and expectations. Furthermore, TQM creates effective and efficient business processes and the execution of skills to deliver low cost high quality products and services (Tannock *et al.,* 2002:1 Online).

Hansson (2002:5), citing Weish and White (1981) and Haksever (1996), researched that small business have an advantage to adapt TQM principles, because they have a direct contact to customer requirements, and managers have total power to decision making. In addition, small business are believed to have an advantage over large organisation in implementing TQM, due to flexibility of their structure, innovation ability, lack of hierarchy positions and strong organisational culture. Furthermore, TQM principles or techniques provide an excellent range of tools for measuring, analysing, and improving the performance of a process (McKenna, 1999: Online).

 SME"s have a number of inherent advantages over large organisations, such as being closer to the customer, being more flexible in their operations, being able to be innovative, have more work force involvement and have more effective communication systems (Zelealem & Getatchew 2002:182). According to Mc Adam (2001:Online), the potential advantage for SME's is their natural visibility and involvement of the managers, and if they are committed driving the TQM effort, then their approach will be visible and clear to all employees.

According to Hansson (2002:4), small business enterprises intending to implement TQM, need an approach better tailored for the small organisation context, and focused on changing process. One could expect that smaller organisations should experience less resistance to change, and would require less expenditure to implement and maintain TQM (Weish & White, 1981 & Haksever, 1996 cited by Hansson, 2002:5).

According to Kelce and Lee (2004:Online) citing Ahire and Golhar, (1996) and Lee (1998), small companies are different from large companies in many areas, such as management style, production processes, available capital, purchasing practices, inventory systems and negotiation powers. Studies indicate that some

elements of TQM and programs appear to be more compatible to SME's while TQM benefits are more significant to SME's (Chen, 1996 and Yan & Tang 1996 cited by Kelce & Lee 2004: Online).

Between a small business and a large business there are differences in structure, policymaking, procedures, and utilization of resources to the extent that the application of a large business concept directly to small business may not be advisable (Weish & White 1981, cited by Ghobadian & Gallear, 1996:Online). There have been fewer studies examining the impact of TQM practices in small and medium enterprises. The conducted studies relied on management self-assessment of performance (Watson & Kolber 2003:1).

Some TQM researchers argue that due to resource problems (mainly financial and human resources) TQM cannot produce consistent financial performance for SME's (Schmidt & Finnigan, 1992; Powel, 1995; Strubering & Klaus, 1997 cited by Demirbag, Zaim, Tatoglu & Koh 2006:1206). Another group of researchers however found some significant performance results of TQM practices in SMEs (Ahire & Golhar, 1996; and Hendricks & Singhal, 2001 cited by Demirbag et al., 2006:1210). In comparing larger firms with smaller firms, Demirbag et al., 2006: 1210 citing Hendricks and Singhal (2001), argue that smaller firms tend to benefit more from TQM as compared to larger firms. This argument contradicts some of the earlier arguments on the role of TQM in SMEs (that TQM is less beneficial to smaller firms). For many of the measured direct relationships between quality and business financial performance, results were not significant, yet the relationship between quality and production/ operations outcome was significant (Adams, 1994:27).

3.7 THE LACK OF TOTAL QUALITY MANAGEMENT WITHIN SME's

According to Lankard (1992:4) citing Mc Commack (1992), when TQM efforts do not meet expectations, it is often because of poor tactics and the lack of strategic frameworks. SME's implement ISO 9000 standards and TQM mainly due to market and customer demand (Bottomley, Dalrymple, Bushan, & Mietenen, 2009: Online). SME's focus on informal, people- orientated approaches

while large organisations are relatively more structured organised and process-orientated (Cheng & Sun, 2002:421).

According to Roberts and Thomson (1995: Online), the reason why there is a lack of TQM implementation in SME's, is that as a rule, the responsibility for implementing TQM process, is given to quality manager or quality department, Not involving anyone in the organisation. In addition, TQM is not part of line management responsibility, or integrated into the strategic plan of the organisation (Roberts & Thomson, 1995: Online).

According to Mann and Kehoe (1993:11), different departments with different characteristics within an organisation can affect the implementation of TQM. The fundamental reasons for failure in quality programs are the lack of clearly shared mental mode of quality throughout the organisation, and the lack of shared values and vision for the organisation (Roberts & Thomson, 1995: Online). Although many SME's like and agree to the idea of TQM, they are not willing to or sufficiently competent to implement it effectively (Tannock *et al.,* 2002: Online).

Leaders and managers within SME's often lack the expertise and training necessary to assimilate and apply complex models and methodology (Yeb-Yun Lin, 1999 cited by Mc Adam, 2000: Online). According to Cooper, Rayson, Botchway and Mc Caffert (2005: Online), most SME's suffer from resource constraints and management weakness. The major disadvantages of SME's are their lack of strategic thinking (Haksever, 1996: Online). Lack of business planning, vision, and misperception of TQM practices are among the obstacle to the adoption of formal TQM programs. Furthermore, SME's as opposed to larger organisations place emphasis on short-term profitability (Zelealem & Gatachew, 2002:181-191).

According to Zelealem and Gatachew (2002:181-191), citing Van der Weile and Brown (1998), Walley (2000) and Ghobadian and Gallear (1996), SME's are frequently disadvantaged in terms of their financial and technical resources. Furthermore, SME's major impediment is their lack of managerial expertise, lack

of strategic orientation, and the lack of necessary infrastructure to implement TQM (Zelealem & Gatachew, 2002:181-191).

According to Mc Adam (2000: Online), citing Gunakaran (1996), SME strategy formulation and linkage to operations is a very dynamic process. SME's find themselves in an ever-increasing market turbulence as secured niche markets are on an ongoing basis being encroached upon by large organisations. Furthermore, SME customers demand higher quality at lower cost (Ghobadian & Galler, 1996 cited by Mc Adam, 1996: Online).

3.7.1 Barriers to Total Quality Management implementation in SME's

According to Quazi and Padibjo (1998: Online), citing Hendricks (1992), unlike large organisations, SME's have limited management capabilities, and incentive resources, In addition, owner / managers, lack business experience and knowledge. The main problem faced by SME's in trying to implement TQM is a shortage of finance, limited human resources, and the time required for implementation. According to Sebatianelli and Tamimi (2003: Online), the underlying barriers to TQM implementation is in adequate human resource development and management, lack of planning for quality, lack of leadership for quality, inadequate resources and a lack of customer focus. According to Farooqui, Masood and Aziz (2008:482), lack of education is also one of the reasons why TQM would fail, adding, corruption, negligence and irresponsibility as critical issues to TQM success.

According to Ismail (2004: Online), resource limitations and resistance to change can affect the introduction of TQM within SME's, which is attributed to workers who believe that change will threaten their current positions. Tannock *et al.,* (2002:3), list four main barriers specific to SME in terms of TQM:

➢ **Cultural barriers:** The culture of SME may not be conducive to TQM.
➢ **Management awareness barriers:** There is wide acceptance that without full management commitment, successful TQM implementation is unlikely.
➢ **Financial barriers:** Managers of SME's cite the cost of training and lost production time as a major reason for not implementing TQM.

➢ **Training barriers:** People who do not hold any formal business qualifications operate large portion of SME's. Such owners and managers will not value formalized learning such as training so much as more highly educated people.

According to Bardoel and Sohal (1996: Online), negative attitudes arising from experience can be a significant barrier to successful implementation of any change program. In addition, language and culture represent a major problem in communicating the principles of a TQM program, while older employees view TQM as the latest trendy fad. Bardoel and Sohal (1996: Online), further list ten barriers to TQM implementation, namely:

➢ Perceived threat to supervisor and manager roles.
➢ Disinterest at the workforce level.
➢ Lack of understanding of what TQM is at the employment level.
➢ Geographical dispersed sites.
➢ Many casual staff.
➢ Fear of job losses.
➢ Inadequate training.
➢ Plans not clearly defined.
➢ Employee scepticism.
➢ Resistance to data collection

Kotelnikov (2009: Online), list the following barriers to TQM implementation, namely:

➢ Lack of long term commitment and leadership for management.
➢ Insufficient empowerment of workers.
➢ Lack of cross- functional, cross-disciplinary efforts.
➢ Misdirected focus- emphasis on the trivial many problems facing the company rather than a critical few.
➢ Emphasis in internal process to the neglect of external- customer focus results
➢ Lack of focus in training and coaching.
➢ Lack of cost of quality measurements, performance reporting, and reward recognition system.
➢ Emphasize on short-term solution instead of focusing on long term improvements.

3.8 MAKING TOTAL QUALITY MANAGEMENT WORK

Yusof and Anspinwall (2000: Online), suggest that a TQM definition for SME's should be considered, reason being that, the existing definitions are large business orientated, and do not reflect the conditions and the characteristics of SME's. Such a definition should read: Adopting a quality culture through the implementation of quality management initiative. In all aspects of the business with a full consideration towards building a continuous improvement culture, based on realistic resources, financial and human, and in anticipating and meeting customer needs according to priorities established for continued business success" (Yusof & Anspinwall, 2000:Online).

In order for TQM to be conducive its implementation has to be systematic, without any wavering in commitment levels, without any hesitation and deferral in the decision-making process (Letza, Zairi,Oakland,1994:38:48). According to Thiagaragan, Zairi and Dale (2001:Online), the critical prerequisites to developing the necessary commitment are a clear belief in the tangible business and operating benefits of TQM, and the recognition that the traditional management system is no longer an option in a competitive business environment. Furthermore, an early responsibility of management is the development of a corporate quality policy incorporating a statement of mission/vision, quality goals and guiding principles. Effective communication of mission ensures all employees understand and are committed to the organisation's direction, with the deployment and implementation of individual efforts and corporate expectations.

Supervisors provide a vital link between the top management and shop floor employees. In traditional firms, supervisors see themselves as powerless, relatively unimportant, and usually underprivileged members of an organization (Lowe, 1992 cited by Golhar, Deshpande, & Ahire 1997: Online). Workers view them as management, but they differ from management in terms of an educational and social background. However, for effective TQM implementation, first-line supervisors provide a vital link between the employees and upper management.

According to Psychogios and Priporas (2007: Online) citing Wilkinson (1998), TQM offers ways in which empowerment of employee's supports organisation efforts not only in quality improvement, but in empowerment as well. TQM's cornerstone is to increase control of work process, while employers seek the commitment and empowerment of their employees (Cleary, 1996 cited by Psychogios & Priporas, 2007: Online). Furthermore, the empowerment is an environment in which people have the ability, the confidence, and the commitment to take the responsibility and the ownership to improve the process and initiate the necessary steps to satisfy customer requirement within well-defined boundaries in order to achieve values and goals (Besterfield *et al.,* 1999, cited by Psychogios & Priporas 2007: Online).

According to Mann & Kehoe (1993:18), diversity of employees can present a problem when implementing TQM, calling for representation of each type of employee that should be involved in the development stage of the TQM implementation plan. Furthermore, for TQM to be successful, management needs to consider the following needs of the employees:

➢ **Skills level:** Highly skilled employees accept TQM, quicker than lower skilled employees.

➢ **Level of education:** Employees with high level of education is likely to accept TQM more quickly.

➢ **Length of employment**: Employees who have worked in an organisation for a long time can be the hardest to convert to TQM.

➢ **Age distribution of employees:** An older employee may not accept change quicker as young employees.

➢ **Employee level of product contact:** Employee in close contact with the product is more likely to accept TQM, this is because quality activities are more likely to be associated with the quality of product than individual is.

According to Zelealem and Getachew (2002:181), for an SME to consider a TQM implementation, it needs to be assisted in systematic business planning techniques. Corporate strategies, characteristics of entrepreneurs and employees are components that constitute the framework for TQM implementation (Sila & Ebrahimpour, 2002: Online). The most important driving force in TQM,

implementation is top management commitment. Top management commitment is the fundamental force towards the introduction of TQM strategy (Ismail, 2004: Online).

According to Yusof and Aspinwall (2000) cited by Zelealem and Getachew (2002:181), when SME is implementing TQM, SME's should not imitate the same approach as a large organisation. They need to modify, adapt, or revise the approach in terms of SME needs and characteristics. The characteristics to be considered as the guide in developing a framework for TQM implementation are listed as below:

➢ Systematic and easily understood.
➢ Simple in structure.
➢ Having clear links between the elements or steps outlined.
➢ General enough to suit different contexts.
➢ Represent a road map and a planning tool for implementation.
➢ Answer 'how to?,' opposed to 'what is?'
➢ Implementable.

According to Baidoun and Zairi (2003:1198) citing Oakland (2000), for an organisation to be successful in the market place, each part of it must work towards the same goal, recognize that each person and each activity affects and in turn is affected by, others.

Baidoun and Zairi (2003:1198) further provide the following guidelines for a successful TQM implementation:

➢ Demonstrate top management commitment and involvement.
➢ Develop a clear belief in the benefits that TQM can bring to the organisation.
➢ Ensure consensus agreement of all senior managers. All senior mangers serves at the quality council as members, attending training courses, attending conferences, reading about TQM, and visiting other organisations for benchmarking purposes.
➢ Recruit a quality-related manager to provide support in the planning and implementation stage.

- Demonstrate visibility of senior managers' commitment to quality and customer satisfaction.
- Communicate the mission statement consistently.
- Develop a comprehensive quality policy ad effective deployment of goals.

Figure 3.3: A proposal model for TQM implementation
(**Source:** Baidoun & Zairi, 2003:1198)

Williams (1997: Online), provide the following framework to emphasise the use of effective performance measurements through quality system activities:

- Define strategic objectives: Senior management must define the organisation's mission.
- Actively determine the customer requirements: The organisation must actively determine the need of the organisation's target market.
- Integrate customer requirements and strategic objectives: Customer, requirements and strategic objectives, with customer requirements.
- Communicate mission and objectives to all employees.
- Employee preparation: Train staff in the principles of ISO9000, TQM and procedure writing.
- Review current operation processes: Review all operation processes within the organisation.

- Convert objectives or required output of the operation process to a measurable outcome.
- Required inputs to process / operations to be also converted into measurable out-come.
- Impact of operation on organisation measures objectives.
- Identify sources of waste in carrying out unnecessary operations.
- Responsibilities and resources required to carry out process/ operations effectively.
- Documents and implement reviewed operation processes.
- Internal audits and management reviews.
- Systems development, mechanism should be put in place to ensure that changes to aspects of the quality system proposed by any employee are considered.
- Repeat cycle: The continuous review of the system should start with the review of the organisation mission and objectives.

Wiklund (1999: Online), propose the model used by Dixon (1994), which has much in common with Deming's (1993), model for continuous improvement, when considering the organisation learning within SME's.
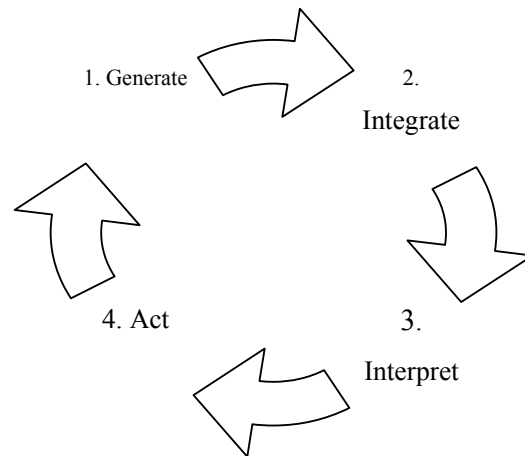
Figure 3.4: The organisational learning cycle (**Source:** Wiklund, 1999: Online)

According to Tannock *et al.,* (2002:3), when implementing TQM within and SME, it is of importance to consider an approach that covers the following themes:

- Management commitment, customer focus, process orientation, training and improvement.
- Obtain top- management understanding and commitment to TQM principles.
- Train management in key TQM concepts such as customer focus and process orientation.
- Preliminary self – assessment of each company.
- Preparation of a quality development plan.
- Train management, staff and the work force in quality tools and improvement techniques.
- Implementation of a quality development plan.
- Final self assessment.

Jablonski (1996: Online), identifies three characteristics necessary for TQM to succeed within an organisation, namely:
- Participative management, that refers to the involvement of all members of a company in the management process.
- Continuous process improvement recognises small incremental gains towards TQM goals.
- Cross-functional teams within the company.

According to Janblonski (1996: Online), a multidisciplinary approach helps workers to share knowledge, identify problems and opportunities. Janblonski (1996: Online), further identifies six attributes for the success of TQM program, namely:
- Customer focus that includes, internal customers such as co-workers as well as external customers.
- Process focus.
- Prevention versus inspection.
- Employee empowerment and compensation.
- Fact based decision-making.
- Receptiveness to feedback.

Jablonski (1996: Online), propose the following the key elements to ensure TQM implementation success:

Preparation: During preparation, management decides whether or not to pursue a TQM program. They undergo initial training, identify needs for outside consultants, develop a specific vision and goals, draft a corporate policy, commit the necessary resources, and communicate the goals throughout the organization

Planning: In the planning stage, a detailed plan of implementation is drafted (including budget and schedule), the infrastructure that will support the program is established, and the resources necessary to begin the plan are earmarked and secured.

Assessment: This stage emphasizes a thorough self-assessment—with input from customers/clients—of the qualities and characteristics of individuals in the company, as well as the company as a whole.

Implementation: At this point, the organisation can already begin to determine its return on investment in TQM. It is during this phase that support personnel and managers and the workforce need training. Training entails raising workers' awareness of exactly what TQM involves and how it can help them and the company. It also explains each worker's role in the program and explains expected outcome of all the workers.

Diversification: In this stage, managers utilize their TQM experiences and successes to bring groups outside the organization (suppliers, distributors, and other companies that have an impact on the business's overall health) into the quality process. Diversification activities include training, rewarding, supporting, and partnering with groups that embraced by the organisation's TQM initiatives.

Zealealem and Getachew (2002:181) identified two major benefits, which TQM could bring to SME's, namely: Improved customer satisfaction primarily because of improved internal processes, and a high level of employee satisfaction based on more satisfied internal and external customers.

SME's need to know, what TQM really mean, to the organisation before they start the 'TQM journey'. In addition, SME's need to create a culture that is conducive to and support TQM implementation (Zealealem and Getachew, 2002:181). Furthermore, they need to align TQM implementation with their goals and competitive environment, and they should understand the necessary time effort required for the implementation. Furthermore, SME's need to know and understand that TQM is unique to each company and that one size does not fit all (Zealealem & Getachew, 2002:183).

According to Zealealem and Getachew (2002: Online), citing Lyler *et al.,* (1989), Bracker and Pearson, 1986, and Shrader *et al.,* (1989), a number of studies indicate that there is a positive and strong relationship between planning behaviour and the size of the organisation. Formal planners put more emphasis on setting goals and objectives, than non-formal planners. Furthermore the more sophisticated the planning process is, the better the organisational performance (Robinson & Pearce, 1989 cited by Zealealem & Getachew, 2002: Online). While SME's usually do little planning, those with formal planning outperform their counterparts, because formalized planning provides a statement of purpose. (Zealealem & Getachew, 2002: Online).

Husband and Mandal (1997: Online), suspect that the poor adoption of quality methods in SMEs is due to multiple and complex reasons – not just the often stated impediments of cost, time and relative impacts. In addition, it may be that quality methods are an extension or separate component of SME business operations (Husband & Mandal, 1997: Online). Many quality methods among SME do not appear to be easily interpreted which may be a significant contributor to low implementation amongst SMEs. There is also evidence to suggest several reasons for SMEs not taking up quality methods (Husband & Mandal, 1997: Online).

Certification of quality systems in order to meet customer requirements or perceived market advantage appears to have little or no overall impact on SMEs. (Ramsey, 1998 cited by Husband & Mandal, 1997: Online). There appears to be no relationship between certification and business performance. Other studies

point to market advantage being a short term advantage should competitors use a similar strategy (Terziovski *et al.* 1997, cited by Husband & Mandal 1997: Online).

It is difficult to draw conclusions on quality methods in SMEs, as the various studies do not examine quality methods in SMEs specifically, define SMEs in inconsistent ways and provide indeterminate or conflicting results (Husband & Mandal, 1997: Online).

According to Husband and Mandal (1999: Online), citing Brown and Van der Weile, (1995) and Wider Quality Movement, (1997), linkages between quality system models (including certification) and other quality methods such as total quality management, are unclear.

3.9 DIFFERENCES BETWEEN LARGE ORGANISATIONS AND SME'S IN TERMS OF TQM IMPLEMENTATION

TQM systems implemented in large companies are not suitable to SME's unless certain changes are made. This is due to the fact that there are significant structural differences between SME's and large organisations, which could have an impact on planning and implementation of the TQM concept (Ghobadian & Gallear 1997: Online).

According to Ghobadian and Gallear (1997: Online), SME's can normally operate with a single manager at the strategic level. In large organisation, the division of functions, labour and the span of control considerations results in the creation of a hierarchy of authority. This means that top management in large organisations are far removed from the point of delivery, and they are likely to lack deep understanding of operational issues, customer needs and quality difficulties. Furthermore, management lack visibility and face difficulties in organizing effective communication and in providing leadership by example. While the flat structure of SME's and fewer departments interfaces, as a rule results in a more flexible work environment, and the lack of extended hierarchy offers top management the opportunity to build a strong personal relationship with

employees. Furthermore, the communication process in SME's is likely to be less complex and simple to organize and manage (Ghobadian & Gallear, 1997: Online).

According to Ghobadian and Gallear (1997: Online), SME's encounter unique advantages and disadvantages when it comes to the implementation of TQM. Marri, Gunasekaran and Grieve, (1989:935-943), discusses the following SME characteristics as it pertains to the implementation of TQM:

➢ The larger the organisation, the greater the resistance to change. In SMEs, shop floor tasks that relates to production usually involve a high degree of human decision-making and execution.

➢ Personal relationships in SMEs are very important

➢ SMEs have a higher inherent innovatory potential than large enterprises.

➢ SME's have the ability to react quickly to keep abreast of fast changing market requirements.

➢ In SME's there is a lack of bureaucracy. Dynamic entrepreneurial managers react quickly to take advantage of new opportunities and are willing to accept risk.

➢ Managers react quickly to take advantage of new opportunities and are willing to accept risk.

➢ There are efficient and informal internal communication networks, this affords a fast response to internal problem solving, and provides the ability to reorganise rapidly to adapt to change in the external environment.

➢ A large number of SMEs have some sort of external linkage which is of importance to the development of their business.

➢ Small enterprises tend to concentrate on traditional industries, where entry barriers are low, minimum production scales are low and labour intensity relatively high (Marri *et al.,*1989:935-943).

3.9.1 SME's advantages to TQM implementation

SME's can glean the following advantages from a TQM implementation:

➢ leadership from top management is very important to the successful implementation of TQM, SME's have a distinctive advantage in this because

the CEO of an SME, enjoy a high degree of visibility and can readily emphases the importance of quality.

➢ In SME's, employees tend to be closer to the company's products and customers, creating an increased sense of responsibility and market awareness.

➢ Smaller companies have a natural tendency for cross -functional training because they have fewer layers of management and staff.

➢ It is easier for small companies to create the kind of atmosphere that fosters personal growth, shows workers how their job fits into the overall organisation goals.

➢ In SME's, employees usually have a very good sense of the overall profitability of the company, and they are committed in to trying to improve business because they know it directly affects them.

➢ The process of decision-making span is shorter in SME's, because there are fewer layers of management (Marri *et al.*, 1989:935-943).

3.9.2 SME's disadvantages to TQM implementation

TQM could hold the following disadvantages for SME's.

➢ In SME's the owner tend to dominate the culture, many SME owners have little formal management training.

➢ Limited size of the management team in SME's means that individuals are responsible for a number of different functions with little backup.

➢ Retraining employees rather than laying them off when their jobs are redundant is difficult to justify.

➢ SME's are often under pressure to gain registration to a standard quality management system such as ISO.

➢ In SME's the likelihood of resistance to the introduction of processes and procedure is greater.

➢ Scarcity of resources holds a disadvantage to SME's

➢ Time and staffing constraints often preclude the administration of complicated recognition.

➢ Lack of time and system is likely to inhibit the implementation of comprehensive performance measurement systems.

➢ SME's are usually sceptical of outside help (Marri *et al.*, 1989:935-9).

CHAPTER 4: KNOWLEDGE MANAGEMENT SURVEY DESIGN AND METHODOLOGY

4.1 THE SURVEY ENVIRONMENT

The South African clothing manufacturing industry consists of large, medium, and small enterprises. The large formal manufacturing organisations are currently phasing out, and the industry is currently made of Small and Medium enterprises, which will serve as the survey environment. Small enterprises consist of design houses and sub contractors which are referred to as CMT (Cut Make and Trim) within the context of the clothing industry, with the number of employees ranging from 10-100. The medium enterprises, which are full package manufactures (they design and manufacture their own products); have between 120-500 employees. There are various type of clothing manufactures SME's, which will serve as a research environment which includes the following:

➢ outerwear,
➢ protective clothing,
➢ work wear, and
➢ uniforms.

4.2 AIM OF THIS CHAPTER

The aim of this chapter and the survey contained therein is to determine what the key factors are that contribute to a lack of total quality management implementation in clothing SME' enterprises. The ultimate objective being to solve the research problem as defined in Chapter 1, Paragraph 1.5, and which reads as follows:

"The lack of successful implementation of TQM in the South African clothing manufacturing SME's is culminating in a degradation of the quality of the industry."

4.3 THE TARGET POPULATION

With any survey, it is necessary to clearly define the target population, which Collis & Hussey (2003:157), define as follows:

> "A population is any precisely defined set of people or collection of items which is under consideration".

The 'sampling frame' defined by Vogt (1993) and cited by Collis and Hussey (2003:155-160), as 'a list or record of the population from which all the sampling units are drawn. Ten clothing manufacturing SME participated in the survey. The target population is clothing manufacturing SME's in the Western Cape with between 20-100 employees. The sample drawn is a convenient sample. The sample was drawn from 9 SME's in the Western Cape with 98 employees in total forming the respondents who answered the questionnaire.

The clothing SME's have different hierarchy levels depending whether the SME supply its own product or is a subcontractor, Most of the SME's have a structure made up as follows:

➢ **CEO:** This in most instances is also the owner of the business.

➢ **Production manager:** Is responsible for production and the daily running of the organisation and reporting directly to the CEO.

➢ **Quality controller:** Is responsible for ensuring that production floor has customer sample and specification and the quality of the product meet customer requirements.

➢ **Line supervisor:** Is responsible for managing a production line and reports to production manager.

➢ **Sewing mechanic:** Is responsible for the maintenance of sewing machines.

➢ **Sewing operator, examiners packers:** Production floor workers. (Clothing and Textile Foot Wear and Leather (CTFL) (SETA: 2005:15).

The target population was specifically chosen in order to validate the practicality of the concepts as presented here. The risk of bias, which cannot be statistically

eliminated, is recognised by the author based on the very definition of the target population as well as the number of respondents selected.

4.4 DATA COLLECTION

According to Emory and Cooper (1995:278), there are three primary types of data collection (survey) methods namely:

➢ **Personal interviewing**: In personal interview respondents see the questionnaire and inter-act face to face with the interviewer, thus lengthy and complex, and variable questions can be asked.

➢ **Telephone interviewing**: In telephone interviews the respondents interact with the interviewer, but they do not see the questionnaire, this limit the type of questions that can be asked to short and simple one.

➢ **Self-administered questionnaires/surveys:** Mail questionnaire are self administered, calling for the questions to be simple with detailed associated instructions (Emory & Cooper,1995:278).

While all of the above listed methods were used, the primary data collection method used in this survey is Self-administered questionnaires/surveys. Remenyi *et al.* (2002:290), defines the concept of 'survey' as: ". . . the collection of a large quantity of evidence usually numeric, or evidence that will be converted to numbers, normally by means of a questionnaire".

The data collection method used in the survey, falls within the context of a survey, defined by Collis and Hussey (2003:60), as:

> *"A sample of subjects being drawn from a population and studied to make inferences about the population"*

The survey conducted in this dissertation falls within the ambit of the 'descriptive survey' as defined by Ghauri, Gronhaug and Kristianslund (1995:203).

The data collection method used fall within the ambit of both the definitions attributed to the concepts 'survey' and 'field study'. 'Survey', according to Gay

and Diebl (1992:238), is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables, while Kerlinger (1986:372), define 'field study' as non-experimental scientific inquiries aimed at discovering the relations and interactions among … variables in real … structures. As in the case of most academic research, the collection of data forms an important part of the overall dissertation content.

4.5 MEASUREMENT SCALES

The survey will be based on the well known Likert scale, whereby respondents were asked to respond to questions or statement (Parasuraman 1991:410). The reason for choosing the Likert scale, is the fact that the scale can be used in both respondent-centred (how responses differ between people) and stimulus-centred (how responses differ between various stimuli) studies, most appropriate to glean data in support of the research problem in question (Emory and Cooper 1995:180-181). The advantages in using the popular Likert scale according to Emory and Cooper (Emory and Cooper 1995:180-181) are:

➢ Easy and quick to construct.
➢ Each item meets an empirical test for discriminating ability.
➢ The likert scale is probably more reliable than the Thurston scale.
➢ The Likert scale is also treated as an interval scale.

According to Remenyi, Money & Twite (1995:224), interval scales facilitate meaningful statistics when calculating means, standard deviation, and Pearson correlation coefficients.

4.6 THE DEMAND FOR A QUALITATIVE RESEARCH STRATEGY

While this author acknowledges that a number of strategies can be applied in similar research projects, the well-known concepts of objectivity, reliability etcetera, inherited from the empirical analytical paradigm, is suggested for

business research in more or less the traditional way. Quoting Thorndike & Hagen, these concepts are defined by Emory & Cooper (1995:156), as follows:

➢ **Practicality:** Practicality is concerned with a wide range of factors of economy, convenience, and interpretability.

➢ **Validity:** Validity refers to the extent to which a test measures what we actually wish to measure. Yin (2003:34) identifies 3 subsets to the concept validity, namely: Construct validity, internal validity and external validity.

➢ **Reliability:** Reliability has to do with the accuracy and precision of a measurement procedure.

4.7 SURVEY SENSITIVITY

Research conducted in areas of a sensitive nature as in the case of this survey, pose particular challenges to the researcher. The following guidelines from various academics serve to illustrate the mitigation process, which can be deployed in an instance where research is conducted in areas of a sensitive nature:

➢ A qualitative investigation of a particularly sensitive nature conducted by Oskowitz & Meulenberg-Buskens (1997:83), qualified the importance of handling mission critical issues as identified above when the authors stated:

"Thus any type of qualitative investigation could benefit from the researchers being skilled and prepared, and the sensitive nature of an investigation into a stigmatizing condition made the need for such an undertaking even more imperative in the current study".

➢ The sensitivity of certain issues and issues identified as impacting the research negatively in the environments being evaluated, not only demand intimate personal involvement, but also demand the 'personal and practical experience' of the researcher. This view was upheld by Meulenberg-Buskens (1997:84), as being imperative to assure quality in qualitative research being undertaken. Checkland (1989:152) supports this view however extends the concept with the opinion that: "The researcher becomes a participant in the action, and the process of change itself becomes the subject of research".

4.8 SURVEY DESIGN

Collis and Hussey (2003:60) are of the opinion that, 'if research is to be conducted in an efficient manner and make the best of opportunities and resources available, it must be organised. Furthermore, if it is to provide a coherent and logical route to a reliable outcome, it must be conducted systematically using appropriate methods to collect and analyse the data. A survey should be designed in accordance with the following stages:

➢ **Stage one:** Identify the topic and set some objectives.

➢ **Stage two:** Pilot a questionnaire to find out what people know and what they see as the important issues.

➢ **Stage three:** List the areas of information needed and refine the objectives.

➢ **Stage four:** Review the responses to the pilot.

➢ **Stage five:** Finalise the objectives.

➢ **Stage six:** Write the questionnaire.

➢ **Stage seven:** Re-pilot the questionnaire.

➢ **Stage eight:** Finalise the questionnaire.

➢ **Stage nine:** Code the questionnaire (Collis and Hussey, 2003:60)

The survey design to be used in this instance is that of the descriptive survey as opposed to the analytical survey. The descriptive survey, according to Collis and Hussey (2003:10), is frequently used for business research in the form of attitude survey. The descriptive survey as defined by Ghauri, Gronhaug and Kristianslund (1995:60), has furthermore the characteristics to indicate how many members of a particular population have a certain characteristic. Particular care was taken to avoid bias in the formulation of the questions.

The statements within the survey have been designed with the following principles in mind:

➢ Avoidance of double-barrelled statements.

➢ Avoidance of double-negative statements.

➢ Avoidance of prestige bias.

➢ Avoidance of leading statements.

➢ Avoidance of the assumption of prior knowledge.

Statements were so formulated as to allow the same respondents to respond to each of the two questionnaires, to determine if a paradigm shift occurred after the concept of 'knowledge management' was adopted.

4.9 THE VALIDATION SURVEY QUESTIONS

The author developed one questionnaire, aimed at management and at line managers and supervisors. The SME's were contacted telephonically, the questionnaire was explained to the company representative, and based on the understanding of the questionnaire by the respondent the questionnaire was then emailed, faxed or delivered to the contacted SME. Refer to Annexure A for the questionnaire used in the research.

4.10 DISCUSSION AND CONCLUSION

As for the results obtained through this survey the following analogies can be drawn from the survey:

➢ The companies do not necessary give their employee's authority to make decisions or involve them in decision making.

➢ The employees are not necessary satisfied with their companies.

➢ The communication is not what it is suppose to be.

➢ Management and the employees disagreed whether their companies have a quality manual, which indicates miscommunication within the companies.

➢ There are mostly positive responses with respect to quality processes in the companies surveyed.

CHAPTER 5: DATA ANALYSIS AND INTERPRETATION OF RESULT

5.1 INTRODUCTION

Data analysis is "the process of bringing order, structure and meaning to the mass of collected data" (de Vos, 2002, 339). This chapter discusses the results of the data analysis of the survey conducted in the Western Cape amongst the clothing manufacturing SME's (Small Medium Enterprises) who employ between 20 and 100 employees. The main aim of this survey is to determine the actions required for Total Quality Management to be successfully implemented within the South African clothing manufacturing Small Medium Enterprises. The data obtained from the completed questionnaires will be presented and analysed by means of various analyses (uni-variate, bi-variate and multivariate) as it comes applicable.

The data has been analyzed by using SAS software. As descriptive statistics, frequency tables are displayed in Paragraph 5.3.2 which shows the distributions of the statement responses. Descriptive statistics is used to summarize the data. As a measure of central tendency and dispersion, Table 5.3 shows the means and standard deviation of all the statements.

5.2 ANALYSIS METHOD

5.2.1 Validation survey results

A descriptive analysis of the survey results returned by the research questionnaire respondents are reflected below. The responses to the questions obtained through the questionnaires are indicated in table format for ease of reference. A database was developed in order to test for responses that were out of the set boundaries. The database in which the data was captured was developed so that data validation was insured. There are build-in boundaries and rules so that any mistakes made by the data capturer could be detected. Other measures to ensure data validity was to capture the information twice and then compare to see whether any mistakes were made and correct it. Data validation is the process of ensuring that a program operates on clean, correct and useful data. The construct

validation however can only be taken to the point where the questionnaire measure what it is suppose to measure. Construct validation should be addressed in the planning phases of the survey and when the questionnaire is developed. This questionnaire is supposed to measure the constraints to Total Quality Management implementation within SA's clothing manufacturing SME's in terms of accreditation.

5.2.2 Data format

The data in its original questionnaire format was then coded according to a predetermined coding scheme and captured on a database in Microsoft Access, which was developed for this purpose. It was then imported into SAS-format through the SAS ACCESS module. This information was then analysed.

5.2.3   Preliminary analysis

The reliability of the statements in the questionnaire posted to the sample respondents are tested by using the Cronbach Alpha tests. (Refer paragraph 5.3.1). Descriptive statistics was performed on all variables; displaying means, standard deviations, frequencies, percentages, cumulative frequencies and cumulative percentages. These descriptive statistics are discussed in Paragraphs 5.3.2 and 5.3.3. (Refer computer printout in Annexure B).

5.2.4   Inferential statistics

The following inferential statistics are performed on the data:
   - ➤ Cronbach Alpha test.
   - ➤ Chi-square test to compare management and employees.
   - ➤ Fisher Exact test.

5.2.5 Technical report with graphical displays

A written report with explanations of all variables and their outcomes were compiled. A cross analysis of variables where necessary was performed, attaching

statistical probabilities to indicate the magnitude of differences or associations. All inferential statistics are discussed in Paragraph 5.3.4.

5.2.6 Assistance to researcher

The conclusions made by the researcher, was validated by the statistical report. Help is given to interpret the outcome of the data. The final report written by the researcher was validated and checked by a qualified statistician to exclude any misleading interpretations.

5.2.7 Sample

The target population is clothing manufacturing SME's in the Western Cape with between twenty to a hundred employees. The sample drawn is a convenient sample. The sample was drawn from 9 SME's in the Western Cape with 98 employees in total from the 9 SME's who answered the questionnaire.

5.3 ANALYSIS

In total, 98 respondents from the population of clothing manufacturing SME's in the Western Cape answered the questionnaire posted to them. The items (statements) in the questionnaire will be tested for reliability in the following paragraph.

5.3.1 Reliability testing

Cronbach Alpha is an index of reliability associated with the variation accounted for by the true score of the "underlying construct". Construct is the hypothetical variables that are being measured (Cooper & Schindler, 2006:216-217). More specific, Cronbach alpha measures how well a set of items (or variables) measures a single uni-dimensional latent construct.

The reliability test (Cronbach's Alpha Coefficient) was done on all the items (statements), which represent the measuring instrument of this survey, with

respect to the responses rendered in this questionnaire. The results are represented in Table 5.1.

TABLE 5. 1:Cronbach's Alpha Coefficients.

Statements	Variable nr.	Correlation with total	Cronbach's Alpha Coefficient
1. Does the company have a quality policy in place?	Q27	0.7016	0.8181
2. Does top management show commitment to quality?	Q28	0.3467	0.8372
3. Does the company give employees authority to make decision?	Q29	0.4596	0.8321
4. Does the company have a quality manual?	Q30	0.3234	0.8410
5. Does the company involve employees in decision making?	Q31	0.5012	0.8290
6. Does the company encourage team work?	Q32	0.5992	0.8257
7. Does the company have an absenteeism problem?	Q33	0.0500	0.8547
8. Does the company communicate company objectives to staff?	Q34	0.4304	0.8337
9. Does company measure quality performance?	Q35	0.4273	0.8333
10. Does company measure production performance?	Q36	0.6504	0.8210
11. Does employees understand company policy?	Q37	0.5717	0.8240
12. Does company measure defect?	Q38	0.6617	0.8214
13. Does company measure customer satisfaction?	Q39	0.7169	0.8202
14. Does company seek customer views?	Q40	0.5727	0.8283
15. Are employees satisfied with the company?	Q41	0.3286	0.8412
Cronbach's Coefficient Alpha for standardized variable			**0.8570**
Cronbach's Coefficient Alpha for raw variables			**0.8405**

According to the Cronbach's Alpha Coefficients (Table 5.1) for all the items in the questionnaire:

➢ 0.8405 for raw variables; and

➢ 0.8570 for standardized variables;

which were more than the acceptable level of 0.70, this questionnaire proves to be reliable and consistent.

5.3.2 Descriptive statistics

Table 5.2 shows the descriptive statistics for all the variables in the questionnaire measuring the SME's description and the employee's responses to the questionnaire with respect to quality with the frequencies in each category and the percentage out of total number of questionnaires. It is of importance to note that statistics are based on the total sample. In some cases there were no answers given (left blank) in the questionnaire. These are shown as "unknown". These descriptive statistics are also shown in Annexure B.

TABLE 5.2: Descriptive statistics for SME's and their employees

Variables	Categories	Frequency	Percentage out of total
Description of the SME's that were part of the sample			
1. Number of employees.	20-100	4	44.4%
	100 +	5	55.6%
	Unknown	1	
2. Does your company have a full manufacturing process?	Full process	8	88.9%
	Sub contractor	1	11.1%
	Unknown	1	
3. Years in operation.	0-10 years	2	22.2%
	11-25 years	4	44.4%
	More than 25 years	3	33.3%
	Unknown	1	
4. Product types. *Note that this does not add up to a 100% because the respondents could indicated more than one and thus it is not independent*	Ladies wear	3	37.5%
	Men's wear	1	12.5%
	Outer wear	1	12.5%
	Protective clothing	3	37.5%
	Work wear	3	37.5%
	Uniforms	4	50.0%
5. Supplier to / subcontracting to: *Note that this does not add up to a 100%*	Retail	3	33.3%
	Manufacturing	3	33.3%

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Variables	Categories	Frequency	Percentage out of total
because the respondents could indicated more than one and thus it is not independent	company		
	Government tenders	5	55.6%
	Design house	0	0.0%
6. Is your company accredited?	Yes	3	33.3%
	No	6	66.7%
	Unknown	1	
Respondents who indicated their company is accredited			
7.1 Which quality system does your company have: ISO 9000-2000	Yes	2	66.7%
	No	1	33.3%
7.2 Which quality system does your company have: SIX SIGMA	Yes	0	0.0%
	No	3	100.0%
7.3 Which quality system does your company have: TQM	Yes	0	0.0%
	No	3	100.0%
7.4 Which quality system does your company have: SABS MARK	Yes	2	66.7%
	No	1	33.3%
7.5 Which quality system does your company have: SANAS	Yes	0	0.0%
	No	3	100.0%
7.6 Which quality system does your company have: Woolworths accreditation	Yes	0	0.0%
	No	3	100.0%
8.1 Were the reasons for implementing a quality system: Customer requirement?	Yes	1	33.3%
	No	2	66.7%
8.2 Were the reasons for implementing a quality system: Improving management process?	Yes	3	100.0%
	No	0	0.0%
8.3 Were the reasons for implementing a quality system: Marketing purpose?	Yes	1	33.3%
	No	2	66.7%
8.4 Were the reasons for implementing a quality system: Tender purpose?	Yes	3	100.0%
	No	0	0.0%
9. The implementation process was:	Easy	0	0.0%
	Challenging	3	100.0%
	Difficult	0	0.0%
	Extremely difficult	0	0.0%
10. Was anyone trained to maintain the	Yes	2	66.7%

Variables	Categories	Frequency	Percentage out of total
system?	No	1	33.3%
11. Training periods.	More than 6 weeks-2 months	2	66.7%
	Unknown	1	33.3%
12. How long should the training period be?	More than 6 weeks-2 months	3	100.0%
Respondents who indicated their company is not accredited			
13.1 Reasons for not achieving accreditation: Too expensive	Yes	4	66.7%
	No	2	33.3%
13.2 Reasons for not achieving accreditation: Your company does not need a quality system.	Yes	0	0.0%
	No	6	100.0%
13.3 Reasons for not achieving accreditation: No support for the accreditation bodies.	Yes	0	0.0%
	No	6	100.0%
13.4 Reasons for not achieving accreditation: Too complicated	Yes	1	16.7%
	No	5	83.3%
13.5 Reasons for not achieving accreditation: Not suitable for the business.	Yes	2	33.3%
	No	4	66.7%
13.6 Reasons for not achieving accreditation: Other	Yes	1	16.7%
	No	5	83.3%
14. Did your company attempt to get accreditation?	Yes	3	42.9%
	No	4	57.1%
Respondents who indicated their company attempted to get accreditation			
15. Which accreditation	ISO – 9000-2000	1	33.3%
	SAPS Mark	1	33.3%
	Did not indicate	1	33.3%
16. Why the attempt to accreditation failed:	Too expensive	1	33.3%
	Challenging	1	33.3%
	Difficult	0	0.0%
	Extremely difficult	0	0.0%
	Not suitable for the business	0	0.0%
	Unknown	1	33.3%
17.1 Reasons for attempting to implement the	Yes	1	33.3%

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Variables	Categories	Frequency	Percentage out of total
quality system: Customer requirement?	No	1	33.3%
	Unknown	1	33.3%
17.2 Reasons for attempting to implement the quality system: Improving management process?	Yes	1	33.3%
	No	1	33.3%
	Unknown	1	33.3%
17.3 Reasons for attempting to implement the quality system: Marketing purpose?	Yes	2	67.7%
	Unknown	1	33.3%
17.4 Reasons for attempting to implement the quality system: Required for tender?	Yes	2	67.7%
	Unknown	1	33.3%
17.5 Reasons for attempting to implement the quality system: Other?	Yes	1	33.3%
	No	1	33.3%
	Unknown	1	33.3%
18. Does the company have a long term plan?	Yes	8	88.9%
	No	1	11.1%
Respondents who indicated that they have a long term plan			
19.1 Indicate type of plan: Strategic plan.	Yes	7	87.5%
	No	1	12.5%
19.2 Indicate type of plan: Production plan.	Yes	5	62.5%
	No	3	37.5%
19.3 Indicate type of plan: Quality plan.	Yes	2	25.0%
	No	6	75.0%
19.4 Indicate type of plan: Marketing plan.	Yes	6	75.0%
	No	2	25.0%
19.5 Indicate type of plan: Succession plan.	Yes	1	12.5%
	No	7	87.5%
20. Does the company have dedicated personnel for planning?	Yes	7	77.8%
	No	2	22.2%
The respondents that indicated that the company has dedicated personnel for planning			
21. For which type of planning?	Sales order	1	14.3%
	Focus	1	14.3%
	Production	3	42.9%
	Other	1	14.3%
	Unknown	1	143.3%

Variables	Categories	Frequency	Percentage out of total
All respondents			
22. Management background.	University qualification	3	33.3%
	Not qualified but experienced	4	44.5%
	Qualification & technical	1	11.1%
	Unknown	1	11.1%
23.1 Staff competencies: Technical background	Yes	4	44.4%
	No	5	55.6%
23.2 Staff competencies: University qualification	Yes	1	11.1%
	No	8	88.9%
23.3 Staff competencies: Not qualified but experienced.	Yes	7	77.8%
	No	2	22.2%
23.4 Staff competencies: Qualification and technical background	Yes	1	11.1%
	No	8	88.9%
23.5 Staff competencies: None of the above	Yes	0	0.0%
	No	9	100.0%
24. Do you have any difficulties to recruit competent staff to your company?	Yes	5	55.6%
	No	4	44.4%
Respondents who indicated that they have difficulties in recruiting staff			
25.1 Reasons: To expensive for the company.	Yes	2	40.0%
	No	3	60.0%
25.2 Reasons: Shortage of experienced staff.	Yes	2	40.0%
	No	3	60.0%
25.3 Reasons: Lack of response to advert.	Yes	3	60.0%
	No	2	40.0%
25.4 Reasons: Shortage of technical staff.	Yes	2	40.0%
	No	3	60.0%
25.5 Reasons: Shortage of qualified staff.	Yes	3	60.0%
	No	2	40.0%
All respondents			
26. How long does it take to recruit new staff	2-3 weeks	1	11.1%

Variables	Categories	Frequency	Percentage out of total
in your company?	>3-4 weeks	2	22.2%
	>4-6 weeks	2	22.2%
	>6-8 weeks	3	33.3%
	>8 weeks	1	11.1%
27. How long should it take to recruit new staff in your company?	2-3 weeks	2	22.2%
	>3-4 weeks	4	44.4%
	>4-6 weeks	3	33.3%
28. Does the company encourage staff development?	Yes	8	89.9%
	No	1	11.1%
Respondents who indicated that their company does not encourage staff development			
29.1 Reasons not to: Too expensive for company.	Yes	0	0.0%
	No	1	100.0%
29.2 Reasons not to: Nor enough time to send staff to training.	Yes	1	100.0%
	No	0	0.0%
29.3 Reasons not to: Limited staff.	Yes	1	100.0%
	No	0	0.0%
29.4 Reasons not to: Training not needed in the business.	Yes	0	0.0%
	No	1	100.0%
29.5 Reasons not to: Staff should educate themselves.	Yes	0	0.0%
	No	1	100.0%
Respondents who indicated that their company does encourage staff development			
30.1 What type of training: In house training?	Yes	7	87.5%
	No	1	12.5%
30.2 What type of training: Short courses?	Yes	8	100.0%
	No	0	0.0%
30.3 What type of training: University?	Yes	1	12.5%
	No	7	87.5%
30.4 What type of training: All of the above?	Yes	2	25.0%
	No	6	75.0%
31 How often does your company send employees to training?	2 times a year	1	11.1%
	Regularly	4	44.4%
	Whenever there is a need	4	44.4%

Variables	Categories	Frequency	Percentage out of total
Measuring instrument:			
1. Does the company have a quality policy in place?	Yes	48	73.8%
	No	17	26.2%
2. Does top management show commitment to quality?	Yes	77	78.6%
	No	21	21.4%
3. Does the company give employees authority to make decision?	Yes	44	46.3%
	No	51	53.7%
4. Does the company have a quality manual?	Yes	66	69.5%
	No	29	30.5%
5. Does the company involve employees in decision making?	Yes	49	51.6%
	No	46	48.4%
6. Does the company encourage team work?	Yes	82	86.3%
	No	13	13.7%
7. Does the company have an absenteeism problem?	Yes	72	75.0%
	No	24	25.0%
8. Does the company communicate company objectives to staff?	Yes	53	62.4%
	No	32	37.6%
9. Does company measure quality performance?	Yes	78	81.2%
	No	18	18.8%
10 Does company measure production performance?	Yes	83	85.6%
	No	14	14.4%
11. Do employees understand company policy?	Yes	65	71.4%
	No	26	28.6%
12. Does company measure defect?	Yes	73	86.9%
	No	11	13.1%
13. Does company measure customer satisfaction?	Yes	76	85.4%
	No	13	14.6%
14. Does company seek customer views?	Yes	74	86.0%
	No	12	14.0%
15. Are employees satisfied with the company?	Yes	54	60.0%
	No	36	40.0%

5.3.3 UNI-VARIATE GRAPHS

Figure 5.1 Distribution of respondents according to the number of employees in SME's:
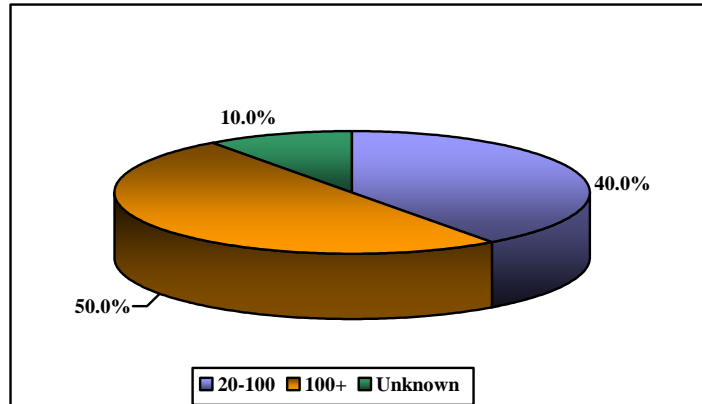
FIGURE 5.1:Number of employees

Four SME's indicated employment of 20-100; in which five SME's indicated employment above 100, with one SME the number of employees were indicated as unknown.
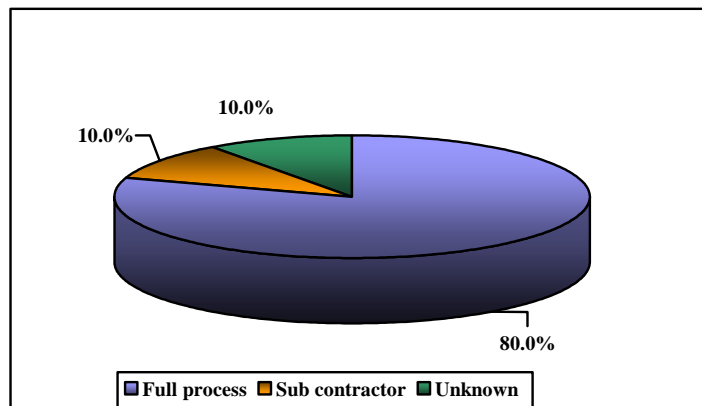
FIGURE 5.2: Distribution according to manufacturing process

Figure 5.2 show that 80% of the SME's have a full manufacturing process, meaning they design, produce and sell direct to end user customer. The remaining 20% split their operation between Subcontracting and Design.
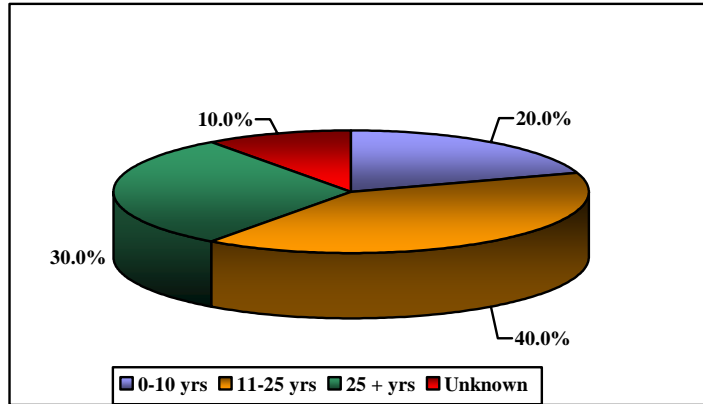
FIGURE 5.3: Distribution according to years in operation

A fifth of the companies are 1-10 years in operation and 70% of the companies are more than 11 years in operation.
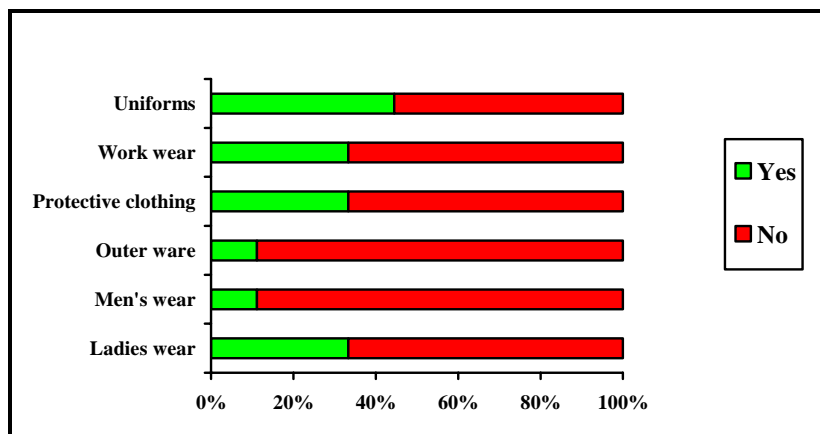
FIGURE 5.4: Distribution according to product type manufactured

The most popular product manufactured seems to be uniforms; every 10 (45%) companies indicated that they manufacture uniforms, with less than 20% of the companies manufacturing outerwear.
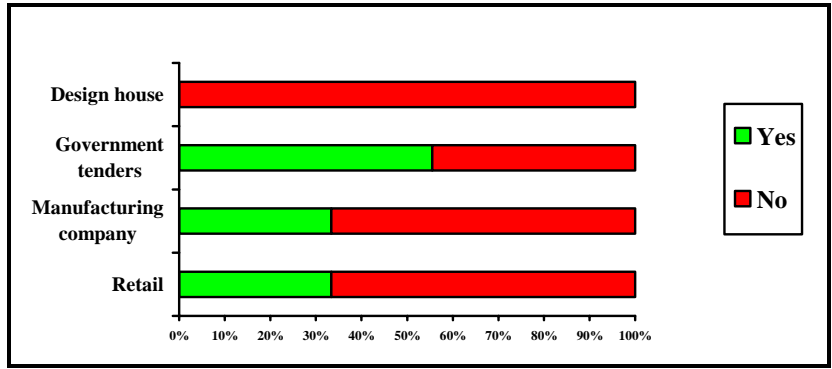
FIGURE 5.5: Supplier distribution**.**

Figure 5.5 reflects that 60% of SME's supply government tenders. The remaining 40% are companies subcontracting to retail shops or design houses or selling direct to customers.
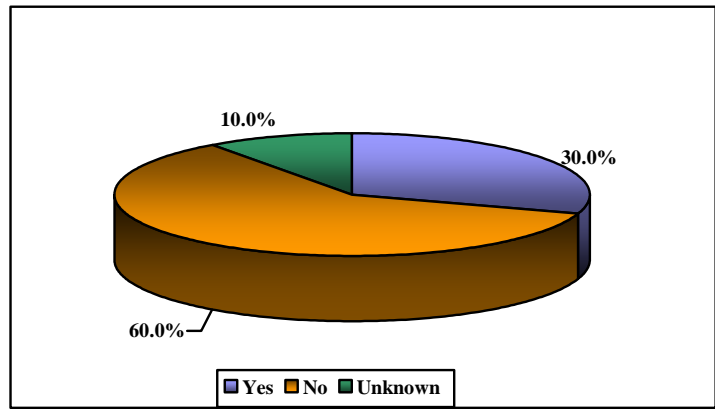
FIGURE 5.6: Distribution for accreditation companies

Figure 5.6 indicate that 60% of the companies are not accredited. This could be attributed to the fact that these companies are manufacturing and selling direct to customers or supplying retail shops. The remaining 30% of the surveyed companies are accredited, and they are the companies supplying work wear or uniforms to government, as one of the requirements to tender is accreditation, especially when the company is supplying safety wear.
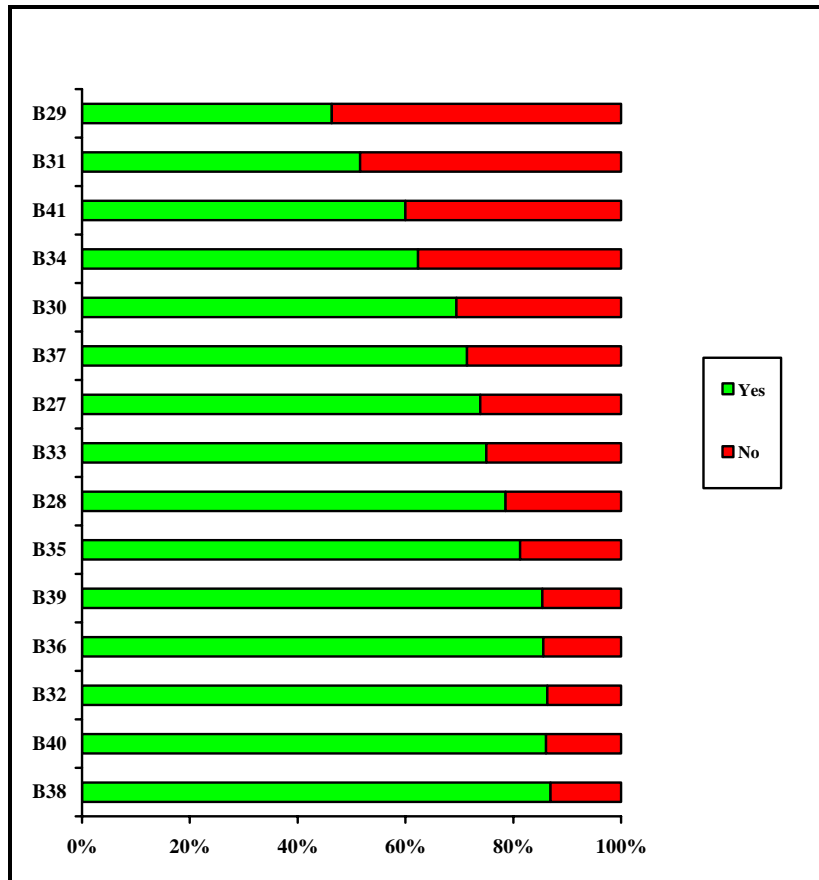
FIGURE 5.7: Quality measurements of SME's

In Figure 5.7 it is evident that most of the respondents agreed with all of the statements. The following statements however calls for closer scrutiny:

- ➢ "Does the company give employees authority to make decisions (Q 29)?" (53.7% indicated no).
- ➢ "Does the company involve employees in decision making (Q 31)?" (48.4% indicated no).
- ➢ "Is employees satisfied with the company (Q 41)?" (40.0% indicated no).
- ➢ "Does the company communicate company objectives to staff? (Q 35)" (37.6% indicated no).

5.3.4 Comparative statistics

Firstly, all the companies that filled in the questionnaire were compared with employees who filled in the questionnaire with respect to the questions posted to them. Secondly a comparison was made between the responses of management for 3 companies and their employees who filled in the questionnaire for each company. The test used to compare the managers with the employees is the chi-square test with Fisher Exact test where there were expected values of less than 5 in a cell. All the statistically significant differences are discussed in this paragraph and all the tests are shown in Annexure C.

The question stating "Does the company have a quality manual?" was answered statistically significantly different between management and employees. Most of the employees indicated yes (72.9%) and most of the management indicated no (60%). There were no other statistically significant differences between the management and employees when comparing them with respect to their responses on the questions.

However in companies there were differences between their management and their employees. See Table 5.3 and Figure 5.8 -5.10

TABLE 5.3: **Comparison between management and employees of the 3 companies surveyed**

Description	Management	Employees	
	Answer	Yes	No
Company 1			
1. Does the company have a quality policy in place?	Yes	7	10
2. Does top management show commitment to quality?	Yes	9	8
3. Does the company give employees authority to make decision?	No	2	14
4. Does the company have a quality manual?	No	9	7
5. Does the company involve employees in decision making?	Yes	1	16
6. Does the company encourage team work?	Yes	8	8
7. Does the company have an absenteeism problem?	No	13	3
8. Does the company communicate company objectives	Yes	3	13

Description	Management	Employees	
	Answer	Yes	No
to staff?			
9. Does company measure quality performance?	No	7	9
10. Does company measure production performance?	Yes	7	10
11. Do employees understand company policy?	Yes	3	9
12. Does company measure defect?	Yes	10	5
13. Does company measure customer satisfaction?	No	9	6
14. Does company seek customer views?	Yes	9	5
15. Are employees satisfied with the company?	Yes	3	9
Company 2			
1. Does the company have a quality policy in place?	Yes	5	0
2. Does top management show commitment to quality?	Yes	7	1
3. Does the company give employees authority to make decision?	Yes	5	2
4. Does the company have a quality manual?	Yes	8	0
5. Does the company involve employees in decision making?	Yes	7	1
6. Does the company encourage team work?	Yes	8	0
7. Does the company have an absenteeism problem?	No	7	0
8. Does the company communicate company objectives to staff?	Yes	6	1
9. Does company measure quality performance?	Yes	8	0
10. Does company measure production performance?	Yes	8	0
11. Do employees understand company policy?	Yes	6	1
12. Does company measure defect?	Yes	7	0
13. Does company measure customer satisfaction?	Yes	8	0
14. Does company seek customer views?	Yes	7	0
15. Are employees satisfied with the company?	Yes	5	2
Company 3			
1. Does the company have a quality policy in place?	Yes	7	2
2. Does top management show commitment to quality?	Yes	2	7
3. Does the company give employees authority to make decision?	No	0	9

Description	Management	Employees	
	Answer	Yes	No
4. Does the company have a quality manual?	Yes	7	2
5. Does the company involve employees in decision making?	No	2	7
6. Does the company encourage team work?	Yes	8	0
7. Does the company have an absenteeism problem?	Yes	8	1
8. Does the company communicate company objectives to staff?	No	0	1
9. Does company measure quality performance?	Yes	8	0
10. Does company measure production performance?	Yes	9	0
11. Do employees understand company policy?	Yes	9	0
12. Does company measure defect?	Yes	3	0
13. Does company measure customer satisfaction?	Yes	0	2
14. Does company seek customer views?	Yes	0	2
15. Are employees satisfied with the company?	Yes	9	0

If the management responses to quality systems are compared to employee responses, the management and the employee responses did not differ in Company 1 for the following questions:

  ➢ Does the company give employees authority to make decisions (Q 29)? (Management said no and 87.5% of employees said no)

  ➢ Does company measure quality performance (Q 35)? (Management said no and 56.2% of employees said no)

  ➢ Does company measure defect (Q 38)? (Management said yes and 66.7% of employees said yes)

  ➢ Does company seek customer views (Q 40)? (Management said yes and 64.3% of employees said yes)

If the management responses to quality systems are compared to employee responses, the management and the employee responses differed in Company 2 for the following questions:

> ➢ Does the company have an absenteeism problem (Q 33)? (Management
>   said no and all the employees said yes), in company 2 management believe
>   not to have an absenteeism problem but all the employees agree to have an
>   absenteeism problem.

If the management responses to quality systems are compared to employee responses, the management and the employees differed in company 3 for the following questions:

> ➢ Does top management show commitment to quality (Q 28)? (Management
>   said yes and 77.8 % of the employees said no)
> ➢ Does company measure customer satisfaction (Q 39)? (Management said
>   yes and all the employees said no)
> ➢ Does company seek customer views (40)? (Management said yes and all
>   the employees said no)

SAS computes a P-value (Probability value) that measure statistical significance which automatically incorporate the chi-square values. Results will be regarded as significant if the p-values are smaller than 0.05, because this value presents an acceptable level on a 95% confidence interval ($p \leq 0.05$). The p-value is the probability of observing a sample value as extreme as, or more extreme than, the value actually observed, given that the null hypothesis is true. This area represents the probability of a Type 1 error that must be assumed if the null hypothesis is rejected (Cooper & Schindler, 2006:509).

The p-value is compared to the significance level (α) and on this basis the null hypothesis is either rejected or not rejected. If the p value is less than the significance level, the null hypothesis is rejected (if p value $<\alpha$, reject null). If the p value is greater than or equal to the significance level, the null hypothesis is not rejected (if p value $\geq\alpha$, don't reject null). Thus with $\alpha=0.05$, if the p value is less than 0.05, the null hypothesis will be rejected. The p value is determined by using the standard normal distribution. The small p value represents the risk of rejecting the null hypothesis.

A difference has statistical significance if there is good reason to believe the difference does not represent random sampling fluctuations only. Results will be regarded as significant if the p-values are smaller than 0.05, because this value is used as cut-off point in most behavioural science research.

CHAPTER 6 CONCLUSION

6.1 INTRODUCTION

The focus of this dissertation has been centred on the application of TQM in clothing manufacturing SME's. The research was primarily mooted to establish the reasons why SME's cannot successfully implement TQM within their operational environments. The researcher explored both the internal and external factors that could contribute to the reasons for a lack of TQM implementation within the SME's. The survey was, conducted with accredited and non-accredited SME's. The external challenges explored were quality accreditation process, while the internal factors were based on SME management systems.

6.2 RESEARCH PROBLEM REVISITED

The research problem which has been researched within the ambit of this dissertation reads as follows: The lack of successful implementation of TQM in the South African clothing manufacturing SME's is culminating in a degradation of the quality of the industry."

Within South African clothing manufacturing SME's, there is a lack of quality management systems being implemented. The research returned that only 33% of SME's are accredited and this percentage is made of SME's that tender for Government.

6.3 THE RESEARCH QUESTION RE-VISITED

The research question which has been researched within the ambit of this dissertation reads as follows: What actions are required for TQM to be successful implemented within South African clothing manufacturing SME's?"

The actions required for TQM to be successfully implemented within South African SME's are contained within the recommendation (refer to paragraph 6.5)

6.4 THE INVESTIGATIVE QUESTIONS RE-VISTED

Investigative questions researched within the ambit of this dissertation reads as follows:

➢ What are the challenges facing South African clothing manufacturing SME's

➢ Is the lack of successful implementation of TQM within the South African clothing manufacturing SME's due to internal or external factors?

➢ Is there a relationship between the planning behaviour of SME's and lack of TQM implementation in SME's?

➢ To what extent does the accreditation influence upon TQM implementation in SME's.

Challenges facing South African clothing manufacturing SME's

➢ Scarcity of resources findings from the survey indicate 66% of the SME's cite financial constraints as a reason for non- accreditation.

➢ Increased level of illegal imports from China and other foreign countries.

➢ High labour cost which makes it difficult to compete with illegal imports.

➢ Low level of staff competencies (60% of SME's indicated a shortage of qualified staff in the clothing industry).

Is the lack of successful implementation of TQM within the South African clothing manufacturing SME's due to internal or external factors?

Based on the survey the factors affecting TQM implementation in South African clothing SME's are internal and external:

➢ Employees indicated a lack management commitment to quality management implementation.

➢ Lack of qualifications and technical background of management.

➢ Lack of communication between management and employees.

➢ Company objectives not communicated to employees.

➢ Lack of employee empowerment to decision making.

➢ Lack of planning for quality implementation.

➢ More focus on production out-put than quality or planning.

➢ Employee satisfaction within the company.

Is there a relationship between the planning behaviour of SME's and lack of TQM implementation in SME's?

Based on the survey findings, the researcher can conclude that, there is a relationship between the planning behaviour of SME's and the lack of TQM implementation. Based on the survey, 87% SME indicated to have a strategic plan in place, while only 25% indicated to have a quality management plan, which proves that SME's do not consider TQM implementation as a priority in their organisations.

To what extent does the accreditation impact upon TQM implementation in SME's?

During this research, there was no statistical evidence to conclude that the accreditation process has any impact upon the TQM implementation in SME's. Based on the survey, there were mostly positive responses with respect to the quality processes in the companies. Although 66% of SME's who are not accredited indicated that the reason for not achieving accreditation is that accreditation is too expensive.

6.5 RECOMMENDATIONS

The following recommendations are made to mitigate the research problem and provide answers to the research question.

External recommendations

➢ Accreditations processes need to be aligned to best suit both SME's and large organisations.

➢ When accrediting an SME, accreditation bodies need to assign a mentor to ensure that the SME understand the requirements, and is able to maintain the quality system.

➢ Enough allocation of time for training and assistance for SME's during accreditation process and after accreditation is needed to maintain the systems.

➢ The South African Government through the department of trade and industry
need to ensure easy accessibility of funds for quality management systems and
encourage SME's to implement quality management systems.

Internal recommendations

➢ SME top management need to be committed to total quality management
implementation.

➢ SME's need to implement quality systems, for better management of their
process.

➢ Improve communication between management and employees to ensure a
better understanding of the company objective

➢ SME's to have a strategic plan, a quality plan and an operational plan.

➢ SME has to ensure that all their processes are documented to ensure that there
is a common understanding of process within different departments.

➢ Based on the fact that SME's find it difficult to attract competitive staff,
SME's need to focus on employee development.

6.6 FINAL CONCLUSION

The main objectives of this study were to determine the constraints to TQM
implementation within South African clothing SME's. The survey conducted
within SME's provides positive feedback with respect to the quality process, but
the following barriers has been identified: Lack of employee involvement in
decision-making, miscommunication between management and employees and
the dissatisfaction of employees within companies, in which all of the above are
one of the fundamental requirements to successful implementation of TQM.

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ANNEXURE: A

Questionnaire for South African clothing manufacturing SME

In this section, the questionnaire is a combination of Yes, No and multiple choice questions'

1.	Is your company accredited		Yes	No

If your answer to Question 1 is No please proceed to question 8.

2. Which quality system does your company have more than one options can be ticked

ISO 9000-2000	
SIX SIGMA	
Total Quality Management	
SABS MARK	
SANAS	
Woolworths accreditation	

3. in your opinion, was the reasons for implementing a quality system?

Customer requirement	
Improving Management process	
Marketing purpose	
Tender purpose	

4. In my opinion the implementation process was (tick one of the following)

Easy	
Challenging	
Difficult	
Extremely difficult	

5.	Was anyone trained to maintain the system	Yes	No

6. if the answer to question 5 is YES, then indicate the training period

One week	
Two – three weeks	
Four – six week	
More than six weeks to two months	

7. In your opinion how long, do you think the training should have been conducted

One week	
Two – three weeks	
Four – six week	
More than six weeks to two months	

8. In your opinion what was the reasons for not achieving accreditation?

Too expensive	
Your company does not need a quality system	
No support from the accreditation bodies	
Too complicated	
Not suitable for the business	
Other	

9.	Did the company attempt to get accreditation	Yes	No

10. If your response to question 9 is YES please tick one of the following systems which your company attempted to implement.

ISO 9000-2000	
SIX SIGMA	
Total Quality Management	
SABS MARK	
SANAS	
Woolworths accreditation	

11. Please select one of the reasons why in your opinion the attempt to accreditation failed

Too expensive	
Challenging	
Difficult	
Extremely difficult	
Not suitable for the business	
Other	

12. In your opinion what was the reasons for attempting to implement the quality System?

Customer requirement	
Improving Management process	
Marketing purpose	
Required for tender	
Other	

Planning

13	Does the company have a long term plan	Yes	No

14. If your response to question 13. Is yes, you indicate the type of plan
   (More than one option can be selected)

Strategic plan	
Production plan	
Quality plan	
Marketing plan	
Succession plan	

15	Does the company have a dedicated personnel for planning	Yes	No

16. if your response to question 15 is yes, please tick one of the following

Sales order planning	
Focus planning	
Production planning	
Cutting room planning	
None of the above	

17. Management background: please tick one of the following

Technical background	
University qualification	
Not qualified but experienced	
Qualification and technical background	
None of the above	

18. Staff competencies: Please tick any of the following competencies.

Technical background	
University qualification	
Not qualified but experienced	
Qualification and technical background	
None of the above	

19	Do you have any difficulties to recruit competent staff to your company	Yes	No

20. If the answer to question 19 was Yes, please select any of the following reasons:

Too expensive for the company	
Shortage of experienced staff	
Lack of response to advert	
Shortage of technical staff	
Shortage of qualified staff	

21. In your opinion how long does it take to recruit new staff in your company from the date of advertisement to actual employment?

Two – three weeks	
Three – four weeks	
Four – six weeks	
Six – eight weeks	
More than eight weeks	

22. In your opinion how long should it take to recruit new staff in your company: from the date of Advertisement to actual employment?

Two – three weeks	
>Three – four weeks	
>Four – six weeks	
>Six – eight weeks	
More than eight weeks	

23.	Does the company encourage staff development	Yes	No

24. If the answer to question 23 was No, please select any of the following reasons:

Too expensive for company	
Not enough time to send staff to training	
Limited staff	
Training not needed in the business	
Staff should educate themselves	

25. If the answer to question 23 was yes, please select any of the following reasons. You may select more than one answer.

In house training	
Short courses	
University	
All of the above	

26. In your opinion how often does your company send employees to training?

Two times in year	
More than two times in year	

Regularly			
Whenever there is a need			

Please indicate yes or no to the following questions

		Yes	No
27	Does company have a quality policy in place		
28	Does top management show commitment to quality		
29	Does the company give employees authority to make decisions		
30	Does the company have a quality manual		
31	Does the company involve employees in decision making		
32	Does company encourage team work		
33	Does the company have an absenteeism problem		
34	Does company communicate company objectives to staff		
35	Does company measure quality performance		
36	Does company measure production performance		
37	Does employees understand company policy		
38	Does company measure defect		
39	Does company measure customer satisfaction		
40	Does company seek customer views		
41	Is employees satisfied with the company		

If your company is accredited:

B02_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	66.67	2	66.67
No	1	33.33	3	100.00

```
              Chi-Square Test
             for Equal Proportions
             ####################
             Chi-Square     0.3333
             DF                  1
             Pr > ChiSq     0.5637
     WARNING: The table cells have expected counts less
             than 5. Chi-Square may not be a valid test.
               Sample Size = 3
```

B02_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	3	100.00	3	100.00

```
              Chi-Square Test
             for Equal Proportions
             ####################
             Chi-Square     0.0000
             DF                  0
             Pr > ChiSq          .
               Sample Size = 3
```

B02_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	3	100.00	3	100.00

```
              Chi-Square Test
             for Equal Proportions
             ####################
             Chi-Square     0.0000
             DF                  0
             Pr > ChiSq          .
               Sample Size = 3
```

B02_4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	66.67	2	66.67
No	1	33.33	3	100.00

```
              Chi-Square Test
             for Equal Proportions
             ####################
             Chi-Square     0.3333
             DF                  1
             Pr > ChiSq     0.5637
     WARNING: The table cells have expected counts less
             than 5. Chi-Square may not be a valid test.
               Sample Size = 3
```

```
                                       Cumulative   Cumulative
B02_5   Frequency    Percent    Frequency    Percent
############################################################
 No          3       100.00            3       100.00


                 Chi-Square Test
                for Equal Proportions
                ####################
                Chi-Square    0.0000
                DF                 0
                Pr > ChiSq         .
                 Sample Size = 3


                                       Cumulative   Cumulative
B02_6   Frequency    Percent    Frequency    Percent
############################################################
 No          3       100.00            3       100.00


                 Chi-Square Test
                for Equal Proportions
                ####################
                Chi-Square    0.0000
                DF                 0
                Pr > ChiSq         .
                 Sample Size = 3


                                       Cumulative   Cumulative
B03_1   Frequency    Percent    Frequency    Percent
############################################################
 Yes         1        33.33            1        33.33
 No          2        66.67            3       100.00


                 Chi-Square Test
                for Equal Proportions
                ####################
                Chi-Square    0.3333
                DF                 1
                Pr > ChiSq    0.5637
     WARNING: The table cells have expected counts less
            than 5. Chi-Square may not be a valid test.
                 Sample Size = 3


                                       Cumulative   Cumulative
B03_2   Frequency    Percent    Frequency    Percent
############################################################
 Yes         3       100.00            3       100.00


                 Chi-Square Test
                for Equal Proportions
                ####################
                Chi-Square    0.0000
                DF                 0
                Pr > ChiSq         .
                 Sample Size = 3


                                       Cumulative   Cumulative
B03_3   Frequency    Percent    Frequency    Percent
############################################################
 Yes         1        33.33            1        33.33
 No          2        66.67            3       100.00


                 Chi-Square Test
                for Equal Proportions
                ####################
                Chi-Square    0.3333
                DF                 1
```

```
                        Pr > ChiSq    0.5637
           WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
                        Sample Size = 3


                                 Cumulative   Cumulative
         B03_4   Frequency   Percent   Frequency    Percent
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
          Yes        3      100.00          3      100.00


                      Chi-Square Test
                      for Equal Proportions
                      ‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
                      Chi-Square    0.0000
                      DF                  0
                      Pr > ChiSq          .
                        Sample Size = 3


                                 Cumulative   Cumulative
          B04    Frequency   Percent   Frequency    Percent
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
Challenging            3      100.00          3      100.00


                      Chi-Square Test
                      for Equal Proportions
                      ‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
                      Chi-Square    0.0000
                      DF                  0
                      Pr > ChiSq          .
                        Sample Size = 3


                                 Cumulative   Cumulative
         B05    Frequency   Percent   Frequency    Percent
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
          Yes        2       66.67          2       66.67
          No         1       33.33          3      100.00


                      Chi-Square Test
                      for Equal Proportions
                      ‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
                      Chi-Square    0.3333
                      DF                  1
                      Pr > ChiSq    0.5637
           WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
                        Sample Size = 3


                                       Cumulative   Cumulative
           B06     Frequency   Percent   Frequency    Percent
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
More than 6 weeks-2 months      2      100.00          2      100.00
                     Frequency Missing = 1


                      Chi-Square Test
                      for Equal Proportions
                      ‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
                      Chi-Square    0.0000
                      DF                  0
                      Pr > ChiSq          .
                   Effective Sample Size = 2
                     Frequency Missing = 1
              WARNING: 33% of the data are missing.


                                       Cumulative   Cumulative
           B07     Frequency   Percent   Frequency    Percent
‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡‡
```

More than 6 weeks-2 months   3   100.00   3   100.00

                              Chi-Square Test
                            for Equal Proportions
                         ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                         Chi-Square   0.0000
                         DF   0
                         Pr > ChiSq   .

                         Sample Size = 3

If your company is not accredited:

```
                               Cumulative   Cumulative
B08_1    Frequency    Percent   Frequency     Percent
########################################################
 Yes         4         66.67        4          66.67
 No          2         33.33        6         100.00


               Chi-Square Test
              for Equal Proportions
              ####################
              Chi-Square    0.6667
              DF                 1
              Pr > ChiSq    0.4142
    WARNING: The table cells have expected counts less
          than 5. Chi-Square may not be a valid test.
                Sample Size = 6


                               Cumulative   Cumulative
B08_2    Frequency    Percent   Frequency     Percent
########################################################
 No          6        100.00        6         100.00


               Chi-Square Test
              for Equal Proportions
              ####################
              Chi-Square    0.0000
              DF                 0
              Pr > ChiSq         .
                Sample Size = 6
                               Cumulative   Cumulative
B08_3    Frequency    Percent   Frequency     Percent
########################################################
 No          6        100.00        6         100.00


               Chi-Square Test
              for Equal Proportions
              ####################
              Chi-Square    0.0000
              DF                 0
              Pr > ChiSq         .
                Sample Size = 6


                               Cumulative   Cumulative
B08_4    Frequency    Percent   Frequency     Percent
########################################################
 Yes         1         16.67        1          16.67
 No          5         83.33        6         100.00


               Chi-Square Test
              for Equal Proportions
              ####################
              Chi-Square    2.6667
              DF                 1
              Pr > ChiSq    0.1025
    WARNING: The table cells have expected counts less
          than 5. Chi-Square may not be a valid test.
                Sample Size = 6


                               Cumulative   Cumulative
B08_5    Frequency    Percent   Frequency     Percent
########################################################
 Yes         2         33.33        2          33.33
```

```
              No        4      66.67            6     100.00


                       Chi-Square Test
                      for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square      0.6667
                    DF                   1
                    Pr > ChiSq      0.4142
          WARNING: The table cells have expected counts less
                  than 5. Chi-Square may not be a valid test.
                      Sample Size = 6


                                    Cumulative   Cumulative
         B08_6   Frequency   Percent   Frequency    Percent
         ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes         1      16.67           1      16.67
          No          5      83.33           6     100.00


                       Chi-Square Test
                      for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square      2.6667
                    DF                   1
                    Pr > ChiSq      0.1025
          WARNING: The table cells have expected counts less
                  than 5. Chi-Square may not be a valid test.
```

Sample Size = 6

If the company attempted to get accreditation

```
                                        Cumulative   Cumulative
                B10    Frequency   Percent   Frequency    Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     ISO 9000-2000           1      50.00           1      50.00
     SABS MARK               1      50.00           2     100.00


                       Chi-Square Test
                      for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square      0.0000
                    DF                   1
                    Pr > ChiSq      1.0000
          WARNING: The table cells have expected counts less
                  than 5. Chi-Square may not be a valid test.
                      Sample Size = 2


                                        Cumulative   Cumulative
                B11    Frequency   Percent   Frequency    Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Too expensive           1      50.00           1      50.00
     Challenging             1      50.00           2     100.00


                       Chi-Square Test
                      for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square      0.0000
                    DF                   1
                    Pr > ChiSq      1.0000
          WARNING: The table cells have expected counts less
                  than 5. Chi-Square may not be a valid test.
                      Sample Size = 2


                                    Cumulative   Cumulative
         B12_1   Frequency   Percent   Frequency    Percent
         ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes         1      50.00           1      50.00
```

```
     No          1     50.00            2     100.00


                     Chi-Square Test
                    for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square    0.0000
                    DF                 1
                    Pr > ChiSq    1.0000
        WARNING: The table cells have expected counts less
                than 5. Chi-Square may not be a valid test.
                    Sample Size = 2


                                        Cumulative   Cumulative
   B12_2    Frequency     Percent     Frequency      Percent
   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes         1      50.00            1       50.00
     No          1      50.00            2      100.00


                     Chi-Square Test
                    for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square    0.0000
                    DF                 1
                    Pr > ChiSq    1.0000
        WARNING: The table cells have expected counts less
                than 5. Chi-Square may not be a valid test.
                    Sample Size = 2


                                        Cumulative   Cumulative
   B12_3    Frequency     Percent     Frequency      Percent
   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes         2     100.00            2      100.00


                     Chi-Square Test
                    for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square    0.0000
                    DF                 0
                    Pr > ChiSq         .
                    Sample Size = 2


                                        Cumulative   Cumulative
   B12_4    Frequency     Percent     Frequency      Percent
   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes         2     100.00            2      100.00


                     Chi-Square Test
                    for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square    0.0000
                    DF                 0
                    Pr > ChiSq         .
                    Sample Size = 2


                                        Cumulative   Cumulative
   B12_5    Frequency     Percent     Frequency      Percent
   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes         1      50.00            1       50.00
     No          1      50.00            2      100.00


                     Chi-Square Test
                    for Equal Proportions
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square    0.0000
                    DF                 1
                    Pr > ChiSq    1.0000
```

If a company has a long term plan

B14_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	7	87.50	7	87.50
No	1	12.50	8	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	4.5000
DF	1
Pr > ChiSq	0.0339

WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                         Sample Size = 8

B14_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	5	62.50	5	62.50
No	3	37.50	8	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.5000
DF	1
Pr > ChiSq	0.4795

WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                         Sample Size = 8

B14_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	2	25.00	2	25.00
No	6	75.00	8	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	2.0000
DF	1
Pr > ChiSq	0.1573

WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                         Sample Size = 8

B14_4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	6	75.00	6	75.00
No	2	25.00	8	100.00

Chi-Square Test
for Equal Proportions

```
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square    2.0000
                            DF                 1
                            Pr > ChiSq    0.1573
                   WARNING: The table cells have expected counts less
                           than 5. Chi-Square may not be a valid test.
                                 Sample Size = 8


                                           Cumulative   Cumulative
            B14_5   Frequency    Percent    Frequency     Percent
            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
            Yes          1       12.50            1        12.50
            No           7       87.50            8       100.00


                                Chi-Square Test
                               for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square    4.5000
                            DF                 1
                            Pr > ChiSq    0.0339
                   WARNING: The table cells have expected counts less
                           than 5. Chi-Square may not be a valid test.
                                 Sample Size = 8
```

The company has dedicated personnel for planning

```
                                           Cumulative   Cumulative
            B16     Frequency    Percent    Frequency     Percent
            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Sales order              1       16.67            1        16.67
Focus                    1       16.67            2        33.33
Production               3       50.00            5        83.33
               6         1       16.67            6       100.00
                               Frequency Missing = 1


                                Chi-Square Test
                               for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square    2.0000
                            DF                 3
                            Pr > ChiSq    0.5724
                   WARNING: The table cells have expected counts less
                           than 5. Chi-Square may not be a valid test.
                              Effective Sample Size = 6
                                 Frequency Missing = 1
                        WARNING: 14% of the data are missing
```

Company has difficulties to recruit competent staff to your company

```
                                           Cumulative   Cumulative
            B20_1   Frequency    Percent    Frequency     Percent
            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
            Yes          2       33.33            2        33.33
            No           4       66.67            6       100.00


                                Chi-Square Test
                               for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square    0.6667
                            DF                 1
                            Pr > ChiSq    0.4142
                   WARNING: The table cells have expected counts less
                           than 5. Chi-Square may not be a valid test.
                                 Sample Size = 6
```

```
                                        Cumulative   Cumulative
B20_2    Frequency     Percent      Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
 Yes          2         33.33            2          33.33
 No           4         66.67            6         100.00

                     Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square     0.6667
                   DF                  1
                   Pr > ChiSq     0.4142
      WARNING: The table cells have expected counts less
              than 5. Chi-Square may not be a valid test.
                    Sample Size = 6


                                        Cumulative   Cumulative
B20_3    Frequency     Percent      Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
 Yes          3         50.00            3          50.00
 No           3         50.00            6         100.00

                     Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square     0.0000
                   DF                  1
                   Pr > ChiSq     1.0000
      WARNING: The table cells have expected counts less
              than 5. Chi-Square may not be a valid test.
                    Sample Size = 6


                                        Cumulative   Cumulative
B20_4    Frequency     Percent      Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
 Yes          2         33.33            2          33.33
 No           4         66.67            6         100.00

                     Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square     0.6667
                   DF                  1
                   Pr > ChiSq     0.4142
      WARNING: The table cells have expected counts less
              than 5. Chi-Square may not be a valid test.
                    Sample Size = 6


                                        Cumulative   Cumulative
B20_5    Frequency     Percent      Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
 Yes          3         50.00            3          50.00
 No           3         50.00            6         100.00

                     Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square     0.0000
                   DF                  1
                   Pr > ChiSq     1.0000
      WARNING: The table cells have expected counts less

              than 5. Chi-Square may not be a valid test.
                    Sample Size = 6
```

110

If the company does not encourage staff development

B24_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	1	100.00	1	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.0000
DF	0
Pr > ChiSq	.

Sample Size = 1

B24_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	100.00	1	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.0000
DF	0
Pr > ChiSq	.

Sample Size = 1

B24_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Yes	1	100.00	1	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.0000
DF	0
Pr > ChiSq	.

Sample Size = 1

B24_4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	1	100.00	1	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.0000
DF	0
Pr > ChiSq	.

Sample Size = 1

B24_5

B24_5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	1	100.00	1	100.00

Chi-Square Test
for Equal Proportions

Chi-Square	0.0000
DF	0

```
                                     Pr > ChiSq          .
                                  Sample Size = 1
```

If the company does encourage staff development

```
                                            Cumulative    Cumulative
        B25_1    Frequency     Percent     Frequency      Percent
        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes          7        77.78            7         77.78
          No           2        22.22            9        100.00


                          Chi-Square Test
                        for Equal Proportions
                        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                        Chi-Square     2.7778
                        DF                  1
                        Pr > ChiSq     0.0956
            WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
                          Sample Size = 9


                                            Cumulative    Cumulative
        B25_2    Frequency     Percent     Frequency      Percent
        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes          8        88.89            8         88.89
          No           1        11.11            9        100.00


                          Chi-Square Test
                        for Equal Proportions
                        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                        Chi-Square     5.4444
                        DF                  1
                        Pr > ChiSq     0.0196
            WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
                          Sample Size = 9


                                            Cumulative    Cumulative
        B25_3    Frequency     Percent     Frequency      Percent
        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes          1        11.11            1         11.11
          No           8        88.89            9        100.00


                          Chi-Square Test
                        for Equal Proportions
                        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                        Chi-Square     5.4444
                        DF                  1
                        Pr > ChiSq     0.0196
            WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
                          Sample Size = 9


                                            Cumulative    Cumulative
        B25_4    Frequency     Percent     Frequency      Percent
        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Yes          2        22.22            2         22.22
          No           7        77.78            9        100.00


                          Chi-Square Test
                        for Equal Proportions
                        ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                        Chi-Square     2.7778
                        DF                  1
                        Pr > ChiSq     0.0956
            WARNING: The table cells have expected counts less
                   than 5. Chi-Square may not be a valid test.
```

ONLY Company info

			Cumulative	Cumulative
B01	Frequency	Percent	Frequency	Percent

ƒƒƒ

| Yes | 3 | 33.33 | 3 | 33.33 |
| No | 6 | 66.67 | 9 | 100.00 |

Chi-Square Test

for Equal Proportions

ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ

Chi-Square	1.0000
DF	1
Pr > ChiSq	0.3173

WARNING: The table cells have expected counts less

than 5. Chi-Square may not be a valid test.

Sample Size = 9

			Cumulative	Cumulative
B09	Frequency	Percent	Frequency	Percent

ƒƒƒ

| Yes | 3 | 42.86 | 3 | 42.86 |
| No | 4 | 57.14 | 7 | 100.00 |

Chi-Square Test

for Equal Proportions

ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ

Chi-Square	0.1429
DF	1
Pr > ChiSq	0.7055

WARNING: The table cells have expected counts less

than 5. Chi-Square may not be a valid test.

Effective Sample Size = 7

Frequency Missing = 2

WARNING: 22% of the data are missing.

			Cumulative	Cumulative
B13	Frequency	Percent	Frequency	Percent

ƒƒƒ

| Yes | 7 | 87.50 | 7 | 87.50 |
| No | 1 | 12.50 | 8 | 100.00 |

Chi-Square Test

for Equal Proportions

ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ

Chi-Square	4.5000
DF	1
Pr > ChiSq	0.0339

WARNING: The table cells have expected counts less

than 5. Chi-Square may not be a valid test.

Effective Sample Size = 8

Frequency Missing = 1

WARNING: 11% of the data are missing.

			Cumulative	Cumulative
B15	Frequency	Percent	Frequency	Percent

ƒƒƒ

| Yes | 6 | 75.00 | 6 | 75.00 |
| No | 2 | 25.00 | 8 | 100.00 |

Chi-Square Test

for Equal Proportions

ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ

| Chi-Square | 2.0000 |

113

```
                                  DF                        1
                                Pr > ChiSq     0.1573
                WARNING: The table cells have expected counts less
                        than 5. Chi-Square may not be a valid test.
                            Effective Sample Size = 8
                              Frequency Missing = 1
                       WARNING: 11% of the data are missing.


                                                       Cumulative    Cumulative
                         B17     Frequency    Percent   Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
University qualification               3      37.50          3        37.50
Not qualified but experienced          4      50.00          7        87.50
Qualification & Technical background    1      12.50          8       100.00


                              Chi-Square Test
                            for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square      1.7500
                            DF                   2
                            Pr > ChiSq      0.4169
                WARNING: The table cells have expected counts less
                        than 5. Chi-Square may not be a valid test.
                            Effective Sample Size = 8
                              Frequency Missing = 1
                       WARNING: 11% of the data are missing.


                                               Cumulative    Cumulative
               B18_1   Frequency    Percent     Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                Yes        4      44.44            4        44.44
                No         5      55.56            9       100.00


                              Chi-Square Test
                            for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square      0.1111
                            DF                   1
                            Pr > ChiSq      0.7389
                WARNING: The table cells have expected counts less
                        than 5. Chi-Square may not be a valid test.
                              Sample Size = 9


                                               Cumulative    Cumulative
               B18_2   Frequency    Percent     Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                Yes        1      11.11            1        11.11
                No         8      88.89            9       100.00


                              Chi-Square Test
                            for Equal Proportions
                            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                            Chi-Square      5.4444
                            DF                   1
                            Pr > ChiSq      0.0196
                WARNING: The table cells have expected counts less
                        than 5. Chi-Square may not be a valid test.
                              Sample Size = 9


                                               Cumulative    Cumulative
               B18_3   Frequency    Percent     Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                Yes        7      77.78            7        77.78
                No         2      22.22            9       100.00


                              Chi-Square Test
```

```
#####################
Chi-Square      2.7778
DF                   1
Pr > ChiSq      0.0956
```

WARNING: The table cells have expected counts less
        than 5. Chi-Square may not be a valid test.
            Sample Size = 9

			Cumulative	Cumulative
B18_4	Frequency	Percent	Frequency	Percent
Yes	1	11.11	1	11.11
No	8	88.89	9	100.00

Chi-Square Test
for Equal Proportions
```
#####################
Chi-Square      5.4444
DF                   1
Pr > ChiSq      0.0196
```

WARNING: The table cells have expected counts less
        than 5. Chi-Square may not be a valid test.
            Sample Size = 9

			Cumulative	Cumulative
B18_5	Frequency	Percent	Frequency	Percent
No	9	100.00	9	100.00

Chi-Square Test
for Equal Proportions
```
#####################
Chi-Square      0.0000
DF                   0
Pr > ChiSq           .
```
            Sample Size = 9

			Cumulative	Cumulative
B19	Frequency	Percent	Frequency	Percent
Yes	5	55.56	5	55.56
No	4	44.44	9	100.00

Chi-Square Test
for Equal Proportions
```
#####################
Chi-Square      0.1111
DF                   1
Pr > ChiSq      0.7389
```

WARNING: The table cells have expected counts less
        than 5. Chi-Square may not be a valid test.
            Sample Size = 9

			Cumulative	Cumulative
B21	Frequency	Percent	Frequency	Percent
2-3 weeks	1	11.11	1	11.11
>3-4 weeks	2	22.22	3	33.33
>4-6 weeks	2	22.22	5	55.56
>6-8 weeks	3	33.33	8	88.89
> 8 weeks	1	11.11	9	100.00

Chi-Square Test
for Equal Proportions

```
                     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                     Chi-Square      1.5556
                     DF                   4
                     Pr > ChiSq      0.8168
        WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                     Sample Size = 9


                                       Cumulative    Cumulative
          B22     Frequency     Percent    Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
2-3 weeks          2       22.22            2        22.22
>3-4 weeks         4       44.44            6        66.67
>4-6 weeks         3       33.33            9       100.00


                      Chi-Square Test
                      for Equal Proportions
                      ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                      Chi-Square      0.6667
                      DF                   2
                      Pr > ChiSq      0.7165
        WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                      Sample Size = 9


                                       Cumulative    Cumulative
        B23     Frequency     Percent    Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes          8       88.89            8        88.89
No           1       11.11            9       100.00


                      Chi-Square Test
                      for Equal Proportions
                      ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                      Chi-Square      5.4444
                      DF                   1
                      Pr > ChiSq      0.0196
        WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.
                      Sample Size = 9


                                         Cumulative    Cumulative
            B26     Frequency     Percent    Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
2 times a year          1       11.11            1        11.11
Regularly               4       44.44            5        55.56


                      Chi-Square Test
                      for Equal Proportions
                      ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                      Chi-Square      2.0000
                      DF                   2
   WARNING: The table cells have expected counts less
               than 5. Chi-Square may not be a valid test.


            Sample Size = 9


                                       Cumulative    Cumulative
        B27     Frequency     Percent    Frequency      Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes         48       73.85           48        73.85
No          17       26.15           65       100.00


                      Chi-Square Test
                      for Equal Proportions
                      ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
```

```
              Chi-Square      14.7846
              DF                     1
              Pr > ChiSq      0.0001
           Effective Sample Size = 65
            Frequency Missing = 33
        WARNING: 34% of the data are missing.


                              Cumulative    Cumulative
B28    Frequency    Percent    Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes        77       78.57         77          78.57
No         21       21.43         98         100.00


              Chi-Square Test
             for Equal Proportions
             ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
             Chi-Square      32.0000
             DF                     1
             Pr > ChiSq      <.0001
               Sample Size = 98


                              Cumulative    Cumulative
B29    Frequency    Percent    Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes        44       46.32         44          46.32
No         51       53.68         95         100.00


              Chi-Square Test
             for Equal Proportions
             ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
             Chi-Square       0.5158
             DF                     1
             Pr > ChiSq      0.4726
           Effective Sample Size = 95
            Frequency Missing = 3


                              Cumulative    Cumulative
B30    Frequency    Percent    Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes        66       69.47         66          69.47
No         29       30.53         95         100.00


              Chi-Square Test
             for Equal Proportions
             ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
             Chi-Square      14.4105
             DF                     1
             Pr > ChiSq      0.0001
           Effective Sample Size = 95
            Frequency Missing = 3


                              Cumulative    Cumulative
B31    Frequency    Percent    Frequency     Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Yes        49       51.58         49          51.58
No         46       48.42         95         100.00


              Chi-Square Test
             for Equal Proportions
             ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
             Chi-Square       0.0947
             DF                     1
             Pr > ChiSq      0.7582
           Effective Sample Size = 95
            Frequency Missing = 3
```

```
                                      Cumulative    Cumulative
B32      Frequency      Percent      Frequency       Percent
#############################################################
Yes          82          86.32           82          86.32
No           13          13.68           95         100.00


                    Chi-Square Test
                    for Equal Proportions
                    ####################
                    Chi-Square      50.1158
                    DF                    1
                    Pr > ChiSq       <.0001
                 Effective Sample Size = 95
                  Frequency Missing = 3


                                      Cumulative    Cumulative
B33      Frequency      Percent      Frequency       Percent
#############################################################
Yes          72          75.00           72          75.00
No           24          25.00           96         100.00


                    Chi-Square Test
                    for Equal Proportions
                    ####################
                    Chi-Square      24.0000
                    DF                    1
                    Pr > ChiSq       <.0001
                 Effective Sample Size = 96
                  Frequency Missing = 2


                                      Cumulative    Cumulative
B34      Frequency      Percent      Frequency       Percent
#############################################################
Yes          53          62.35           53          62.35
No           32          37.65           85         100.00


                    Chi-Square Test
                    for Equal Proportions
                    ####################
                    Chi-Square       5.1882
                    DF                    1
                    Pr > ChiSq       0.0227
                 Effective Sample Size = 85
                  Frequency Missing = 13
            WARNING: 13% of the data are missing.


                                      Cumulative    Cumulative
B35      Frequency      Percent      Frequency       Percent
#############################################################
Yes          78          81.25           78          81.25
No           18          18.75           96         100.00


                    Chi-Square Test
                    for Equal Proportions
                    ####################
                    Chi-Square      37.5000
                    DF                    1
                    Pr > ChiSq       <.0001
                 Effective Sample Size = 96
                  Frequency Missing = 2


                                      Cumulative    Cumulative
B36      Frequency      Percent      Frequency       Percent
#############################################################
Yes          83          85.57           83          85.57
No           14          14.43           97         100.00
```

```
                    Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square    49.0825
                   DF                  1
                   Pr > ChiSq     <.0001
                 Effective Sample Size = 97
                   Frequency Missing = 1


                                    Cumulative   Cumulative
     B37    Frequency    Percent    Frequency     Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes          65      71.43           65        71.43
     No           26      28.57           91       100.00

                    Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square    16.7143
                   DF                  1
                   Pr > ChiSq     <.0001
                 Effective Sample Size = 91
                   Frequency Missing = 7


                                    Cumulative   Cumulative
     B38    Frequency    Percent    Frequency     Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes          73      86.90           73        86.90
     No           11      13.10           84       100.00

                    Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square    45.7619
                   DF                  1
                   Pr > ChiSq     <.0001
                 Effective Sample Size = 84
                   Frequency Missing = 14
            WARNING: 14% of the data are missing.


                                    Cumulative   Cumulative
     B39    Frequency    Percent    Frequency     Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes          76      85.39           76        85.39
     No           13      14.61           89       100.00

                    Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square    44.5955
                   DF                  1
                   Pr > ChiSq     <.0001
                 Effective Sample Size = 89
                   Frequency Missing = 9


                                    Cumulative   Cumulative
     B40    Frequency    Percent    Frequency     Percent
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Yes          74      86.05           74        86.05
     No           12      13.95           86       100.00

                    Chi-Square Test
                   for Equal Proportions
                   ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                   Chi-Square    44.6977
```

```
                DF                    1
                Pr > ChiSq      <.0001
            Effective Sample Size = 86
             Frequency Missing = 12
        WARNING: 12% of the data are missing.


                              Cumulative    Cumulative
    B41    Frequency    Percent    Frequency    Percent
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
    Yes        54      60.00         54        60.00
    No         36      40.00         90       100.00


                Chi-Square Test
               for Equal Proportions
               ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
               Chi-Square      3.6000
               DF                   1
               Pr > ChiSq      0.0578
            Effective Sample Size = 90
              Frequency Missing = 8
```

120

```
                            Simple Statistics
Variable        N         Mean      Std Dev          Sum     Minimum     Maximum     Label
B27            35      1.17143      0.38239     41.00000     1.00000     2.00000     B27
B28            35      1.14286      0.35504     40.00000     1.00000     2.00000     B28
B29            35      1.51429      0.50709     53.00000     1.00000     2.00000     B29
B30            35      1.37143      0.49024     48.00000     1.00000     2.00000     B30
B31            35      1.42857      0.50210     50.00000     1.00000     2.00000     B31
B32            35      1.11429      0.32280     39.00000     1.00000     2.00000     B32
B33            35      1.22857      0.42604     43.00000     1.00000     2.00000     B33
B34            35      1.34286      0.48159     47.00000     1.00000     2.00000     B34
B35            35      1.22857      0.42604     43.00000     1.00000     2.00000     B35
B36            35      1.17143      0.38239     41.00000     1.00000     2.00000     B36
B37            35      1.34286      0.48159     47.00000     1.00000     2.00000     B37
B38            35      1.14286      0.35504     40.00000     1.00000     2.00000     B38
B39            35      1.11429      0.32280     39.00000     1.00000     2.00000     B39
B40            35      1.08571      0.28403     38.00000     1.00000     2.00000     B40
B41            35      1.51429      0.50709     53.00000     1.00000     2.00000     B41


                       Cronbach Coefficient Alpha
                Variables            Alpha
                ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                Raw                  0.840496
                Standardized         0.857026


                 Cronbach Coefficient Alpha with Deleted Variable
                     Raw Variables              Standardized Variables
            Deleted    Correlation                Correlation
            Variable   with Total        Alpha    with Total       Alpha      Label
            ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
            B27        0.701567      0.818130     0.710225      0.836503      B27
            B28        0.346748      0.837219     0.371437      0.854682      B28
            B29        0.459622      0.832067     0.436677      0.851289      B29
            B30        0.323410      0.841019     0.324971      0.857069      B30
            B31        0.501187      0.829039     0.470463      0.849511      B31
            B32        0.599206      0.825729     0.615312      0.841736      B32
            B33        0.050012      0.854687     0.081432      0.869171      B33
            B34        0.430444      0.833671     0.437610      0.851240      B34
            B35        0.427261      0.833269     0.452629      0.850451      B35
            B36        0.650435      0.821000     0.666708      0.838916      B36
            B37        0.571663      0.824012     0.562046      0.844625      B37
            B38        0.661742      0.821422     0.662274      0.839160      B38
            B39        0.716869      0.820232     0.732714      0.835246      B39
            B40        0.572742      0.828328     0.592096      0.842999      B40
            B41        0.328597      0.841223     0.319208      0.857363      B41
```

```
                    Table of grp by B27

         Frequency  ,
         Percent    ,
         Row Pct    ,
         Col Pct    ,Yes    ,No      , Total
         fffffffffff^ffffffff^ffffffff^
         Management ,      8 ,     2 ,     10
                    ,  12.31 ,  3.08 ,  15.38
                    ,  80.00 ,  20.00 ,
                    ,  16.67 ,  11.76 ,
         fffffffffff^ffffffff^ffffffff^
         Employees  ,     40 ,    15 ,     55
                    ,  61.54 ,  23.08 ,  84.62
                    ,  72.73 ,  27.27 ,
                    ,  83.33 ,  88.24 ,
         fffffffffff^ffffffff^ffffffff^
         Total             48        17        65
                         73.85     26.15    100.00


            Statistics for Table of grp by B27

Statistic                      DF      Value      Prob
ffffffffffffffffffffffffffffffffffffffffffffffffffff
Chi-Square                      1     0.2317     0.6302
Likelihood Ratio Chi-Square     1     0.2430     0.6221
Continuity Adj. Chi-Square      1     0.0081     0.9281
Mantel-Haenszel Chi-Square      1     0.2282     0.6329
Phi Coefficient                       0.0597
Contingency Coefficient               0.0596
Cramer's V                            0.0597

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                 Fisher's Exact Test
         ffffffffffffffffffffffffffffffff
         Cell (1,1) Frequency (F)        8
         Left-sided Pr <= F         0.8042
         Right-sided Pr >= F        0.4825
         Table Probability (P)      0.2867
         Two-sided Pr <= P          1.0000
              Effective Sample Size = 65
                Frequency Missing = 33
         WARNING: 34% of the data are missing.



                    Table of grp by B28

         Frequency  ,
         Percent    ,
         Row Pct    ,
         Col Pct    ,Yes    ,No      , Total
         fffffffffff^ffffffff^ffffffff^
         Management ,     10 ,     0 ,     10
                    ,  10.20 ,  0.00 ,  10.20
                    , 100.00 ,  0.00 ,
                    ,  12.99 ,  0.00 ,
         fffffffffff^ffffffff^ffffffff^
         Employees  ,     67 ,    21 ,     88
                    ,  68.37 ,  21.43 ,  89.80
                    ,  76.14 ,  23.86 ,
                    ,  87.01 , 100.00 ,
         fffffffffff^ffffffff^ffffffff^
         Total             77        21        98
                         78.57     21.43    100.00


            Statistics for Table of grp by B28
```

```
Statistic                        DF      Value      Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                        1      3.0372    0.0814
Likelihood Ratio Chi-Square       1      5.1251    0.0236
Continuity Adj. Chi-Square        1      1.7852    0.1815
Mantel-Haenszel Chi-Square        1      3.0062    0.0829
Phi Coefficient                          0.1760
Contingency Coefficient                  0.1734
Cramer's V                               0.1760

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                    Fisher's Exact Test
          ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Cell (1,1) Frequency (F)        10
          Left-sided Pr <= F          1.0000
          Right-sided Pr >= F         0.0783
          Table Probability (P)       0.0783
          Two-sided Pr <= P           0.1129
                   Sample Size = 98


                   Table of grp by B29
          Frequency  ,
          Percent    ,
          Row Pct    ,
          Col Pct    ,Yes      ,No       ,  Total
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Management ,      7 ,      3 ,      10
                     ,   7.37 ,   3.16 ,  10.53
                     ,  70.00 ,  30.00 ,
                     ,  15.91 ,   5.88 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Employees  ,     37 ,     48 ,      85
                     ,  38.95 ,  50.53 ,  89.47
                     ,  43.53 ,  56.47 ,
                     ,  84.09 ,  94.12 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Total            44       51       95
                        46.32    53.68   100.00


             Statistics for Table of grp by B29
Statistic                        DF      Value      Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                        1      2.5214    0.1123
Likelihood Ratio Chi-Square       1      2.5569    0.1098
Continuity Adj. Chi-Square        1      1.5692    0.2103
Mantel-Haenszel Chi-Square        1      2.4949    0.1142
Phi Coefficient                          0.1629
Contingency Coefficient                  0.1608
Cramer's V                               0.1629

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                    Fisher's Exact Test
          ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Cell (1,1) Frequency (F)         7
          Left-sided Pr <= F          0.9738
          Right-sided Pr >= F         0.1052
          Table Probability (P)       0.0790
          Two-sided Pr <= P           0.1793
              Effective Sample Size = 95
                Frequency Missing = 3


                   Table of grp by B30
          Frequency  ,
          Percent    ,
```

```
            Row Pct     ,
            Col Pct     ,Yes      ,No       , Total
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Management ,      4 ,      6 ,      10
                       ,   4.21 ,   6.32 ,  10.53
                       ,  40.00 ,  60.00 ,
                       ,   6.06 ,  20.69 ,
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Employees  ,     62 ,     23 ,      85
                       ,  65.26 ,  24.21 ,  89.47
                       ,  72.94 ,  27.06 ,
                       ,  93.94 ,  79.31 ,
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Total            66       29       95
                          69.47    30.53   100.00
```

         Statistics for Table of grp by B30

Statistic	DF	Value	Prob
Chi-Square	1	4.5780	0.0324
Likelihood Ratio Chi-Square	1	4.1855	0.0408
Continuity Adj. Chi-Square	1	3.1565	0.0756
Mantel-Haenszel Chi-Square	1	4.5298	0.0333
Phi Coefficient		-0.2195	
Contingency Coefficient		0.2144	
Cramer's V		-0.2195	

```
 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.
```

            Fisher's Exact Test
```
         ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
         Cell (1,1) Frequency (F)       4
         Left-sided Pr <= F        0.0419
         Right-sided Pr >= F       0.9920
         Table Probability (P)     0.0339
         Two-sided Pr <= P         0.0628
            Effective Sample Size = 95
              Frequency Missing = 3
```

               Table of grp by B31
```
            Frequency  ,
            Percent    ,
            Row Pct    ,
            Col Pct    ,Yes      ,No       , Total
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Management ,      6 ,      3 ,       9
                       ,   6.32 ,   3.16 ,   9.47
                       ,  66.67 ,  33.33 ,
                       ,  12.24 ,   6.52 ,
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Employees  ,     43 ,     43 ,      86
                       ,  45.26 ,  45.26 ,  90.53
                       ,  50.00 ,  50.00 ,
                       ,  87.76 ,  93.48 ,
            ƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
            Total            49       46       95
                          51.58    48.42   100.00
```

         Statistics for Table of grp by B31

Statistic	DF	Value	Prob
Chi-Square	1	0.9062	0.3411
Likelihood Ratio Chi-Square	1	0.9246	0.3363
Continuity Adj. Chi-Square	1	0.3617	0.5476
Mantel-Haenszel Chi-Square	1	0.8966	0.3437
Phi Coefficient		0.0977	

```
Contingency Coefficient            0.0972
Cramer's V                         0.0977
 WARNING: 50% of the cells have expected counts less
         than 5. Chi-Square may not be a valid test.

              Fisher's Exact Test
         ################################
         Cell (1,1) Frequency (F)        6
         Left-sided Pr <= F         0.9049
         Right-sided Pr >= F        0.2757
         Table Probability (P)      0.1807
         Two-sided Pr <= P          0.4880
            Effective Sample Size = 95
              Frequency Missing = 3


              Table of grp by B32
         Frequency  ,
         Percent    ,
         Row Pct    ,
         Col Pct    ,Yes      ,No       , Total
         ###########^########^########^
         Management ,     10 ,      0 ,     10
                    ,  10.53 ,   0.00 ,  10.53
                    , 100.00 ,   0.00 ,
                    ,  12.20 ,   0.00 ,
         ###########^########^########^
         Employees  ,     72 ,     13 ,     85
                    ,  75.79 ,  13.68 ,  89.47
                    ,  84.71 ,  15.29 ,
                    ,  87.80 , 100.00 ,
         ###########^########^########^
         Total            82        13        95
                       86.32     13.68    100.00


          Statistics for Table of grp by B32
Statistic                      DF      Value      Prob
########################################################
Chi-Square                      1     1.7719    0.1831
Likelihood Ratio Chi-Square     1     3.1239    0.0772
Continuity Adj. Chi-Square      1     0.7136    0.3983
Mantel-Haenszel Chi-Square      1     1.7532    0.1855
Phi Coefficient                       0.1366
Contingency Coefficient               0.1353
Cramer's V                            0.1366
 WARNING: 25% of the cells have expected counts less
         than 5. Chi-Square may not be a valid test.

              Fisher's Exact Test
         ################################
         Cell (1,1) Frequency (F)       10
         Left-sided Pr <= F         1.0000
         Right-sided Pr >= F        0.2117
         Table Probability (P)      0.2117
         Two-sided Pr <= P          0.3479
            Effective Sample Size = 95
              Frequency Missing = 3


              Table of grp by B33
         Frequency  ,
         Percent    ,
         Row Pct    ,
         Col Pct    ,Yes      ,No       , Total
         ###########^########^########^
         Management ,      5 ,      5 ,     10
                    ,   5.21 ,   5.21 ,  10.42
```

```
                        ,  50.00 ,  50.00 ,
                        ,   6.94 ,  20.83 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Employees  ,     67 ,     19 ,     86
                        ,  69.79 ,  19.79 ,  89.58
                        ,  77.91 ,  22.09 ,
                        ,  93.06 ,  79.17 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Total            72         24         96
                         75.00      25.00     100.00
```

Statistics for Table of grp by B33

Statistic	DF	Value	Prob
Chi-Square	1	3.7209	0.0537
Likelihood Ratio Chi-Square	1	3.2752	0.0703
Continuity Adj. Chi-Square	1	2.3814	0.1228
Mantel-Haenszel Chi-Square	1	3.6822	0.0550
Phi Coefficient		-0.1969	
Contingency Coefficient		0.1932	
Cramer's V		-0.1969	

WARNING: 25% of the cells have expected counts less
         than 5. Chi-Square may not be a valid test.

Fisher's Exact Test

```
          ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Cell (1,1) Frequency (F)         5
          Left-sided Pr <= F          0.0670
          Right-sided Pr >= F         0.9857

          Table Probability (P)       0.0527
          Two-sided Pr <= P           0.1145
              Effective Sample Size = 96
                Frequency Missing = 2
```

Table of grp by B34

```
          Frequency  ,
          Percent    ,
          Row Pct    ,
          Col Pct    ,Yes      ,No        , Total
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Management ,      8 ,      2 ,     10
                        ,   9.41 ,   2.35 ,  11.76
                        ,  80.00 ,  20.00 ,
                        ,  15.09 ,   6.25 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Employees  ,     45 ,     30 ,     75
                        ,  52.94 ,  35.29 ,  88.24
                        ,  60.00 ,  40.00 ,
                        ,  84.91 ,  93.75 ,
          ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒƒˆ
          Total            53         32         85
                         62.35      37.65     100.00
```

Statistics for Table of grp by B34

Statistic	DF	Value	Prob
Chi-Square	1	1.5035	0.2201
Likelihood Ratio Chi-Square	1	1.6329	0.2013
Continuity Adj. Chi-Square	1	0.7722	0.3795
Mantel-Haenszel Chi-Square	1	1.4858	0.2229
Phi Coefficient		0.1330	
Contingency Coefficient		0.1318	
Cramer's V		0.1330	

WARNING: 25% of the cells have expected counts less
         than 5. Chi-Square may not be a valid test.

```
                 Fisher's Exact Test
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Cell (1,1) Frequency (F)        8
Left-sided Pr <= F         0.9484
Right-sided Pr >= F        0.1920
Table Probability (P)      0.1405
Two-sided Pr <= P          0.3072
      Effective Sample Size = 85
        Frequency Missing = 13
WARNING: 13% of the data are missing.


          Table of grp by B35

Frequency  ,
Percent    ,
Row Pct    ,
Col Pct    ,Yes     ,No      , Total
ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
Management ,      8 ,      2 ,     10
           ,   8.33 ,   2.08 ,  10.42
           ,  80.00 ,  20.00 ,
           ,  10.26 ,  11.11 ,
ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
Employees  ,     70 ,     16 ,     86
           ,  72.92 ,  16.67 ,  89.58
           ,  81.40 ,  18.60 ,
           ,  89.74 ,  88.89 ,
ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
Total             78       18       96
               81.25    18.75   100.00


     Statistics for Table of grp by B35
Statistic                  DF     Value     Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                  1    0.0114   0.9148
Likelihood Ratio Chi-Square  1    0.0113   0.9154
Continuity Adj. Chi-Square   1    0.0000   1.0000
Mantel-Haenszel Chi-Square   1    0.0113   0.9152
Phi Coefficient                  -0.0109
Contingency Coefficient           0.0109
Cramer's V                       -0.0109
 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                 Fisher's Exact Test
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Cell (1,1) Frequency (F)        8
Left-sided Pr <= F         0.5974
Right-sided Pr >= F        0.7206
Table Probability (P)      0.3180
Two-sided Pr <= P          1.0000
      Effective Sample Size = 96
        Frequency Missing = 2


          Table of grp by B36

Frequency  ,
Percent    ,
Row Pct    ,
Col Pct    ,Yes     ,No      , Total
ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
Management ,      9 ,      1 ,     10
           ,   9.28 ,   1.03 ,  10.31
           ,  90.00 ,  10.00 ,
           ,  10.84 ,   7.14 ,
ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
Employees  ,     74 ,     13 ,     87
           ,  76.29 ,  13.40 ,  89.69
```

127

```
                            ,   85.06 ,  14.94 ,
                            ,   89.16 ,  92.86 ,
              ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
              Total              83        14        97
                              85.57     14.43    100.00


                  Statistics for Table of grp by B36
Statistic                          DF        Value        Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                          1       0.1774      0.6736
Likelihood Ratio Chi-Square         1       0.1934      0.6601
Continuity Adj. Chi-Square          1       0.0000      1.0000
Mantel-Haenszel Chi-Square          1       0.1756      0.6752
Phi Coefficient                             0.0428
Contingency Coefficient                     0.0427
Cramer's V                                  0.0428

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                        Fisher's Exact Test
              ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
              Cell (1,1) Frequency (F)         9
              Left-sided Pr <= F          0.8066
              Right-sided Pr >= F         0.5593
              Table Probability (P)       0.3659
              Two-sided Pr <= P           1.0000
                    Effective Sample Size = 97
                      Frequency Missing = 1


                        Table of grp by B37
              Frequency  ,
              Percent    ,
              Row Pct    ,
              Col Pct    ,Yes     ,No      ,  Total
              ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
              Management ,     7 ,      3 ,     10
                         ,  7.69 ,   3.30 ,  10.99
                         , 70.00 ,  30.00 ,
                         , 10.77 ,  11.54 ,
              ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
              Employees  ,    58 ,     23 ,     81
                         , 63.74 ,  25.27 ,  89.01
                         , 71.60 ,  28.40 ,
                         , 89.23 ,  88.46 ,
              ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
              Total             65        26        91
                              71.43     28.57    100.00


                  Statistics for Table of grp by B37
Statistic                          DF        Value        Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                          1       0.0112      0.9156
Likelihood Ratio Chi-Square         1       0.0111      0.9159
Continuity Adj. Chi-Square          1       0.0000      1.0000
Mantel-Haenszel Chi-Square          1       0.0111      0.9161
Phi Coefficient                            -0.0111
Contingency Coefficient                     0.0111
Cramer's V                                 -0.0111

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                        Fisher's Exact Test
              ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
              Cell (1,1) Frequency (F)         7
              Left-sided Pr <= F          0.5876
              Right-sided Pr >= F         0.6941
```

```
                    Table Probability (P)        0.2816
                    Two-sided Pr <= P            1.0000
                        Effective Sample Size = 91
                          Frequency Missing = 7


                             Table of grp by B38
                    Frequency  ,
                    Percent    ,
                    Row Pct    ,
                    Col Pct    ,Yes     ,No      ,  Total
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Management ,      9 ,      1 ,     10
                               ,  10.71 ,   1.19 ,  11.90
                               ,  90.00 ,  10.00 ,
                               ,  12.33 ,   9.09 ,
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Employees  ,     64 ,     10 ,     74
                               ,  76.19 ,  11.90 ,  88.10
                               ,  86.49 ,  13.51 ,
                               ,  87.67 ,  90.91 ,
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Total            73        11       84
                                  86.90     13.10   100.00


                       Statistics for Table of grp by B38
                    Statistic              DF     Value     Prob
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Chi-Square              1    0.0956   0.7572
                    Likelihood Ratio Chi-Square  1    0.1019   0.7496
                    Continuity Adj. Chi-Square    1    0.0000   1.0000
                    Mantel-Haenszel Chi-Square    1    0.0944   0.7586
                    Phi Coefficient                   0.0337
                    Contingency Coefficient           0.0337
                    Cramer's V                        0.0337
                    WARNING: 25% of the cells have expected counts less
                             than 5. Chi-Square may not be a valid test.


                             Fisher's Exact Test
                    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
                    Cell (1,1) Frequency (F)        9
                    Left-sided Pr <= F         0.7750
                    Right-sided Pr >= F        0.6118
                    Table Probability (P)      0.3868
                    Two-sided Pr <= P          1.0000
                        Effective Sample Size = 84
                          Frequency Missing = 14
                    WARNING: 14% of the data are missing.


                             Table of grp by B39
                    Frequency  ,
                    Percent    ,
                    Row Pct    ,
                    Col Pct    ,Yes     ,No      ,  Total
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Management ,      8 ,      2 ,     10
                               ,   8.99 ,   2.25 ,  11.24
                               ,  80.00 ,  20.00 ,
                               ,  10.53 ,  15.38 ,
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Employees  ,     68 ,     11 ,     79
                               ,  76.40 ,  12.36 ,  88.76
                               ,  86.08 ,  13.92 ,
                               ,  89.47 ,  84.62 ,
                    ƒƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
                    Total            76        13       89
                                  85.39     14.61   100.00
```

```
              Statistics for Table of grp by B39
Statistic                          DF       Value      Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                          1      0.2627     0.6083
Likelihood Ratio Chi-Square         1      0.2431     0.6220
Continuity Adj. Chi-Square          1      0.0014     0.9702
Mantel-Haenszel Chi-Square          1      0.2598     0.6103
Phi Coefficient                            -0.0543
Contingency Coefficient                     0.0543
Cramer's V                                 -0.0543

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                 Fisher's Exact Test
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Cell (1,1) Frequency (F)        8
     Left-sided Pr <= F          0.4481
     Right-sided Pr >= F         0.8412

     Table Probability (P)       0.2892
     Two-sided Pr <= P           0.6358
          Effective Sample Size = 89
            Frequency Missing = 9


                Table of grp by B40
       Frequency  ,
       Percent    ,
       Row Pct    ,
       Col Pct    ,Yes     ,No      ,  Total
     ƒƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
     Management ,     10 ,      0 ,     10
                ,  11.63 ,   0.00 ,  11.63
                , 100.00 ,   0.00 ,
                ,  13.51 ,   0.00 ,
     ƒƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
     Employees  ,     64 ,     12 ,     76
                ,  74.42 ,  13.95 ,  88.37
                ,  84.21 ,  15.79 ,
                ,  86.49 , 100.00 ,
     ƒƒƒƒƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`ƒƒƒƒƒƒƒ`
     Total            74       12       86
                   86.05    13.95   100.00


              Statistics for Table of grp by B40
Statistic                          DF       Value      Prob
ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
Chi-Square                          1      1.8350     0.1755
Likelihood Ratio Chi-Square         1      3.2117     0.0731
Continuity Adj. Chi-Square          1      0.7555     0.3847
Mantel-Haenszel Chi-Square          1      1.8137     0.1781
Phi Coefficient                             0.1461
Contingency Coefficient                     0.1445
Cramer's V                                  0.1461

 WARNING: 25% of the cells have expected counts less
          than 5. Chi-Square may not be a valid test.


                 Fisher's Exact Test
     ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
     Cell (1,1) Frequency (F)       10
     Left-sided Pr <= F          1.0000
     Right-sided Pr >= F         0.2029

     Table Probability (P)       0.2029
     Two-sided Pr <= P           0.3445
          Effective Sample Size = 86
            Frequency Missing = 12
     WARNING: 12% of the data are missing.
```

```
                    Table of grp by B41
          Frequency  ,
          Percent    ,
          Row Pct    ,
          Col Pct    ,Yes     ,No      , Total
          ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
          Management ,      6 ,      3 ,      9
                     ,   6.67 ,   3.33 ,  10.00
                     ,  66.67 ,  33.33 ,
                     ,  11.11 ,   8.33 ,
          ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
          Employees  ,     48 ,     33 ,     81
                     ,  53.33 ,  36.67 ,  90.00
                     ,  59.26 ,  40.74 ,
                     ,  88.89 ,  91.67 ,
          ƒƒƒƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆƒƒƒƒƒƒƒˆ
          Total            54       36       90
                        60.00    40.00   100.00


             Statistics for Table of grp by B41
    Statistic                     DF       Value      Prob
    ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
    Chi-Square                     1      0.1852    0.6670
    Likelihood Ratio Chi-Square    1      0.1889    0.6639
    Continuity Adj. Chi-Square     1      0.0051    0.9428
    Mantel-Haenszel Chi-Square     1      0.1831    0.6687
    Phi Coefficient                       0.0454
    Contingency Coefficient               0.0453
    Cramer's V                            0.0454

     WARNING: 25% of the cells have expected counts less
             than 5. Chi-Square may not be a valid test.


                    Fisher's Exact Test
          ƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒƒ
          Cell (1,1) Frequency (F)         6
          Left-sided Pr <= F          0.7815
          Right-sided Pr >= F         0.4796

          Table Probability (P)       0.2611
          Two-sided Pr <= P           0.7362
             Effective Sample Size = 90
               Frequency Missing = 8
```