CHAPTER 3

A FRAMEWORK FOR THE IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT

3.1   INTRODUCTION

In chapter 2, a conceptual overview of TQM is provided as an aid to gain a better understanding of the concept. As indicated in the title, this thesis proposes the development of a framework for the implementation of TQM in the SA Air Force. Such a framework must be comprehensive, flexible and easy to adopt. Therefore, the purpose of this chapter is to determine the most important dimensions of and variables that influence TQM from an extensive review of the findings provided in the vast literature on TQM and to integrate these findings and dimensions into such a framework. The framework is then to be integrated into the activities of the SA Air Force as a prerequisite for the implementation of TQM. It is imperative that such an implementation framework will 'fit the purpose' of the institution in order to pave the way for improved TQM adoption. The dimensions of TQM outlined in the research review complement the focus on TQM, which is highly people-oriented and based on hard and soft dimensions to achieve TQM. The main purpose of this chapter is thus to provide a TQM framework suitable to the SA Air Force and to describe and analyse its main phases for implementation.

The particular focus of this chapter is therefore a general overview of the need for a framework for TQM, as a precursor to the following section, which focuses on the critical dimensions of TQM, before discussing the primary and supportive dimensions in greater detail and exploring a three-phase implementation process.

3.2   THE NEED FOR A FRAMEWORK FOR TOTAL QUALITY MANAGEMENT

Authors have often used the term 'framework' in TQM implementation without really defining it. According to Dale *et al*. (2001:441) and Mohd Zain, Dake & Kehoe (2001:605), "frameworks" seem to be popular research outputs, which serve as a means of presenting ideas, concepts, pointers and plans in a non-prescriptive manner.

The two authors argue that frameworks allow users to choose their own starting point and specific course of action and priorities, and to develop the individual dimensions of TQM at a pace that suits the institutional situation and available resources.

Another contribution to the meaning of a "framework" was made by Yusof & Aspinwall (2000a:284). Their work provides a definition of a framework, which states "Frameworks are a structure for supporting, defining, or enclosing something; especially, skeletal erections and supports as a basis for something to be constructed' and also 'a basic arrangement, form, or system." The two writers continue and mention that a framework is also a set of assumptions or fundamental principles of intellectual origin according to which discussions and actions can proceed. According to Yusof & Aspinwall (2000a:284), it can be assumed that a model provides an answer to the question of 'what is TQM', with the overall concept or elements put together, whereas a framework answers 'how to' questions and provides an overall way forward. If TQM is to be theoretically 'designed and constructed', the overall picture and structure for implementing, referred to as a framework, are required for carrying out relevant and important activities.

Aalbregtse, Heka & McNeley (1991:30) define a framework as being "a clear picture of the leadership goal for the institution and should present key characteristics of the to-be style of business operations". In TQM terms it means that one should design a framework representing the modus operandi, the systems to be developed, the activities to be carried out and the ultimate vision of the new style of managing quality in an institution. Aalbregtse, Heka & McNeley (1991:30) continue and state that a sound implementation plan should define what the institution does, what it is trying to do and how it is going to do it, ensuring that each step builds on the previous one. Through this approach Aalbregtse, Heka & McNeley (1991:30) and Mohd Zain, Dake & Kehoe (2001:605) support each other in the view that a sound framework secures links between concepts and practical application. TQM theory is thus translated into practice by some or other systematic means. Aalbregtse, Heka & McNeley (1991:31) provide four reasons why a framework is needed to implement TQM, namely:

- to illustrate an overview of TQM so as to communicate a new vision of the institution;

- to force management to address a substantial list of key issues which otherwise might not be addressed;

- to provide insight into the institution's strengths and weaknesses; and

- most importantly, to support implementation and to improve the chances that TQM adoption will be successful.

Yusof & Aspinwall (2000a:285) support Aalbregtse, Heka & McNeley (1991:31) by arguing that the development of a sound implementation framework is crucial and should be one of the first things to be done before embarking on TQM. The framework will make the institution more aware of TQM itself, and be able to introduce its elements and features in a more comprehensive, controlled and timely manner. As intimated by its title, this thesis proposes the inclusion of a framework as a means to implement TQM in the SA Air Force. In the following paragraph the most important dimensions of TQM will be determined, as derived from an extensive review of the vast literature on TQM, in order to integrate these dimensions into a framework for TQM which, in turn, is to be integrated into the SA Air Force as a prerequisite for implementing total quality and understanding the interactive role and relationships between these dimensions.

3.3   CRITICAL DIMENSIONS OF TOTAL QUALITY MANAGEMENT

Although a large number of prescriptions exist as provided by the quality gurus (see paragraph 2.3.1.1 - 2.3.1.5), and various principles (see paragraph 2.3.3) and definitions of TQM (see paragraph 2.3.4) have been discussed, it is prudent to create a deeper insight into the various dimensions of TQM that constitute quality so as to maintain perspective on the subject of managing total quality. The level of awareness of TQM has increased considerably over the last few years. There is widespread consensus that TQM is a way of managing institutions to improve effectiveness, but there is less agreement as to what are the key elements of TQM and what are the critical dimensions that influence the TQM implementation process. In recent research work, Oschman (2002:66) identified eight dimensions of TQM as derived from the perspective of an intensive literature study. Further to this, Oschman expands his literature research, which involved more than 100 articles and identifies the diverse dimensions of TQM as indicated in table 3.1. Table 3.1 provides a summary of literature evidence on the criticality of the dimensions of TQM. On studying table 3.1,

some of the values and themes underpinning the TQM philosophy that is common to all institutions become apparent. For the purposes of this study, they will be referred to as "**dimensions**". An extensive literature survey was conducted in order to identify those dimensions essential for successful implementation of TQM. Several writers as indicated in table 3.1 have defined the different dimensions that shape TQM. The dimensions are derived from research conducted by academics and include those they consider to be essential for shaping the development of TQM.

Table 3.1: Various Total Quality Management dimensions

DIMENSION	RESEARCHERS
Accountability/responsibility	Lindsay & Petrick (1998:226)
Audit system	Karapetrovic & Willborn (2001:13)
Balanced scorecard	Kanji & Moura (2002:13); Kanji & Wallace (2000:987); Kueng (2000:67); Lawton (2002:66); Tate (2000:674)
Benchmarking	Boaden (1997:163); Camp (1989a:62); Dale *et al.* (2001:444); George & Weimerskirch (1994:207); Lincoln (1996:33); Morling & Tanner (2000:417); Rao *et al.* (1996:561); Stahl (1995:186); Stamatis (1996:198); Sureshchandar, Rajendran & Kamalanabhan *(*2002 :73); Swift, Ross & Omachonu (1998:137); Tang & Zairi (1998:552); Tata & Prasad (1998:703)
Business excellence	Hammond (2000:666); Kanji & Wong (1999:1147); Kanji (2002:720)
Business process re-engineering	Yong & Wilkinson (2001:247)
Change management	Bertram (1993:26); Buxton (1998:181); Carnell (2002:76); Dervitsiotis (1998:57); Evans & Dean (2003:196); Gopalan (1994:117); Hammer & Champy (2000:12); Kelly & Morath (2001:68); Madu & Kuei (1995:93); Nel, Gerber, Van Dyk, Haasbroek, Schultz & Sono (2001:400); Rao *et al.* (1996:425); Stahl (1995:287); Yusof & Aspinwall (2000b:450)

Collaboration	Brown, Hitchcock & Willard (1994:145)
Commitment	Jaycox (1996:45); Kanji (1995:75); Masters (1996:53); Parzinger & Nath (2000:355)
Communication	Addey (2001:852); Bilich & Neto (2000:9); Boaden (1997:163); Dayton (2001:294); Duffy, Bauer & Moran (2001:100); Gunasekaran (1998:991); Johnson (1993a:211); Lai, Weerakoon & Cheng (2002:31); Milliken (1996:60); Oakland & Oakland (1998:185); Russel (2002:78); Scully (1996:47); Scully (1995:37); Stahl (1995:360); Townsend & Gebhardt (2002:77)
Competence	Bilich & Neto (2000:8); Lindsay & Petrick (1998:282)
Competition	Boaden (1997:163)
Confidential relationships	Milliken (1996:58)
Continuous improvement	Ahmed, Loh & Zairi (1999:428); Boaden (1997:163); Butz (1995:106); Chester (1995:57); Czarnecki, Schroer, Adams & Spann (2000:74); Dean & Bowen (1994:395); Hradesky (1995:291); Kanji & Wong (1999:1147); Kanji (2002:720); Kanji & Yui (1997:421); Land, (2001:89); Lai, Weerakoon & Cheng (2002:31); Lindsay & Petrick (1998:154); Rao *et al.* (1996:231); Rapp & Eklund (2002:945); Stahl (1995:424); Sureshchandar, Rajendran & Kamalanabhan *(*2002 :73); Swift, Ross & Omachonu (1998:243); Tata & Prasad (1998:703); Wetzel (1996:41); Wright (2000:433); Yusof & Aspinwall (2000b:459)
Control of processes	Bilich & Neto (2000:9)
Cooperative relationship	Kanji & Wong (1999:1147)
Corporate citizenship	Boaden (1997:163)
Creativity/innovation	Bertram (1993:42); Billich & Neto (2000:9); Joiner (1996:51); Madu & Kuei (1995:83)
Cross functional teams	Gunasekaran (1998:990)

Culture	Billich & Neto (2000:7); Butz (1995:105); Caspaeij (1997:109); Dale (2002:88); Dayton (2001:294); Gopalan (1994:120); Hradesky (1995:129); Kanji (2002:720); Kanji & Yui (1997:417); Kanji & Wallace (2000:980); Lai, Weerakoon & Cheng (2002:31); Lotentzen (1992:31); Masters (1996:53); Pun (2001:323); Tata & Prasad (1998:703); Travalini (2001:103); Watson & Gryna (2001:41); Yusof & Aspinwall (2000a:283); Yusof & Aspinwall (2000b:459)
Customer and supplier participation	Dale *et al.* (2001:444); Evans & Dean (2003:133)
Customer satisfaction	Addey (1999:422); Afors & Michaels (2001:82); Ang, Davies & Finlay (2001:146); Bemowski (1996b:50); Boaden (1997:163); Butz (1995:106); Dayton (2001:294); Dean & Bowen (1994:394); George & Weimerskirch (1994:33); Hradesky (1995:629); Kanji & Wong (1999:1147); Kanji (2002:720); Kanji & Yui (1997:421); Lai, Weerakoon & Cheng (2002:31); Linden (1993:49); Lindsay & Petrick (1998:89); Longo & Cox (1997:327); Masters (1996:55); Oakland & Oakland (1998:187); Parr (1995:105); Parzinger & Nath (2000:355); Russel (2000:663); Stahl (1995:178); Sureshchandar, Rajendran & Kamalanabhan (2002 :73); Swift, Ross & Omachonu (1998:117); Tata & Prasad (1998:703); Wong (2000:427); Wood (1997:184); Yusof & Aspinwall (2000b:450)
Customer loyalty	Behara, Fontenot & Gresham (2002:603)
Customer value	Saliba & Fisher (2000:63)
Decision-making	Billich & Neto (2000:7); Boaden (1997:163); Johnson (1993b:223); Stahl (1995:121)
Employee attitudes and behaviour	Dale *et al.* (2001:444)

Employee involvement	Dale *et al.* (2001:444); Dean & Bowen (1994:400); Pun, Chin & Gill (2001:95); Tata & Prasad (1998:703); Townsend & Gebhardt (2002:77); Yusof & Aspinwall (2000:450)
Employee satisfaction	Bowden (2000:637); Eskildsen & Nüssler (2000:581); Eskildsen & Dahlgaard (2000:1081); George & Weimerskirch (1994:81); Gunasekaran (1998:991); Johnson (1993a:204); Martensen & Gronholdt (2001:949); Oakland & Oakland (1998:187); Palmer & Ziemianski (2000:74); Rao *et al.* (1996:461); Sureshchandar, Rajendran & Kamalanabhan (2002 :73)
Empowerment	Beck (1996:28); Boaden (1997:163); Evans <u>& Dean</u> (2003:266); Gunasekaran (1998:991); Hradesky (1995:159); Johnson (1993a:187); Jones (1994:101); Ljungström & Klefsjö (2002:623); Longo & Cos (1997:327); Masters (1996:55); Maynard (1995:697); Oakland & Oakland (1998:186); Rao *et al.* (1996:486); Scully (1996:47); Spice & Gilburg (1992:27); Stahl (1995:332); Waldman (1994:520); Wilsey (1995:85)
E-quality leadership	Wells (1998:230)
Excellence	Eskildsen & Dahlgaard (2000:1081); Hammond (2000:666)
Human resources	Ang, Davies & Finlay (2001:146); Bemowski (1996b:50); Billich & Neto (2000:6); Dean & Bowen (1994:399); Gurnani (1999:209); Kanji (2002:720); Leo (1996:67); Longo & Cos (1997:326); Nel *et al.* (2001:28); Scully (1996:46); Stahl (1995:245); Sureshchandar, Rajendran & Kamalanabhan (2002:73); Swift, Ross & Omachonu (1998:7); Yusof & Aspinwall (2000:459)
Innovation	Boaden (1997:163); Buxton (1998:181)

Information management/systems/ technology	Ang, Davies & Finlay (2001:146); Bemowski (1996b:50); Billich & Neto (2000:6); Leo (1996:67); Matta, Chen & Tama (1998:445); Rao *et al.* (1996:547); Stahl (1995:444); Sureshchandar, Rajendran & Kamalanabhan *(*2002 :73)
Integrated management	Tranmer (1996:714)
Internal and external customers	Ross (1994:208)
Involvement	Billich & Neto (2000:9)
ISO 9000:2000	Campbell (1996:706); Hooper (2001:70-73); Ketola & Roberts (2001:65); Mercier (2002:56); Russel (2000:657); Russel (2002:78); Stahan (2002:27); Seghezzi (2001:861); Shipley (2002:32); Tonk (2000:51); Zuckerman (1999:35); West (2002:58); Wright (2001:57)
Knowledge management	Brenner (1999:33); Clarke (2000:67); Gore & Gore (1999:554); Kanji (1995:53); Wilson & Asay (1999:26)
Leadership	Beck (1996:28); Billich & Neto (2000:7); Boaden (1997:163); Cocheu (1995:41); Coetzee (2001:27); Dean & Bowen (1994:398); Evans & Dean (2003:289); George & Weimerskirch (1994:15); Hradesky (1995:199); Griffin (1996:637); Gurnani (1999:209); Johnson (1993a:41); Kanji & Wong (1999:1147); Kanji & Yui (1997:421); Kanji (1995:73); Kanji (2002:720); Master (1992:12); Nel *et al.* (2001:349); Pun & Hui (2002:380); Russel (2000:661); Savolainen (2000:211); Scholtes (1999:704); Scully (1996:47); Tata & Prasad (1998:703); Townsend & Gebhardt (2002:77); Wilsey (1995:85); Yusof & Aspinwall (2000b:459)
Learning organisation	Hassounah (2001:106); Sitkin, Sutcliffe & Schroeder (1994:544)
Management by facts	Kanji (2002:720); Kanji & Wong (1999:1157)
Management systems	Bemowski (1996a:37); Bertram (1993:14)

Measures of quality	Dale (2002:86); Kanji & Yui (1997:421); Yusof & Aspinwall (2000b:450)
Mission	Billich & Neto (2000:6)
Operational quality planning	Lai, Weerakoon & Cheng (2002:31)
Organisational structure	Billich & Neto (2000:6); Dale (2002:87); Johnson (1993b:17); Masters (1996:54); Parr (1995:105); Stahl (1995:206)
Organisation flexibility	Madu & Kuei (1995:9); Stahl (1995:235)
Ownership	Bertram (1993:52); Johnson (1993a:32)
Participative management	Bilich & Neto (2000:7); Boaden (1997:163); Johnson (1993a:121); Oakland & Oakland (1998:186); Parr (1995:103); Pun, Chin & Gill (2001:95)
People management	Dayton (2001:294); Kanji (2002:720); Kanji & Yui (1997:421); Lai, Weerakoon & Cheng (2002:31); Oakland & Oakland (1998:185); Oakland & Oakland (2001:773); Russel (2000:661); Yong & Wilkinson (2001:247)
Performance measurement	Andersen & Fagerhaug (2001:171); Bemowski (1996b:49); Kanji (2002:715); Lindsay & Petrick (1998:261); Nel *et al.* (2001:514); Pun (2002:759); Townsend & Gebhardt (2002:77); Yusof & Aspinwall (2000b:459)
Plan Do Check Action (PDCA)	Noguchi (1995:37); Yusof & Aspinwall (2000a:292)
Planning	Dervitsiotis (1998:56); Longo & Cos (1997:326)
Policy	Billich & Neto (2000:7); Russel (2000:661)
Problem solving	Lindsay & Petrick (1998:5)
Procedures	Yusof & Aspinwall (2000a:283)
Process improvement	Yusof & Aspinwall (2000b:450)
Process management	Boaden (1997:163); Dale *et al.* (2001:444); Gardner (2001:51); George & Weimerskirch (1994:163); Bemowski (1996b:50); Kane (1992:41); Kanji (2002:720); Kanji & Yui (1997:421); Lawrence (1997:74); Lindsay & Petrick (1998:159); McCormick (2001:51); Milliken (1996:61); Parzinger & Nath (2000:355);

Process management (follow)	Russel (2000:662); Senthil, Devadasan & Selladurai (2001:682); Selladurai (2002:615); Tranmer (1996:717)
Process mapping	Greenfield (2002:50)
Process re-engineering	Hammer & Champy (2000:12); Rao *et al.* (1996:531)
Productivity	Ross (1994:299)
Product design	Dale *et al.* (2001:444)
Quality management	Billich & Neto (2000:6); Chorlton (2002:39); Dale (2003:277); Gordon (2002:86); Mohanty (1998:753); Rowley (1998:321); Stahan (2002:27); Yong & Wilkinson (2002:101)
Quality audit	Bemowski (1996b:50); Wetzel (1996:42)
Quality control	Boaden (1997:163)
Quality department	Yusof & Aspinwall (2000b:450)
Quality function deployment	Martins & Aspinwall (2001:575)
Quality improvement	Dayton (2001:294); Pun, Chin & Gill (2001:102)
Quality inspection	Ljungström & Klefsjö (2002:623)
Quality measures	Parzinger & Nath (2000:356)
Quality policies & procedures	Page (2000:58)
Quality system	Hoyle (1996:710); Yusof & Aspinwall (2000b:450)
Quality tools	Draper & Ames (2000:41)
Quality of work life	Billich & Neto (2000:9); Johnson (1993a:265); Wuagneux (2002:60)
Recognition	Billich & Neto (2000:9); Boaden (1997:163); Gurnani (1999:209); Townsend & Gebhardt (2002:77)
Resources	Johnson (1993a:43); Ross (1994:119); Russel (2000:662); Swift, Ross & Omachonu (1998:79)
Rewards	Bertram (1993:49); Billich & Neto (2000:9); George & Weimerskirch (1994:107); Gurnani (1999:209); Rao *et al.* (1996:474)
Safety management	Pun & Hui (2002:373)

Self assessment (i.e. EFQM)	Boaden (1997:163); Collier, Goldstein & Wilson (2002:97); George & Weimerskirch (1994:239); Bemowski (1996:49); Kueng (2000:68); Milliken (1996:59); Pun (2002:759); Rao *et al.* (1996:63); Watts & Dale (1999:81); Wetzel (1996:47)
Service culture	Sureshchandar, Rajendran & Kamalanabhan (2001b:351); Sureshchandar, Rajendran & Kamalanabhan *(*2002 :73)
Service delivery	Kandampully (1999:431); Rowley (1998:321); Stamatis (1996:44)
Service quality	Sureshchandar, Rajendran & Kamalanabhan (2001:111)
SERVQUAL	Wisniewski (2001:995)
Six Sigma	Gross (2001:24); Lucas (2002:27); Pearson, (2001:35); Treichler, Carmichael & Kusmanoff (2002:33); Wyper & Harrison (2000:720)
Social responsibility	Pun (2002:759); Sureshchandar, Rajendran & Kamalanabhan (2002:73)
Software quality	Parzinger & Nath (2000:355)
Statistical process control	Kueng (2000:68); Yusof & Aspinwall (2000b:450)
Strategic goals	Yusof & Aspinwall (2000b:450)
Strategic planning	Ang, Davies & Finlay (2001:146); Bemowski (1996:39); Butz (1995:105); Cascella (2002:62); Dayton (2001:294); Dean & Bowen (1994:402); Evans & Dean (2003:347); George & Weimerskirch (1994:49); Johnson (1993b:125); Lindsay & Petrick (1998:92); Masters (1996:53); Miller (1995:102); Nel *et al.* (2001:561), Oakland (1995:81); Russel (2000:661); Stahl (1995:153); Swift, Ross & Omachonu (1998:59)
Strategic positioning	Bemowski (1996:33); Ross (1994:89); Stahl (1995:118)
Subcontracting	Billich & Neto (2000:7)

Supplier relationships and satisfaction	Ang, Davies & Finlay (2001:146); Boaden (1997:163); Dale *et al.* (2001:444); Dale (2002:88); Dayton (2001:294); Dean & Terziovski (2001:611); Trent & Monczka (1998:927); Wong (2003:151); Yusof & Aspinwall (2000b:450)
Support resources	Ketola & Roberts (2001:65)
Support structures	Ghobadian *et al.* (1998:153); Pun & Hui (2002:380); Quazi, Hong & Meng (2002:53); Tata & Prasad (1998:703); Yusof & Aspinwall (2000a:283)
Support systems	Billich & Neto (2000:6); Yong & Wilkinson (2001:247); Yusof & Aspinwall (2000a:283)
Systems thinking	Boaden (1997:163); Dale (2002:86); La Lopa & Marecki (2000:59); Madu & Kuei (1995:17); Nel *et al.* (2001:50); Stahl (1995:180); Taiwo (2001:967); Waldman (1994:514)
Teamwork	Beck (1996:28); Boaden (1997:163); Dayton (2001:294); Dean & Bowen (1994:395); Evans & Dean (2003:235); Gunasekaran (1998:991); Hradesky (1995:193); Jaycox (1996:46); Kanji & Yui (1997:421); Masters (1996:54); Nel *et al*. (2001:372); Oakland & Oakland (1998:186); Rao *et al.* (1996:477); Scholtes (1995:51); Scully (1996:47); Stahl (1995:386); Tata & Prasad (1998:703); Teegarden (1995:111)
Techniques and tools for quality	Dale (2003:309); Evans & Dean (2003:87); Milliken (1996:57); Tranmer (1996:716)
Technical skills	Pun, Chin & Gill (2001:99)
Technical system	Sureshchandar, Rajendran & Kamalanabhan (2002 :73)
Technology	Billich & Neto (2000:6); Gunasekaran (1998:991); Joiner (1996:52); Ross (1994:61); Teegarden (1995:111)
Top management commitment	Addey (2001:851); Townsend & Gebhardt (2002:77)
Total Quality Service	Choppin (1994:458)

Training and education	Bertram (1993:11); Billich & Neto (2000:9); Boaden (1997:163); Dean & Bowen (1994:401); George & Weimerskirch (1994:95); Masters (1996:53); Gunasekaran (1998:991); Gurnani (1999:209); Longo & Cos (1997:327); Nel *et al.* (2001:466); Oakland & Oakland (1998:186); Parzinger & Nath (2000:355); Rooney, Heuvel & Lorenzo (2002:34); Townsend & Gebhardt (2002:77)
Values	Milliken (1996:58); Gopalan (1994:116)
Vision and mission	Addey (2001:851); Bertram (1993:38); Boaden (1997:163); Johnson (1993a:249); Jones (1994:99); Parr (1995:106)
Work ethics	Bottorff (1997:57); Johnson (1993b:305)
Workflow-based monitoring	Kueng (2000:68)
Working conditions	Jaycox (1996:47)
Work performance	Waldman (1994:518)
Work development	Ljungström & Klefsjö (2002:625)
Zero defects	Lindsay & Petrick (1998:77)

Source: Adapted by Oschman (2002:69)

The procedure discussed in chapter 1, figure 1.1 clearly indicates that the prescriptions of the quality gurus and the principles and definitions of TQM form an integral part when identifying the dimensions required for TQM as indicated in table 3.1. As more literature was studied, further dimensions associated with TQM were added as they were identified. Based on a thorough review of the prescriptive, conceptual, practitioner and empirical literature on TQM, the author identified dimensions of TQM outlined by some researchers as models or frameworks as indicated in table 3.2.

A framework for TQM, taking cognisance of the relevant TQM principles (see chapter 2, paragraph 2.3.3), prescriptions of the quality gurus (see chapter 2, paragraph 2.3.1.1 – 2.3.1.5), definitions (see chapter 2, paragraph 2.3.4) and dimensions (see table 3.1 and table 3.2) derived from research literature, will be more appropriate for a specific institution than a TQM philosophy that does not consider these aspects.

Table 3.2: Topology of the TQM literature accentuating the various dimensions as models or frameworks

Dimensions as models (M) or frameworks (F)	Researchers
Communication (M)	Addey (2001:853)
Continuous improvement (F)	Ahmed, Loh & Zairi (1999:427); Carpinetti & Martins (2001:283)
Culture (F)	Adehanjo (1997:608), Bright (1994:609); Casparij (1997:111)
Support structures, systems and resources (M)	Mandal, Howell & Sohal (1998:81); Naveh & Halevy (2000:87); Russel (2000:657)
Strategic planning (M)	Briggs & Keogh (1999:447); Boon (1997:95)
Knowledge management for continues improvement (F)	Gore & Gore (1999:554)
Customer satisfaction (M)	Gorst, Wallace & Kanji (1999:561); Kaye & Dyason (1999:594); Gronholgdt, Martensen & Kristensen (2000:S510); Kanji & Wallace (2000:983); Wong (2000:428)
Process management (M)	Kueng (2000:83)
Self assessment (M)	Robinson (1999:691); Russel (1999:697)
Change management (M)	Buxton (1998:181); Dervitsiotis (1998:59)
Leadership (M)	Edgeman & Dahlgaard (1998:77)
Empowerment	Moon & Swaffin-Smith (1998:302)
Teamwork	Adams & Kydoniefs (2000:43)
Employee satisfaction (M)	Fosam, Grimsley & Wisher (1998:238); Eskildsen & Nüssler (2000:581); Martensen & Gronholdt (2001:950).
Training (M)	Mathews *et al.* (2001:483)
Systems thinking (M)	Nwabueze & Kanji (1997:290); Taiwo (2001:967)
Supplier satisfaction	Wong (2000:430)
Employee involvement	Pun, Chin & Gill (2001:100)

Source: Own research observation

The philosophy of total quality, consisting of the dimensions as indicated in tables 3.1 and 3.2, gives rise to various interpretations. The present work, based on a thorough review of the literature on TQM dimensions, provides in table 3.3 a summary of the critical dimensions underlying TQM in an attempt to develop a TQM framework.

Table 3.3: Critical primary and supportive dimensions for TQM

Primary dimensions	Hard or Soft science[1]
Leadership and top management commitment	Soft
Strategic planning	Hard
Empowerment and investment in people	Soft
Teamwork	Hard
Continuous improvement	Hard
Customer and employee satisfaction	Soft
Supportive dimensions	Hard or Soft science
Communication	Soft
Training	Soft/Hard
Culture forming	Soft
Change management	Soft
Processes	Soft
Supportive structures, systems and resources	Hard
Systems thinking	Soft
Self assessment	Hard

Source: Own observation

In a literature review of the dimensions set out in table 3.1 and the dimensions of TQM outlined by researchers as models or frameworks in table 3.2, generic relationships between the dimensions of the models and frameworks became apparent. An analysis of all the dimensions listed in table 3.1 revealed 14 dimensions critical to the success of TQM. These 14 dimensions, which are commonly mentioned in the literature survey material cited in this paper, are listed in table 3.3. In the process followed to reduce the number of dimensions from table 3.1 to 14 dimensions, some dimensions were combined into a single dimension as they cover similar concepts. For example, (1)

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[1] See page 107 and 108 for an explanation of hard and soft science.

leadership and top management commitment is the combination of top management commitment and committed leadership and (2) empowerment includes investment in people. A theoretical assumption could be made that the 14 dimensions as indicated in table 3.3, which are divided into primary and supportive dimensions, hard and soft issues, are most probably applicable and critical to all types of institutions. These 14 dimensions are critical for the institution of a TQM environment. In research work conducted by Oschman (2002:184), he empirically validated eight of the 14 dimensions, namely leadership and top management commitment, strategic planning, empowerment, teamwork, continuous improvement, customer and employee satisfaction, communication and culture forming, and validated these at only one air force base, namely Test Flight and Development Centre (TFDC, now known as Air Force Base Overberg). The measures used for the eight TQM dimensions were found to be reliable and valid, and provided key contributions for a better understanding of TQM. Oschman (2002:324) further contributed to the development of an instrument to measure the levels of implementation of the eight dimensions. However, the eight TQM dimensions proposed by the author in his research and instrument are not comprehensive as the work excluded certain key dimensions of TQM, such as training, support structures, systems and resources, the systems thinking approach, self assessment, processes and change management. Oschman's measurement instrument (see Appendix B) is developed further in this research, as it will be used to evaluate all 14 dimensions as proposed in table 3.3, in order to evaluate the extent of TQM practices at eight air force bases. The 14 dimensions are those that should be considered in shaping the development of TQM.

Table 3.3 clearly indicates that TQM must be regarded as a mixture of soft and hard science. Kanji (1995:128) supports this statement of the researcher by stating that the implementation of TQM arises from the fact that TQM is a soft and hard science and as such invites philosophical discussion. According to Wilkinson, Godfrey & Marchington (1997:799) two broad approaches can be identified under the labels of "hard" and "soft" TQM and these categories identify the main emphasis behind an institution's TQM approach. "Hard" TQM concentrates on the tools and techniques and the systematic measurement and control of the work process, ensuring conformance to performance standards and the reduction of variability. "Soft" TQM, on the other hand, places more importance on areas such as increasing the customer orientation of the institution,

leadership and top management commitment, communication, training, employee participation and culture forming (Wilkinson, Godfrey & Marchington 1997:801). The two approaches are not mutually exclusive and institutions are likely to adopt features from both categories. However, the soft and hard labels do describe a difference in *emphasis* that is evident on the ground, and one, which has a significant effect on the level of discretion given to employees and the degree and nature of implementation. According to Wilkinson, Godfrey & Marchington (1997:799), most institutions implementing TQM are not aware of the soft and hard implementation options and without the awareness and analysis of critical soft and hard implementation issues, it is not possible to implement TQM successfully. Implementing a framework requires thorough planning and a systematic effort. Although the principal result of implementation is improvement in hand, institutional indicators and performance metrics, getting there requires managerial attention to the many soft issues, such as people and processes that are critical to long-term success (Legare & Bechtel 2001:20).

The dimensions listed in table 3.3 can be grouped into three categories, namely:

- Those dimensions that is generic to both manufacturing and service institutions. This includes all 14 dimensions.
- Those dimensions that concentrate on hard and soft issues in both manufacturing and service institutions. This includes all 14 dimensions.
- Those dimensions that are unique namely support structures, systems and resources.
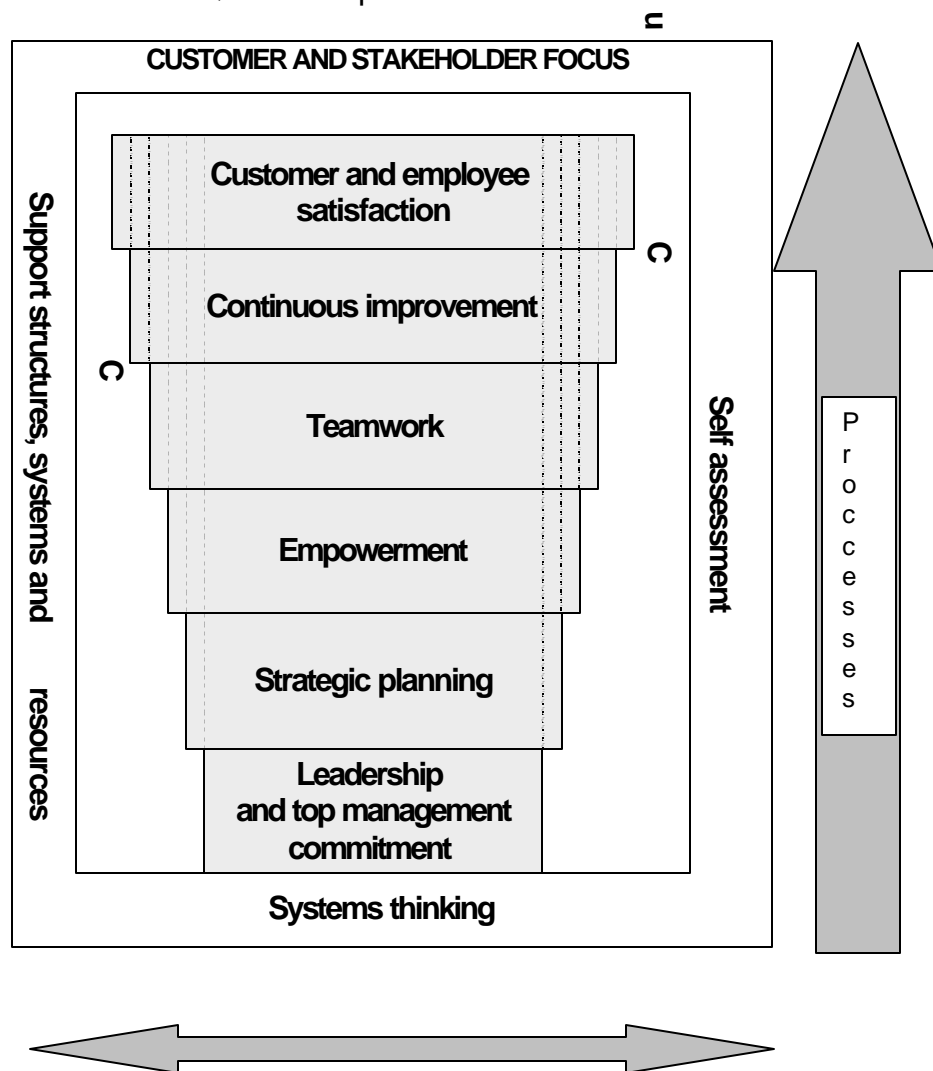
In future, as TQM develops even further, new dimensions will be identified. However, in this study the objective is to limit the scope to the most common dimensions as indicated in table 3.3.

3.4   A FRAMEWORK FOR TOTAL QUALITY MANAGEMENT

From the literature review of the different models and frameworks, it became evident that various researchers agree that the 14 dimensions listed in table 3.3 are in accordance with the philosophy that underpins TQM. The 14 dimensions are found in

most quality improvement processes and as they incorporate the prescriptions of the quality gurus (see paragraph 2.3.1.1 - 2.3.1.5), and the principles (see paragraph 2.3.3) and definitions of TQM (see paragraph 2.3.4), they are combined to represent a framework for TQM. The prescriptions of the quality gurus provide fundamental principles on which total quality is based, however, none of these prescriptions provide a framework for the implementation of TQM within institutions. The 14 dimensions have different functions in a TQM movement. Based on the literature evidence and logical reasoning, the various functions of the dimensions are portrayed by means of a descriptive framework as indicated in figure 3.1.

Figure 3.1: The framework: "TQM telescopic framework"

CUSTOMER AND STAKEHOLDER FOCUS

Customer and employee satisfaction

Continuous improvement

Teamwork

Empowerment

Strategic planning

Leadership and top management commitment

Support structures, systems and resources

Self assessment

Systems thinking

Proccesses

Source: Adapted by Oschman (2002:68)

The framework is to be used when introducing TQM and when designing implementation plans for quality improvement. The purpose of the framework is to provide guidance to institutions introducing TQM in order to indicate to them the way in which the various dimensions and features of TQM fit together. The framework has been customized to fit the needs of the SA Air Force. An apt name for this framework would be the "*TQM telescopic framework*" (see figure 3.1).

The framework has been constructed in such a manner that it will provide a directional structure for using the 14 dimensions when implementing TQM. The framework provides an overall view of the integrative manner of the 14 dimensions relying on both 'hard' and 'soft' issues. Figure 3.1 identifies the key dimensions in the TQM telescopic framework and the way in which the dimensions are interconnected. The framework can be regarded as a "total quality journey" tearing down outdated TQM models and frameworks, arguing instead for the need to build a whole new TQM framework (see figure 3.1) – one which can live up to the vision and challenges in the definition of TQM (see chapter 2, paragraph 2.3.4).

The framework provides a multi-dimensional TQM vision for studying an institution's status, or against which a particular approach to TQM implementation can be compared and weaknesses highlighted. Strong relationships and linkages exist between the six primary dimensions and the eight supportive dimensions. An empirical investigation of the framework has been completed and is discussed in chapters 7 and 8.

Chapter 4 and 5 expands on the major features of the individual dimensions in the framework. A measuring instrument (spanning the 14 dimensions) in the form of a questionnaire (see Appendix B and C) was developed in order to measure empirically the level of TQM implementation at the various air force bases as discussed in chapters 8 and 9. By following this approach, the data collected from various air force bases can empirically validate the questionnaire as well as the relationships between the 14 dimensions. The questionnaire is used in the present study to investigate the relationship between and importance of the dimensions. See chapter 8 for a detailed description of the methodology adopted to validate the 14 dimensions empirically. Research done for this thesis, which involves a "citation time line" from 1931 to 2003,

yielded evidence of many literature insight studies, which were both analytical and descriptive, but not empirical in nature. No evidence of an empirically developed framework exists that could be used to assist the implementation of TQM in air forces (Oschman 2002:306).

From the dimensions listed in table 3.3, leadership and top management commitment, empowerment, communication, culture forming, change management, customer and employee satisfaction, training, processes, processes and systems thinking form the basis of the "soft" outcomes of the framework to achieve TQM. However, the soft outcomes are surrounded by some "hard" management necessities, namely strategic planning, teamwork, continuous improvement, support structures, systems and resources and self-assessment.

The TQM telescopic framework does not give leaders the ability to control and improve their entire institution, nor are decisions made for them. The framework focuses on the customer/stakeholder and is directed toward customer and employee satisfaction (i.e. meeting customer and employee requirements). The TQM telescopic framework is based on the systems thinking approach (see chapter 5, paragraph 5.7) that integrates the interrelationships of the 14 dimensions as a "whole". Deming, as quoted by Lindsay & Petrick 1998:21, states: "The people work in a system. The job of the manager is to work on the system, to improve it continuously, with their help." Figure 3.2 shows the relationship between the primary and supportive dimensions of TQM. All 14 dimensions affect every part of the institution (see figure 3.2) and all 14 dimensions are interwoven with each other.

On studying figure 3.3(a) and table 3.3 it becomes clear that six dimensions, namely leadership and top management commitment, strategic planning, empowerment, teamwork, continuous improvement, customer and employee satisfaction form the *primary* dimensions, which drive the TQM transformation. The primary dimensions with their related foundations and cornerstones are discussed in chapter 4.

Figure 3.2: Integration of 14 dimensions

Supportive dimensions

| Support structures, systems and resources | Training | Culture forming | Systems thinking |

Communication | Change management | Self-assessment

Primary dimensions

- Customer and employee satisfaction
- Continuous improvement
- Teamwork
- Empowerment
- Strategic planning
- Leadership and top management commitment

Processes
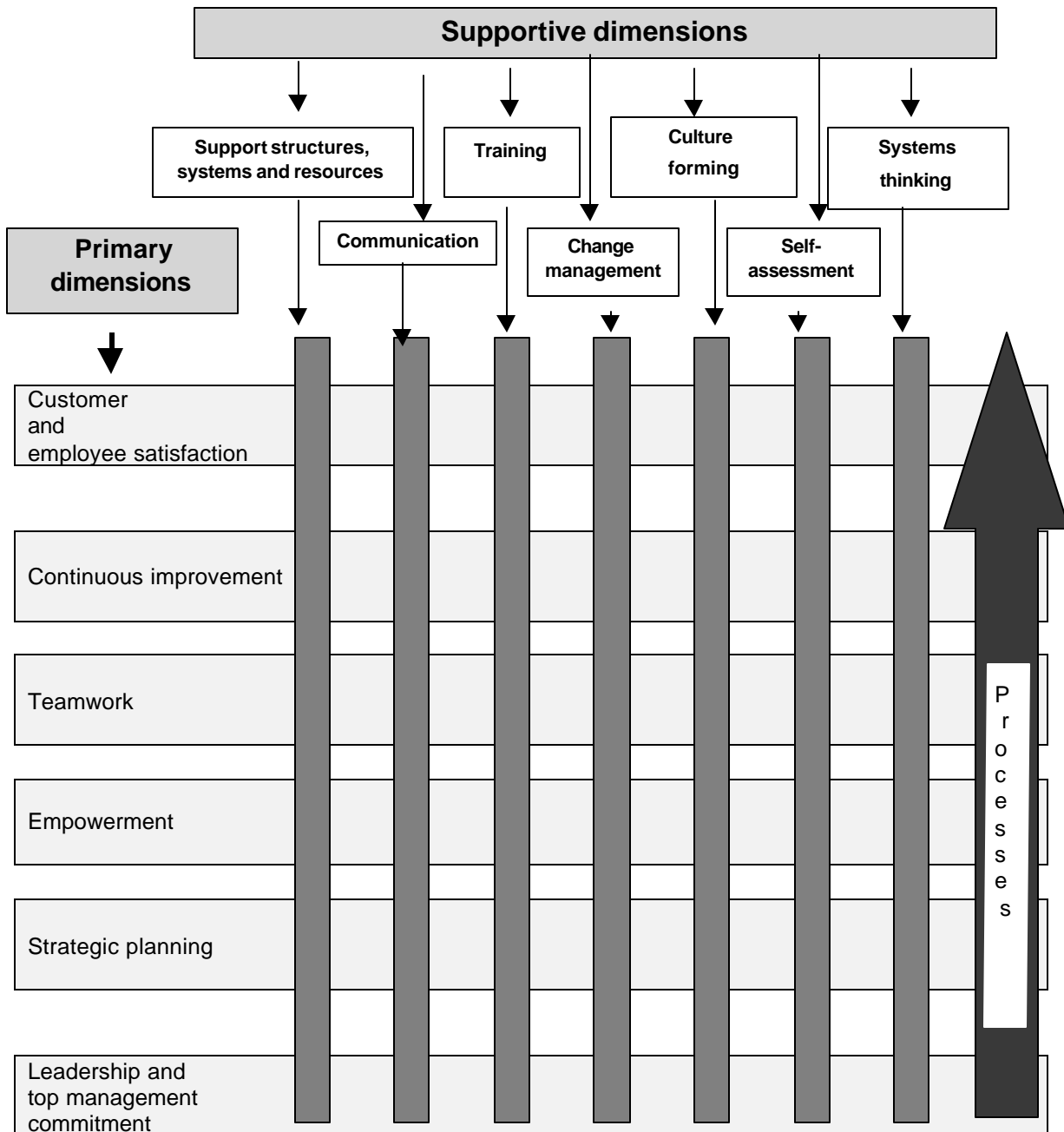
Source: Own research observation

From figure 3.3(b) it becomes clear that eight dimensions, namely communication, training, change management, culture forming, support structures, systems and resources, systems thinking, self assessment and processes, form the *supportive* dimensions which affect every part of the institution, and should be continuously considered in all six primary dimensions [see figure 3.3(a)]. The supportive dimensions with their related foundations and cornerstones are discussed in chapter 5.

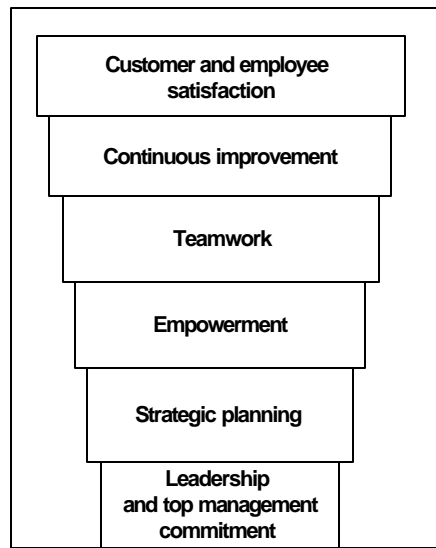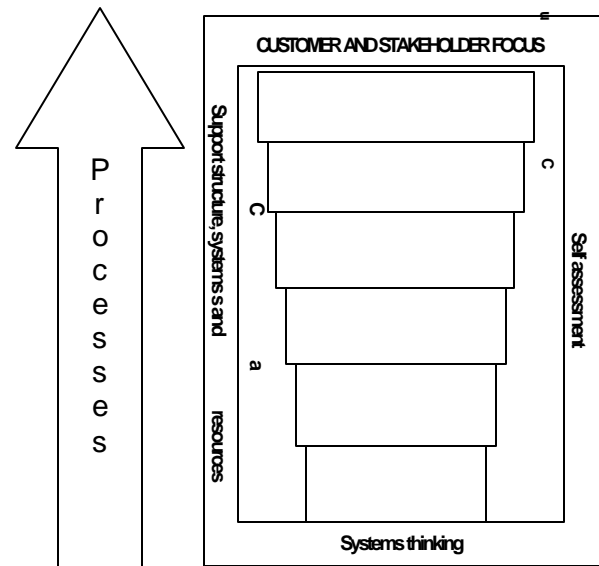Figure 3.3(a): Primary dimensions   Figure 3.3(b): Supportive dimensions

Source: Own research observation

The main focus of the TQM telescopic framework is on customer and stakeholder satisfaction. The theme of the framework is that top management should focus on creating and delivering the best value to the customer and improve the quality of life for employees, which will cut horizontally and vertically across institutional structures.

The next paragraph explains the assumptions based on the 14 critical dimensions, while summarising the criticality of the 14 dimensions at institutions. The different roles that each of the dimensions play and the various aspects that they bring into the overall picture (such as skills, values, tools, techniques and other requirements) vary from institution to institution as discussed in chapter 4 and 5.

3.4.1   The primary dimensions

The primary dimensions of the TQM telescopic framework are based on the following assumptions as identified by the author, based on a core set of functions, values and paradigms as provided by these dimensions, to complement the focus on TQM, (Bowden 2000:637; Dale *et al.* 2001:444; Dale 2002:86; Eskildsen & Nüssler 2000:582; Lindsay & Petrick 1998:88; Linkow 1989:69; Mehta 2000:59; Townsend & Gebhardt 2002:77; Wilkinson & Witcher 1993:49-51; Weitz 1994:36; Wong 2000:428), namely:

(a)   **Leadership and top management commitment** – The TQM telescopic framework should be based on the main primary (foundation) dimension of leadership and top management commitment to establish unity of purpose and direction for the institution in order to reach desired outcomes. It is to be "the driver" for all types of institutions when implementing TQM.

(b)   **Strategic planning** – Strategic planning should be used to plan, develop and implement strategies that should result in improved customer and employee satisfaction. TQM and strategic planning should become a single process and TQM should be fully integrated and linked to the strategy and operation of the institution.

(c)   **Empowerment and investment in people** – Employees should be empowered as they are at the centre of any TQM approach, involved in managing and improving processes and serving customers. Employees have to be involved from day one to transform to the TQM philosophy and employees should be empowered and encouraged to provide innovation and creativity at all levels of the workforce.

(d)   **Teamwork** – Institutions should foster a team-based approach to the TQM programme, with each member actively seeking means to improve total quality. Teamwork is necessary for the propensity of the institution to engage in non-competitive activities internally among employees and externally with respect to suppliers and customers.

(e)   **Continuous improvement** – The propensity of the institution to pursue incremental and innovative improvements of its processes, products and services should be the driver to achieve continuous improvement. Any institution should have procedures and processes established to ensure that incremental and ongoing improvements are made to products and services.

(f)(i)   **Customer satisfaction** – Customer-driven quality should be the focus of any organisation with the procedures and practices, which ensure that products and services are delivered with the objective of satisfying customer needs. The customer is the final arbiter of product and service quality. Customer needs and requirements and how to deliver value should be deeply understood.

(f)(ii)   **Employee satisfaction** – The full potential of employees should be released through shared values and a culture of trust and empowerment. There should be a wide spread of involvement and communication to achieve employee

satisfaction. In the TQM telescopic framework, employee satisfaction is considered an indicator of operating performance and customer satisfaction.

3.4.2 The supportive dimensions

The supportive dimensions of the TQM telescopic framework is based on the following assumptions for the eight dimensions, based on a core set of values and paradigms, to support the six primary dimensions and complement the focus on TQM, namely:

(a) **Communication** – Communication should be used to focus employees on customer satisfaction in order to eliminate discrepancies between internal and external perceptions of quality. Leaders should effectively communicate the link between customer satisfaction and increased service delivery, and encourage sceptical management to support quality programmes by stressing the link.

(b) **Training** – Any institution should have a comprehensive approach to education and training, which includes quality standards, procedures and skills for quality improvement. In-service training should be instituted to educate and train employees on the TQM philosophy.

(c) **Culture forming** – Institutions should develop a culture where quality initiatives are the responsibility of everyone in the different departments of an institution. The culture forming dimension should address the values, which determine group behaviours and support the performance objectives required to internal and external customer satisfaction agreements.

(d) **Change management** - TQM requires continual change in the way things are done in institutions. Strategies to manage and cope with change should be adopted to maintain order in an institution. Change should be seen as inevitable, and it should be planned for to minimize the associated risks.

(e) **Support structures, systems and resources** – The sustenance of TQM is dependent on the creation of support structures and systems, and is the process of linking the institution's resources to its demands. The support structures and systems of the institution should not be static, but flexible and should encourage the flow of new ideas and information to improve the management of quality.

(f) **Systems thinking** - An institution should be managed in accordance with the characteristics of the systems approach if it is to be successful. An institution

should be viewed as a system, as institutions are systems that employ various processes to convert input into outputs.

(g) **Self-assessment** – Self-assessment should be a comprehensive, systematic and regular review of an institution's activities and results referenced against a recognized model (SAEF) of performance excellence. The self-assessment process should allow the institution to clearly identify its strengths and areas in which improvements can be made.

(h) **Processes** - A key part of any TQM strategy is the management of processes. The basic essence of TQM is that it should be a process that training, institutional education, and leadership need to support. All work should be seen as a process, and TQM should be seen as a continues process of improvement for individuals, groups of people and whole institutions. To improve the total implementation process of TQM, people should know what to do and how to do it, have the right tools to do it, and be able to measure the improvement of the process and the current level of achievement. Institutions should focus on process improvement at all levels through problem solving processes and follower ship aimed at assuring that the goals of the customer are attained.

What emerged from the 14 dimensions is a framework for TQM in which all of the dimensions, divided into six primary and eight supportive dimensions, must operate synergistically within an institution. Applying the aforementioned primary and supporting dimensions will encourage the SA Air Force or any other institution to grow as a TQM based institution.

3.4.3   A three-phase implementation process

The TQM telescopic framework as indicated in figure 3.1 is a new framework to be used when implementing TQM in institutions. Every institution needs a clear and cohesive TQM framework that is understood at all levels of the institution and that supports objectives and the collection of results. Frameworks as discussed in paragraph 3.2 are an ideal method according to which an institution can guide itself. Once developed, it is to be implemented, reviewed and modified. The framework in figures 3.1 and 3.2 portrays the relationships between the various TQM dimensions in order to assist the researcher and other practitioners to better understand the

intricacies of TQM in the institutional ambience. The framework can be used to assist with the planning, control, introduction and development of a process for implementing TQM. As the framework is non-prescriptive, the sequence to be followed by an institution planning to implement TQM, depends on that particular institution's unique situation.

As institutions strive towards TQM and continuous improvement, it is prudent to develop guidelines for implementing TQM. For the purposes of this research, the following implementation phases are used to implement the TQM telescopic framework.
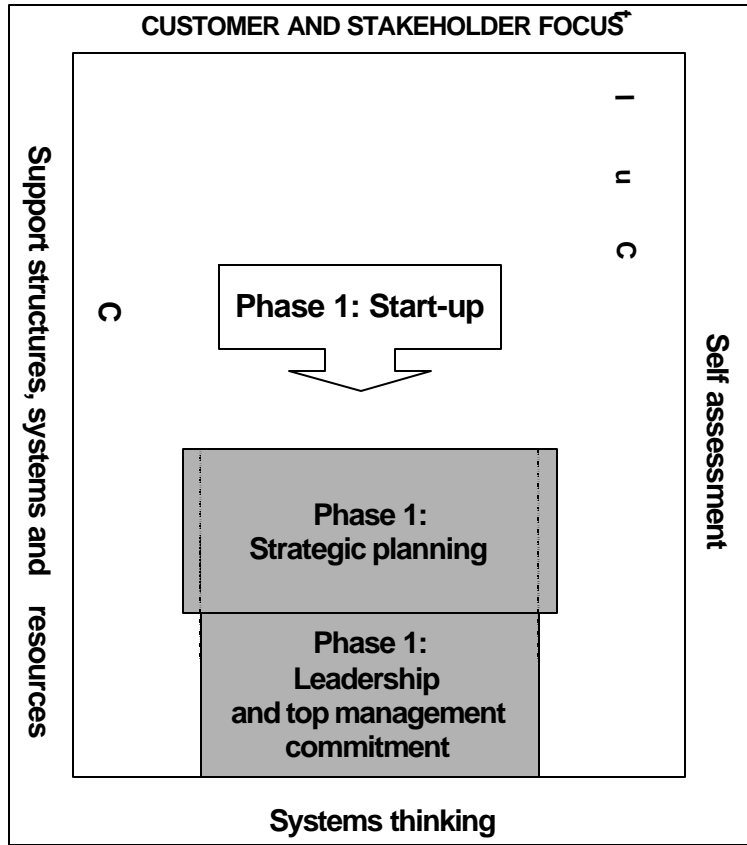
3.4.3.1 Phase 1: Start-up (see figure 3.4)

Leadership and top management commitment and strategic planning as indicated in figure 3.4 form the core of the start-up phase. The foundation of the framework is 'leadership and top management commitment, strategic planning and the eight supportive dimensions'. It is essential that the 'eight supportive dimensions' be considered in this phase (see figure 3.2).

To implement TQM in an institution, the 14 dimensions as indicated in figure 3.4 must be managed according to the systems approach where all the dimensions are integrated vertically and horizontally, and when combined make the greatest contribution to customer and employee satisfaction. To start the implementation process clear, consistent and visible involvement by top management is an essential part of successful TQM implementation.

The first phase of the TQM implementation based on the framework in figure 3.4 must start by focussing on top management commitment, which acts as the driver for the TQM movement. Top management must understand and be committed to the objectives and methodology of TQM and be prepared to adopt them at all times. Top management must understand and learn about TQM, its principles and the prescriptions of the quality gurus. This phase aims at consolidating top management's commitment and generating a consensus of vision and values about the TQM process. Top management must take the leadership through a strategic planning process to start the whole TQM transformation.

Figure 3.4: Phase 1 - Start-up phase to implement TQM

CUSTOMER AND STAKEHOLDER FOCUS

Support structures, systems and   resources

Self assessment

Phase 1: Start-up

Phase 1:
Strategic planning

Phase 1:
Leadership
and top management
commitment

Systems thinking

Source: Own research observation

This commitment by top management coupled with visionary leadership drives the institutional system consisting of the next five primary dimensions that is strategic planning, empowerment and investment in people, teamwork, continuous improvement and customer and employee satisfaction. Top management must thus be actively involved in both the creation and implementation of its institution's systems. Regular reviews and self-assessment are also part of the leadership process; as they provide feedback on performance. Hence, a first step in developing and implementing a TQM process should be to conduct an assessment and audit of all management and employee activities in the areas of quality and productivity. The main purpose of the assessment is to identify customer service gaps. The assessment ensures that the ensuing process is managed from data and information. The objective of the assessment is to gather information related to strategic planning, management styles, existing quality measures and customer requirements. Paramount to the assessment process is the identification of the institution's internal and external customers, their

requirements *vis-à-vis* the institution and an initial benchmarking to ascertain the competitiveness of the institution.

The outcomes of this assessment process are a more customer-oriented institutional cognizant of the expectations and requirements of its customers, and a top management vision which allows the leadership of the institution to see the broader picture of continuous improvement. After the assessment, top management must not only personally articulate the mission, vision and goals to various levels within the institution, but also must be involved and committed in the dissemination of both customer and employee expectations and results throughout the institution. The visionary and charismatic style of top management plays a crucial role in delivering the message that to achieve customer satisfaction is the 'only' way to effectively implement TQM, and that a quality focus and customer orientation is the appropriate behaviour for managers to exhibit and employees to emulate.

The cultural change required in a TQM process is not possible without top management commitment to institute drastically different processes in the institution. Organising the change to implement TQM entails activities such as assessment, leadership, planning and goal setting. As previously mentioned, assessment requires an institution to identify its customers, analyse their requirements and the gaps in meeting these expectations. Leadership plays a crucial role in organising for changes to implement TQM. Besides the need to develop a passion for managing change, management will have to identify and remove the existing barriers and obstacles for change, and determine the critical success factors in the management of the cultural change. For example, looking at leadership: top management commitment and strategic planning through a vision, mission, critical success factors, and critical processes make a contribution to the strategic planning process. In the strategic planning process top management must identify and collect information about the institution's internal and external environment, and the prime areas where improvement will have the most impact on the institution's performance in the future. Organising for change also entails strategic planning with goal setting. This requires the development of a vision for the institution, identification of the values and development of the institution's mission. New goals and expectations need to be set as near-term objectives. Finally, an integration and deployment strategy needs to be developed. In
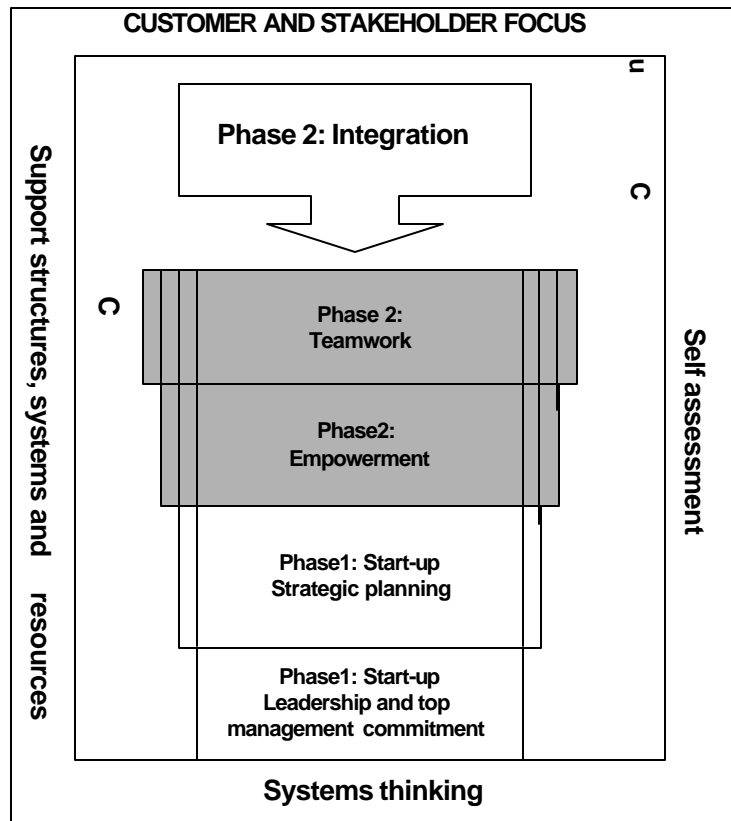
the strategic plan it will ensure that everyone is working on the right things, thereby enhancing efficiency. The TQM philosophy must succeed when the institution's strategic plan is related to the alignment with overall institutional goals. Top leaders should convey the institution's vision, mission, critical success factors, critical processes and strategic direction to employees and external customers clearly, concisely and repeatedly. Through strategic planning, top management must and need to effectively prepare the environment of the institution for the change process to TQM. Top management will face many challenges to change the institution to TQM in the way it operates, manages its people and responds to the customer. Ways to prepare the institution environment by top management are information sharing, transfer of knowledge and the creation of an awareness and commitment to quality improvement and customer orientation, interactive communication between management and employees, and overall education and training. Effectively preparing the institution in the start-up phase ultimately consists of energising employees by empowering and investing in them to embrace the continuous improvement process to achieve customer and employee satisfaction (see figure 3.4).

3.4.3.2   Phase 2: Integration (see figure 3.5)

The foundation of phase two is 'empowerment and investment in people, teamwork and the eight supportive dimensions'. It is essential that the 'eight supportive dimensions' be considered in this phase (see figure 3.5). This phase further cascades the total quality vision throughout the institution from phase one and builds commitment at middle management and supervisory levels. Commitment is vital for the successful implementation of an all-employee involvement process. In this second phase middle management, supervision and employees must be empowered by investing in them through top management's commitment and the strategic plan. The strategic plan adopted should be jointly developed so that everyone in the institution has a sense of ownership in the actions to be taken. In this phase the institution discovers that total quality is more than the sum of isolated improvements (systems thinking approach – see chapter 5, paragraph 5.7). Therefore the institution must strive to fully integrate the TQM principles and the prescriptions of the quality gurus into every aspect of the institution's operations in such a way that their influence becomes invisible and automatic. The start-up phase dimensions (leadership and top management

commitment, and strategic planning) and the integration phase dimensions (empowerment and teamwork) must be fully integrated with each other as indicated in figure 3.5 to ensure the total infiltration of the TQM effort in an institution.

Figure 3.5: Phase 2 - Integration phase to implement TQM

CUSTOMER AND STAKEHOLDER FOCUS

Phase 2: Integration

Phase 2: Teamwork

Phase2: Empowerment

Phase1: Start-up Strategic planning

Phase1: Start-up Leadership and top management commitment

Systems thinking

Support structures, systems and resources

Self assessment

Source: Own research observation

The second phase of the TQM implementation process is more geared at the middle management level of the institution. Top management commitment and quality improvement principles (see chapter 2, paragraph 2.3.3) have to be converted into action in order to achieve the desired change. The outcomes and deliverables of top management and the strategic plan are now further cascaded down to the management and supervisory levels of the institution through training and education. The quality vision and ensuing strategic plan are translated into concrete action plans for the middle management. The commitment at this level is of primary concern and extremely critical to the successful implementation of the TQM process. This requires that individuals and teams of employees are empowered with the ability to effect change which will result in continuous improvement to ensure customer and employee

satisfaction. Besides the acquisition of a number of problem-solving skills and quality improvement techniques, empowerment also requires transformational leadership skills of management. Management must create the proper environment, stay involved, and maintain the responsibility of managing the process and the results while growing the institution.

For employees to be empowered to make changes for the betterment of the institution, they need to have the necessary tools and techniques. Once employees have learned these tools for continuous improvement, they require a structure to practise them. Under supervision, they must be given the opportunity to apply these newly learned skills to an application assignment.   Using the problem solving method, teams of employees should brainstorm critical total quality issues guided by their management, selecting a particular workflow process for case study review. To achieve successful empowerment and teamwork in the integration phase, teams and individuals' success and effort must be recognised and rewarded.   Individuals and teams should feel effectively recognised and rewarded for their contribution.

To integrate TQM smoothly (see figure 3.5), people who work closest to a problem are the ones who know the problem better in their area of influence to solve their work problems and improve their processes. The TQM process ultimately has to involve all employees to be successfully integrated.   It always requires that employees be 'empowered' to make continuous improvement changes within the scope of their daily tasks and responsibilities. The degree of empowerment will depend heavily upon the regulatory nature of the work done. Due to the professional autonomy of the different SA Air Force departments, the empowerment of employees will have to be limited to areas beyond the scope of professional expertise. In other words, there will always remain, within the workflow process, areas of specific expertise and responsibility reserved to the appropriate departments at bases. If properly introduced and managed, empowerment occurs consistent with required/assigned responsibility.

This empowered workforce must also be enabled to implement their decisions. Empowerment and investment in people depends on envisioned leadership, as well as constancy and unity of purpose. Leaders must create working conditions for their workforce that contributes to collaboration, commitment and creativity, bred from

effective development of people. In general most institutions serving customers work mostly through their employees, who form the interface between customers and the service to be delivered. Therefore, customer satisfaction and employee satisfaction are treated as the main focus area of the TQM telescopic framework. When employees are empowered, they must work in teams.

Collaborative teamwork is more effective than individuals. The interdependence of the various tasks and the specialised knowledge required in the work flow process necessitate a collaborative team spirit to complete the right task right the first time and all the time. Teamwork has been the *modus operandi* in the modern SA Air Force. The familiarity of SA Air Force tasks with teamwork should make the TQM process particularly well suited to their work environment. The synergy of multiple intellects confronting problems is more effective than the intellect of a single individual. Institutions committed to self-improvement should develop suppliers and customers as partners where trust, shared knowledge and integration develop synergy and competitive advantage. Proper communication, training, change management, culture forming must be part of the leadership process: leaders motivate the right thing to happen and therefore contribute to productivity.

The outcomes of the integration phase are to have gained middle management's and the rest of the employee's commitment, visibility and active participation in the process through teamwork, and to increase their understanding of how they can contribute to the process through their daily performance and behaviours. Effectively guiding the institution from the start-up phase to the integration phase ultimately consists of energising employees by empowering and investing in them to embrace the continuous improvement process to achieve customer and employee satisfaction (see figure 3.5).

### 3.4.3.3   Phase 3: Results (see figure 3.6)

The foundation of the third phase is 'continuous improvement and customer and employee satisfaction and the eight supportive dimensions'. It is essential that the 'eight supportive dimensions' be considered in this phase (see figure 3.2).   On completion of the integration phase, TQM has infiltrated every nook and cranny of the institution and therefore specific techniques must be used and results must be

monitored and managed to ensure continuous improvement in order to ensure customer and employee satisfaction, which is the main focus of any TQM philosophy. Together with the start-up phase dimensions (leadership and top management commitment and strategic planning), the integration phase dimensions (empowerment and teamwork) and result phase dimensions (continuous improvement and customer and employee satisfaction) must be fully integrated with each other as figure 3.6 indicates to ensure the total infiltration of the TQM effort in an institution.

To reiterate, the eight supportive dimensions from figure 3.1 to 3.6 and figure 3.3(b), namely communication, training, culture forming, change management, support structures, systems and resources, systems thinking, self assessment and processes which form the *supportive* dimensions affecting every part of the institution, must be considered continuously during all three implementation phases. This will ensure the proper implementation of TQM.

Institutions must strive to continuously improve (see figure 3.6) all processes by focusing on results. Continuous improvement is not only a philosophy, but also a way of life. Management and employees need to embrace this newly found passion for quality. Bringing about these transformation in people's attitudes and behaviour requires, however, different sets of techniques. While a change in attitude requires awareness that there is a better way and a commitment to that change, a change in behaviour necessitates the belief that the transformation can be done. The customer for products, or customers for service, is the sole judge of TQM. The customer pays the supplier of the product or service. Therefore he/she must be given what he/she wants when he/she wants it, and to the quality standard specified by him/her, the customer. By combining plans with empowerment, teamwork and continuous improvement, review in a vertical direction (see figure 3.6), leadership and strategic planning is provided to control direction and thus contribute to customer satisfaction. Leadership doesn't stand alone in its contribution to customer satisfaction. The dimensions shown vertically in the planning telescopic framework (see figure 3.6), under the headings of leadership and top management commitment, strategic planning, empowerment, teamwork, continuous improvement, are just as important.

Figure 3.6: Phase 3 - Result phase when implementing TQM
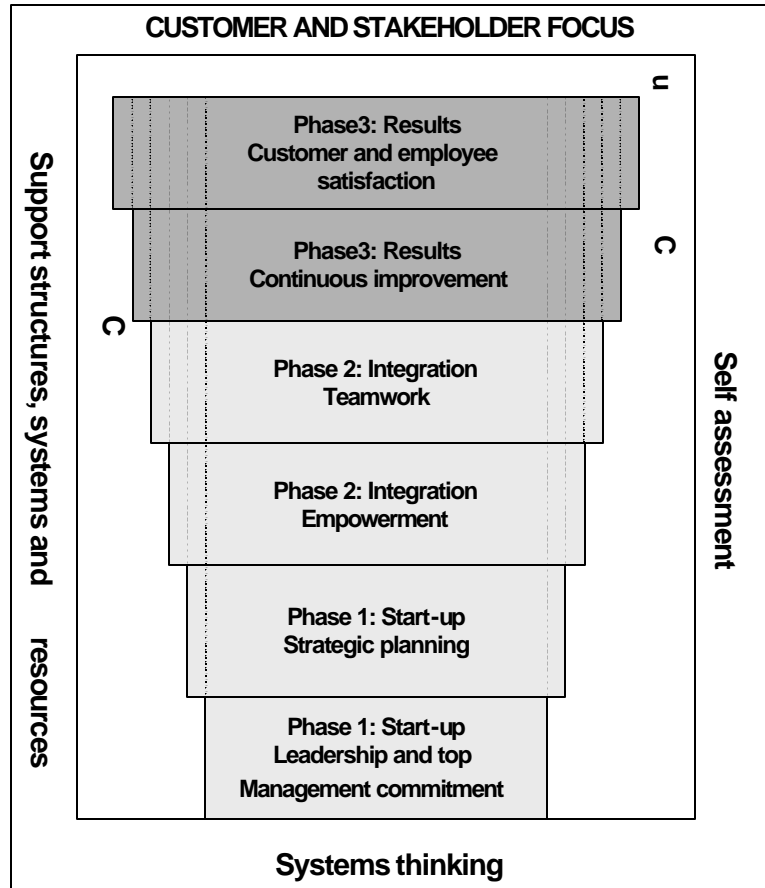
Source: Own research observation

Each of the dimensions as shown in figure 3.6 must be present for the TQM philosophy to achieve optimum results. Managers can use this framework to conceptualise a TQM system or plan for its ordinary implementation. Managers can look at pieces of the dimensions, like the planning structure to implement TQM (figure 3.7), and choose the methods they want to use. They can evaluate policies to see how they contribute to planning effectiveness or empowerment. Managers can identify missing pieces in each of the 14 dimensions and understand the pieces of each dimension. They can choose methods for synthesis and systematic analysis. Every need of the institutional system becomes clearer when compared to this framework. This framework also lends itself to measurement of an institution's progress. For example, managers can measure the dimensions individually, by asking the right questions of the telescopic framework.

Figure 3.7: Implementation methodology of TQM
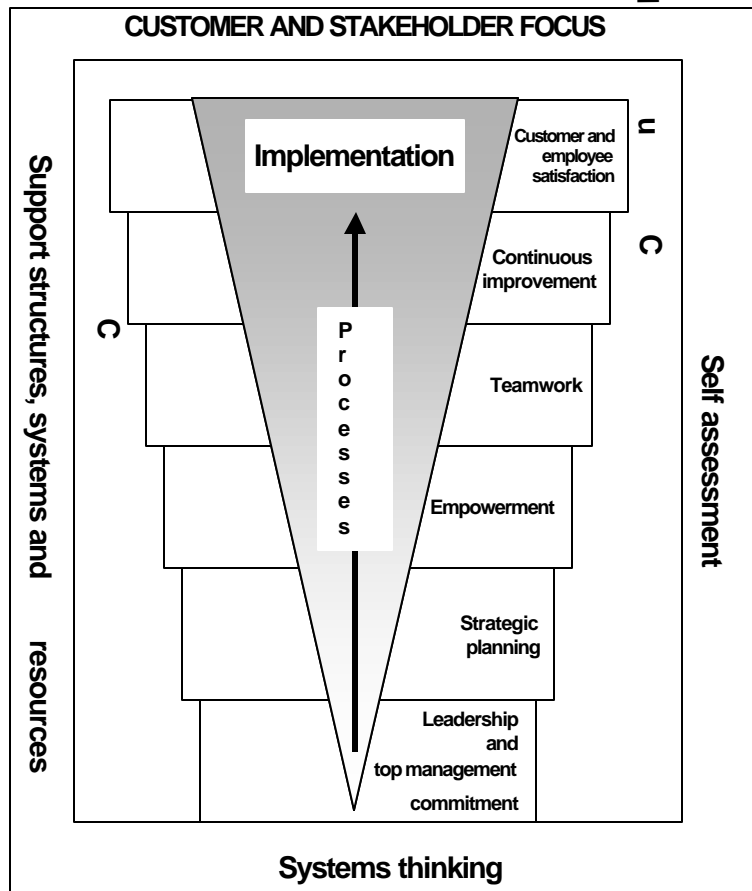
Source: Own research observation

When the design, construction and implementation of the TQM telescopic framework are complete, and managers have eliminated wasteful encumbrances to responsiveness, the institution will be in the most competitive position possible. It will provide better products or services. When an institution also uses ethics in the TQM telescopic framework, the institution will evolve from a normal institution to an essential part of management science.

The 14 dimensions in figure 3.7 are all vital for quality improvement, but when used in isolation or on an ad hoc basis they do not constitute TQM. TQM will be fruitful only to the extent to which the various dimensions synergically operate in an environment of continuous improvement. Akin to continuous improvement is the fact that TQM should be viewed from a long-range perspective, i.e. it requires a clear understanding that the process will take time, money and determination before benefits become clear.

The integration of the 14 dimensions in the framework, as figure 3.7 shows, imply that TQM is an approach that should be adopted as a whole rather than piecemeal. The subtle, implicit and behavioural aspects such as leadership and top management commitment, empowerment, communication, culture forming, change management, customer and employee satisfaction, training, processes and systems thinking which form the basis of the "soft issues" of the framework to achieve TQM, play a dominant role, surrounded, however, by some "hard" management necessities, namely strategic planning, teamwork, continuous improvement, support structures, systems and resources, and self-assessment.

3.5   SUMMARY

This chapter has discussed the meaning and need for a TQM framework and has summarized the discrete dimensions related to TQM as presented in literature dealing with the topic. This has formed the basis for a comprehensive framework that encompasses the different facets of TQM. The key dimensions of TQM have been identified with emphasis on their critical value in the framework. The dimensions of TQM described in this chapter have all been thoroughly documented by many authors and experts on the subject. A review of the literature has shown apparent generic relationships between the dimensions where, firstly, a theoretical assumption has been made that the following dimensions are applicable to all types of institutions, namely:

- Leadership and top management commitment
- Strategic planning
- Empowerment and investment in people
- Teamwork
- Communication
- Training
- Culture forming
- Change management
- Continuous improvement
- Customer and employee satisfaction
- Support structures, systems and resources
- Systems thinking

- Self-assessment
- Processes

What emerged from this review is a framework for TQM in which all of these 14 dimensions, divided in six primary and eight supportive dimensions coupled to the hard or soft science, operate synergistically within an institution. It is only appropriate that a sound implementation framework should be developed before the actual implementation phase to ensure a successful adoption of TQM in any institution. What is unique in the framework is the connectivity between the 14 dimensions. The roles that each of these dimensions play have been discussed through assumptions. The framework can be applied to any institution and, naturally, has to be adapted to the specific institution when it is implemented. The framework also portrays the relationships between the various TQM dimensions.

Tables 3.1 to 3.3 summarize evidence on the critical nature of these dimensions of TQM in institutions. Based on the identified dimensions and with the help of an extensive review of the literature in chapter 2, a measurement instrument in the form of a questionnaire spanning the 14 dimensions has been developed (see Appendix B ands C) in order to measure the level of acceptance of each dimension by employees at the various SA Air Force Bases. Through this approach, the instrument can be empirically validated by collecting data from employees at SA Air Force Bases.

The developed framework (see figure 3.1) can be seen as a meta-framework of TQM that summarizes the "what" (chapters 2 to 5) and the "how" (chapters 6, 8 and 9) of institutional challenges.

In chapter 4, in particular, attention will be paid to the application and role of each of the six primary dimensions of the TQM framework. An in-depth discussion is provided of the commitment to TQM by an organisation or institution's leadership and top management, strategic planning, empowerment, teamwork, continuous improvement, and customer and employee satisfaction.