

QUALITY MANAGEMENT STRATEGIES FOR TECHNICAL AND VOCATIONAL  
EDUCATION AND TRAINING INSTITUTIONS IN BOTSWANA

ASALEPELE TOBEDZA

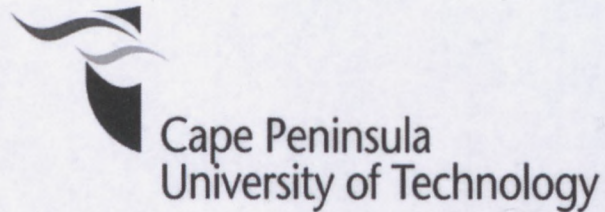
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**Quality Management Strategies for Technical and Vocational  
Education and Training Institutions in Botswana**

by

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A Thesis

Submitted in fulfilment of the requirements for the

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**Cape Town**

**16<sup>th</sup> November 2011**

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## DECLARATION

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Asalepele Tobedza

16<sup>th</sup> November 2011

Date

## ABSTRACT

Education is undoubtedly of great significance to everyone, and as a consequence countries are working hard to ensure that their educational systems are responsive to their socio-economic needs. In search for competitive advantage, institutes of higher learning throughout the world are focussing their attention in ensuring the provision of quality academic programmes. Botswana's public technical colleges are no exception. In recent years, the government of Botswana through Department of Technical and Vocational Education and Training (DTVET) has stepped up its efforts to expand and transform technical and vocational education in that country. In spite of these investments, studies show that the quality of training is still a serious concern.

This study aims to explore the extent to which the Botswana institutions implement quality management systems. Critical areas and attributes where institutions should focus their efforts in relation to quality are explored.

To achieve the objective of the study, both qualitative and quantitative research methodologies were used. The case study research method was employed to investigate issues which have affected the capacity of the institutions to implement quality management systems. Data was gathered from students, teachers and the college management team members by means of a self-administered questionnaire.

This study hopes to contribute to the existing body of knowledge by providing insights into the implementation of quality management systems in the training institutions in Botswana.

**Key Words:** Quality, Quality Management Systems, Quality Assurance, Total Quality Management, Standards, Performance Indicators, TVET.

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## LIST OF ABBREVIATIONS

<b>BOTA</b>	Botswana Training Authority
<b>BTEP</b>	Botswana Technical Education Programmes
<b>DTVET</b>	Department of Technical and Vocational Education and Training
<b>MoESD</b>	Ministry of Education and Skills Development
<b>MTTC</b>	Madirelo Training and Testing Centre
<b>NCC</b>	National Craft Certificate
<b>NCE</b>	National Commission on Education
<b>QAA</b>	Quality Assurance and Assessment
<b>QMS</b>	Quality Management System
<b>RNPE</b>	Revised National Policy on Education
<b>TVET</b>	Technical and Vocational Education and Training

## **CHAPTER 1: SCOPE OF THE RESEARCH**

### **1.1 Introduction**

This chapter discusses the motivation for the study, outlines the scope of the research project and the background of the research problem. The research questions, research objectives and research process are covered in this chapter. The chapter ends by giving a chapter outline for the thesis.

### **1.2 Motivation**

Many organisations in the world at large, whether they are in the private or the public sectors, are caught up in the fast changing global business environment. These organisations need to develop new strategies in order to remain effective, efficient and responsive to their customers' needs. The education and training sectors are no exempt from these developments. The adoption of quality management systems by technical and vocational education and training institutions in Botswana could be a key factor in ensuring quality and relevance of institutional programmes to the country's economy.

Because the government of Botswana wants to diversify the economy and establish an industrial sector, it is supporting the development of a publicly financed TVET system. There are also some private training providers who are making significant contribution to the growth and development of TVET. The government's vision for TVET is "to have a competent, innovative and internationally competitive National Human Resource with ability to contribute to the socio-economic and technological advancement of the country" (Republic of Botswana, 2007). In order to achieve this vision, all stakeholders involved must be committed to the common goal if they are to play their roles effectively. This study therefore seeks to examine the current quality strategies critically in order to firstly identify weaknesses or failures and secondly to propose strategies which will remedy these lapses in quality.

### **1.3 Background to the research problem**

Whilst the Government of Botswana continues to strengthen its efforts towards provision and expansion of TVET, there are no indicators to show that there has been a proportional increase in programme offerings and student enrolments. Technical Colleges do not seem to be collaborating, which compromises the image of these institutions. Botswana Technical Education Programmes (BTEP) is offered at four levels, namely: Foundation, Certificate, Advanced Certificate and Diploma. There has been an increase in the number of students exiting with qualifications at Foundation and Certificate levels, but only a small number of students have proceeded to the Advanced Certificate level.

Some colleges have the capacity and resources necessary to accommodate the two top levels of the BTE Programmes but have not pursued this opportunity. This has led to the following problems: declining student numbers, understaffing in the colleges, duplication of programmes across the colleges, underutilization of resources, and students have failed to complete their courses.

In the light of the above problems, there is the need to examine the current situation with a critical eye in order to determine the appropriate quality management strategies that would produce improvements in the quality of the programmes currently on offer.

### **1.4 Statement of the research problem**

Based on the background outlined in section 1.3, the statement of the research problem reads as follows: "Quality management strategies are not applied to technical and vocational education and training programmes in Botswana, resulting in poor implementation of programmes and adversely impacting on the efficiency of the technical institutions".

## **1.5 The research questions**

### **1.5.1 Primary research question**

The primary research question which forms the crux of the research read as follows: "Which quality management strategies should be applied to technical and vocational training in Botswana to ensure successful implementation of programmes and an improvement of the efficiency of the technical institutions?"

### **1.5.2 Investigative questions**

The following investigative questions support the primary research question.

- Do technical institutions have the procedures to implement quality management systems?
- How effective is DTVET planning for institutional human resource?
- How effective is the planning and management of programme development, delivery and evaluation?
- How can the Department of Vocational Education and Training measure the quality of TVET provision in the technical institutions?
- What strategies could be put in place to ensure effective and efficient TVET systems?

## **1.6 Primary research objectives**

The objective of this study is to explore ways in which technical colleges in Botswana could implement quality management systems in their programmes. The specific objectives are;

- To establish whether institutions have policies and procedures that could facilitate application of quality management system to their programmes
- To establish how effective is the planning for institutional human resource
- To establish whether tools exist for evaluation of tertiary institution performance

- To determine strategies that could be used by institutions to improve their efficiency and effectiveness.

## 1.7 The research process

The research process provides an insight into the research process from formulating the research proposal to finalization of the research project. Collis and Hussey (2003:16) pointed out the six fundamental stages in the research process as follows;

- The identification of the research title
- Definition of the research problem
- Determining how the research is going to be conducted
- Collection of the research data
- Analysis and interpretation of the data
- Writing up the dissertation

Struwig and Stead (2007:25), Polit and Hungler (1987:36), Leedy and Ormrod (2010:85), argue that it is important to understand the research process in its entirety before commencing a research project. Figure 1.1 below shows a basic structure of a research process as outlined by Struwig and Stead (2007:25).

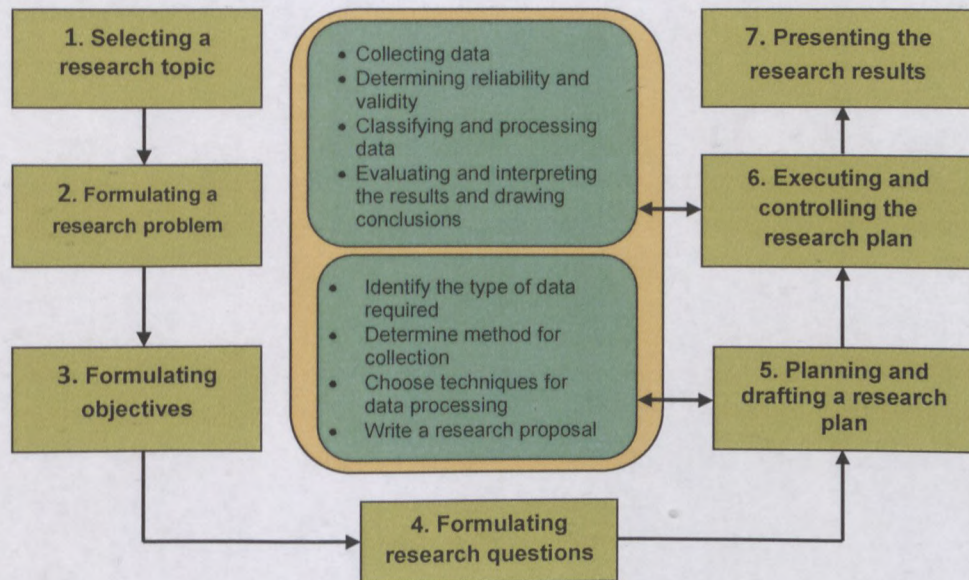


Figure 2.1: Research process

The researcher has followed these stages.

## **1.8 The research design and methodology**

Research design is the logical sequence that connects the empirical data to a study's initial research question and ultimately to its conclusion (Yin, 1994:19). It forms a plan or blueprint of how the research is to be conducted and determines the methods and procedures, types of measurements, sampling, data collection and analysis methods that the researcher employs (Mouton & Prozesky, 2010:75).

This research is an empirical enquiry that investigates a contemporary phenomenon within academic environment in Botswana. Furthermore, this research study is aimed at determining the quality management strategies that could be applied by Botswana public technical and training institutions in the implementation of their programmes. Therefore, the case study method is an appropriate approach for this research.

## **1.9 Data Collection Methods**

The researcher adopted a survey approach and collected data through the use of questionnaires and analysis of relevant documents. The use of the questionnaire was considered suitable as it is a quick and cheap way of collecting data. This is a quantitative research method that tries to understand the facts of a research investigation from an outsiders' perspective. It emphasizes the measurements and analysis of casual relationships between variables within a value-free context (Denzin & Lincoln, 1994:128). The questionnaire (Munn & Drever, 1990) allows the respondents to freely express their views and opinions due to the provision for anonymity. The questionnaires were constructed in such a way that cross referencing of data could be done to address the objectives of the study.

## **1.10 Data validity and reliability**

Validity refers to the extent to which a research design is scientifically sound or appropriately conducted (Strugwig & Stead, 2007:136). Accordingly, the validity of a measuring instrument refers to the extent to which the instrument measures what it is intended to measure (Strugwig

& Stead, 2007:136, Collis & Hussey, 2003:186). Essentially, Strugwig and Stead (2007:137) explains various types of validity as follows;

- **Face validity** - This refers to whether the items of the test appear to measure what the test purports to measure.
- **Content validity** – This refers to the extent to which the items reflect the theoretical content domain of the construct being measured.
- **Criterion-related validity** – criterion – related validity examines the relationship between two or more tests that appear to be similar.

According to Strugwig and Stead (2007:130), reliability is a measure of the accuracy, consistency or stability of test scores. They further indicated that the validity of a test score is determined by the reliability of the test, if reliability is weak validity will be poor.

## 1.11 Ethics

According to Saunders, Lewis and Thornhill (2000:130), “ethics refers to the appropriateness of your behaviour in relation to the rights of those who become the subject of your work, or affected by it”. In considering the ethical issue, the researcher has informed the participants in advance of the nature of the study he was conducting. Furthermore, participants were given the rights to withdraw from the study at any time as participation was voluntary. In essence, a consent form which described the nature of research as well as the nature of participation was designed and presented to the participants.

The nature and quality of participants' performance was strictly kept confidential. Findings are reported honestly; and no attempt was made to manipulate data in order to support a particular conclusion.

### **1.12 Significance of the study**

This study attempts to contribute to the existing body of knowledge about quality management systems (QMS) in the training institutions. It does so by examining the implementation of QMS in the training institutions in Botswana. It is envisaged that the result of this study will assist other training institutions in Botswana which are interested in applying QMS in the implementation of their programmes. QMS can help an organisation to operationalise the goals and objectives set out in its policy documents and strategic plans. The research will also assist the colleges to identify and use quality tools to measure their performance.

### **1.13 Chapter outline of the Thesis**

This research study is divided into six chapters.

#### **Chapter one: Scope of the research**

Chapter one introduces the thesis topic and gives background information about the research. It includes the statement of the research problem, the research question, research objectives as well as outlining the research process.

#### **Chapter two: Holistic overview of the research environment**

This chapter provides a holistic overview of the research environment. It also gives a global context of quality in vocational education and training. The chapter provides an overview of the TVET programmes in Botswana. It also discusses the function of the Department of Technical and Vocational Education and Training as the central administrative authority governing technical colleges in Botswana.

#### **Chapter three: Literature review**

Chapter three explores how quality management systems are applied to technical and vocational education and training programmes.

#### **Chapter four: Research methodology**

Chapter four presents the research design followed in this study, the setting where the study was conducted. The justification for the chosen research method is also discussed. The population of the study is identified including methods of selection. The sampling technique is discussed as well. Ethical considerations are also discussed. The procedure for data collection is also presented.

#### **Chapter five: Research findings**

Chapter five presents data analysis and interpretation.

#### **Chapter Six: Conclusion and recommendation**

This chapter discusses conclusions drawn from the findings and offers some recommendations.

#### **1.14 Conclusion**

This chapter has introduced the topic of the thesis and provided background information on the research. It has outlined the problem statement as well as the primary research question. The chapter provides the foundation of the research study, and offers the motivation for the study.

## **CHAPTER 2: HOLISTIC OVERVIEW OF THE RESEARCH ENVIRONMENT**

### **2.1 Introduction**

This chapter gives a holistic overview of the research environment on Technical and Vocational Education and Training (TVET) in Botswana. The chapter is divided into four parts. The first part gives an overview of TVET in Botswana. The second part discusses the structure of the TVET system and, highlights the colleges that form the population for this study. The third part gives an overview of the VET programmes offered by the colleges and how they are assessed. Finally, in the fourth part, the researcher highlights the quality issues which arise from the manner in which the programmes are developed, implemented and monitored.

### **2.2 Global context of TVET**

Technical and Vocational Education and Training (TVET) is the systematic and orderly transmission of the knowledge, skills and values that enables a workforce to enhance productivity and sustain competitiveness in the global economy (Park, 2005:1; Armstrong, 2003:2; UNESCO & ILO, 2002:2; Finch & Crunkilton, 1999). The concept of quality management has always been one of the main concerns of vocational education and training institutions worldwide (Zuniga, 2003; Blom & Meyers, 2003:6). Zuniga (1989), aver that in a market which is diverse and in which there are numerous offerings, prospective students need to know which are the best training institutions, which provide education and training that is of consistently high standards.

According to the European University Association (2008:53), the development of the internal quality management is a key element in reforming high education in Europe. Furthermore, universities have a responsibility for assuring the quality of teaching, research and internal organisation. Universities all over Europe are in the process of systematizing quality assurance measures and instruments as they implement a quality management system (European University Association, 2008:53).

Across the globe every nation is faced with the challenge of improving the capacity of its workforce to respond to the rapidly changing and increasingly competitive global markets. Furthermore, the future success of nations, and also of individuals, enterprises and communities increasingly depends on institutions and structures that can impart skills and knowledge (UNESCO & ILO, 2002:2; Teh & Pendergast, 2002:2),

In 2002, there were 50 million students enrolled in technical and vocational education (Maclean & Wilson, 2009:77). According to MacLean & Wilson (2009:77), global statistics shows that one in five upper secondary students is enrolled in technical and vocational programmes. However, the enrolments rates vary widely from region to region. In Europe, such programmes account for 50%, of upper secondary enrolment and in East Asia which includes China, the figure is 30% (MacLean & Wilson, 2009:77). In Africa and South America, enrolment is less than 20%. In North America it is less than 10% and in West Asia less than 4% (MacLean & Wilson, 2009:77).

### **2.2.1 TVET in the United State**

Vocational education in the United States of America is not a well-defined 'system'. It is more accurately characterized as scattered, decentralized and unconnected programmes (Brand, 1998). The major emphasis of VET provision in the United States of America is on the transition from school to work. The 'Tech Prep' programmes represent the major pathway whereby students enter post-secondary education directly from high school (Illinois Tech Prep, 2002). The programme begins in high school, continues at a post-secondary institution, and culminates in an associate of applied science degree, two-year certificate, or a two-year apprenticeship (Illinois Tech Prep, 2002)., The Carl D Perkins Vocational and Technical Education Act which came into effect in July 1999 was enacted to provide programmes (Blom & Meyers, 2003). The purpose of the Act is to improve vocational and technical education programs, including Tech Prep programs. The Act prescribes the most significant set of performance indicators that is applied in the United States of America and it is designed to promote continuous program improvement.

### **2.2.2 TVET in the United Kingdom (UK)**

The UK has a long tradition of vocational education and training, and has developed a reputation for high quality training and qualifications (British Council, 2011). Although there are differences between the TVET system in England, Wales, Scotland and Northern Ireland, the training and qualifications are of the same standard and therefore interchangeable (British Council, 2011). Furthermore, the UK vocational education and training is flexible, responsive and relevant to the needs of industry and individuals. According to the British Council Report (2011), the UK TVET system has the following key features;

- A network of Sector Skills Councils, where industry defines and steers the planning for the skills it needs
- Occupational standards are set by industry, which lead to qualifications that are based and assessed on what individuals can do as well as what they know.
- Vocational education and training programmes starting at school for 14 year olds and with links to university study options.
- A Learning and Skills Council which integrates the planning and funding of all academic and vocational education which is not part of the higher education system.

### **2.2.3 TVET in Asia and the Pacific Region**

The Colombo Plan region, which is known as Asia Pacific region, covers a vast region which includes economies at different stages of growth. This area has a greater diversity than any other region on earth (Majumdar, 2009:5). In spite of great geographical, economic and demographic diversities among the Asian Pacific countries, the region share many common challenges and pose many common issues which are fundamental to improve the quality and relevance of TVET to gain competitive edge in the growing knowledge economy (Majumdar, 2009:1).

#### **2.2.4 TVET in Africa**

TVET systems in Africa differ from country to country. TVET is delivered at different levels in different types of institutions, for example technical and vocational schools (African Union, 2007:6). In West Africa in particular, traditional apprenticeship provide the greatest number of opportunities for acquiring skills necessary for employment. In Ghana, the informal sector accounts for more than 90 percent of all skills training in the country (African Union, 2007:6). A 2002 study for the World Bank found out that virtually all training systems in Sub-Sahara Africa have to deal with the reality of diminishing government funding for public sector training (Ziderman, 2002). Management of TVET institutions is not effective (Wahba, 2009). In Kenya for instance the management is distributed among different ministries. This makes it difficult to coordinate activities and maintain training standards (Mureithi, 2009; African Union, 2007:6).

While there may be issues which undermine the quality of TVET in most African countries, the current status of TVET in Africa is not all about weaknesses. TVET systems in a number of countries are undergoing or have undergone promising reforms that have been or are designed to build on the inherent strengths of the system (African Union, 2007). The major reforms concern the setting up of national training bodies, and the enactment of laws to strengthen vocational training programmes. According to the African Union (2007), National Training Authorities have been set up in a number of countries, for example South Africa, Botswana, Namibia, Zambia and Tanzania. These authorities are responsible for skills development.

#### **2.3 TVET in Botswana**

In 1993 the Botswana Government, undertook a review of the education system, in order to find out how relevant it was to support a growing economy. The Revised National Policy on Education (1994), revealed that the review of the education system, highlighted shortcomings in the technical and vocational education. The Report of the National Commission on Education (1993), noted:

- Lack of recognition of the status of vocational and technical training
- Fragmentation and uneven quality of training provision
- Weaknesses in the scope and interrelation of vocational qualifications

In the light of the above shortcomings, the Commissioners proposed the following:

- The need to establish a coherent vocational and technical training system which included opportunities for part time training.
- Provision for pre- employment training and skills upgrading
- The need for vocational awards with clearly defined progression paths.
- The need for a training system that is sensitive and responsive to the aspirations of the people and the manpower requirements of the country.

Recommendation 52 of the Revised National Policy on Education (1994), directed that a National Policy on Vocational Education and Training be formulated. This policy was to be an integral part of the overall strategy to review the vocational education and training. It provided guidance for planning, co-ordination and provision of training (National Policy on Vocational Education and Training, 1997). Provision of vocational education and training was to be consolidated under the Department of Vocational Education and Training (DTVET) in the Ministry of Education and Skills Development. Botswana Training Authority was also conceived as a co-ordinating authority which monitors the skills needs of the economy and develops a more comprehensive system of vocational qualifications (Revised National Policy on Education, 1994).

In 1998, the Vocational Training Act was promulgated. It replaced the Apprenticeship and Industrial Training Act of 1983, and established Botswana Training Authority (BOTA) as the statutory body responsible for co-ordinating, regulating and promoting Vocational Training in Botswana. BOTA's responsibilities also includes, but is not limited to, registration,

accreditation, and monitoring both public and private training institutions in order to ensure that they adhere to the required standard and quality of training.

## **2.4 Structural set up of TVET in Botswana**

TVET in Botswana is funded in three ways, namely; by the government, by employers, by individuals and/or by a combination of these three via apprenticeship scheme (Trade Test and National Craft Certificate). The apprenticeship scheme allows apprentices to do on-the-job training and also receive further training at the training institutions. The apprenticeship programmes are assessed and certificated by Madirelo Training and Testing Centre (MTTC), a government body under the Ministry of Labour and Home Affairs. There are also private training providers, Orapa Training Centre, Botswana Power Corporation Training School, Construction Industry Trust Fund, to mention a few, which train apprentices either for their business sector or organisations. In the main their programmes are also assessed and certificated by MTTC though there are a few who conduct their own assessments.

The larger part of training is done through Brigade Centres and public Technical Colleges. The Brigades prepare trainees for National Trade Tests, Levels 'C' and 'B' and to a lesser extent, for the National Craft Certificate (NCC). The Brigades started with a few trades such as bricklaying and plastering, carpentry and joinery, cabinet making, plumbing, for example. Nowadays there are a number of new areas of training such as business and information and communications technology courses. Technical colleges train up to NCC level. They also do some training for those taking trade test courses. The technical colleges also offer Botswana Technical Education Programmes (BTEP). These are modular outcomes- based programmes which are intended to produce personnel with the necessary skills and attributes in a number of vocational fields connected to commerce and industry. Both the Brigade centres and technical colleges fall under the Department of Vocational Education and Training (DTVET), within the Ministry of Education and Skills Development.

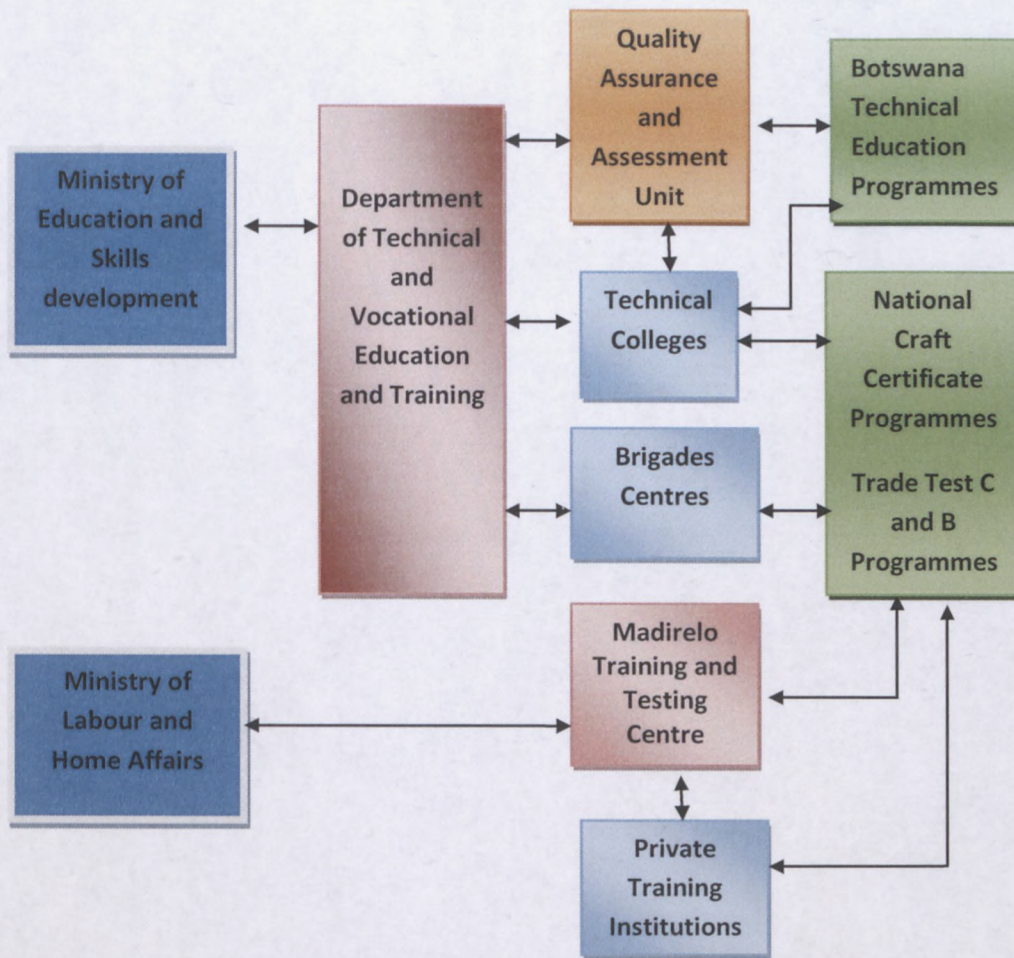


Figure 2.1: Model showing Programme linkages with institutions, departments and ministries

## 2.5 Department of TVET

The Department of Technical and Vocational Education and Training (DTEVT) is one of the various departments of the Ministry of Education and Skills Development (MoESD). It is the department responsible for the implementation of technical and vocational education and training. The department has five divisions, namely; Directorate Division, Human Resource Division, Policy Division, Programme Development and Delivery Division and Departmental Management Division.

### *Directorate Division*

This division is responsible for the overall functioning of the department. It is responsible for the strategic direction of the department. It oversees the

work of Principals of the institutions, and the overall performance of all the units it is responsible for.

### ***Human Resource Division***

The Human Resource Division consists of two units, namely; human resource management and human resource development.

### ***Humana Resource Management Unit***

The functions of Human Resource Management Unit cover eight broad areas: recruitment, maintenance of HR infinium, confirmation, promotion, discipline, transfers, acting appointment and management of temporary full-time staff welfare. The division thus:

- initiates the recruitment process;
- Develops, update, and/or implement the localization plan of the Department
- Rationalizes the provision of human resources within the Department
- Consider recommendations for confirmation, promotion, disciplining, etc
- Considers applications for transfer
- Contributes to the improvement of operational efficiency and effectiveness;
- Contributes to the re-engineering of key processes
- Contributes to the improvement of partnerships with key stakeholders;
- Handles diverse human resource cases/matters; etc.

### ***Human Resource Development Unit***

The Human Resource Development unit is responsible for:

- Carrying out staff development needs at Head Office, DTVET Regions and Technical Colleges.
- Drawing up Training Plans from the identified staff development needs for all divisions of DTVET and categorizes them into short and long term training in line with development objectives of individual officers and or lecturers.

- Compiling and updating consolidated training plans covering Head Office, Technical Colleges and Regional Offices on regular basis.
- Sending reminders to institutions about submissions of training plans before the deadline.
- Organizing orientation sessions for candidates scheduled to go on training before departure.
- Ensuring that bond/memorandum of agreements are signed before departure;
- Keeping track of progress for candidates on study leave.
- Building and updating an elaborate database on officers/lecturers that have been trained or are on training, and expenses incurred by DTVET.
- Together with key stakeholders, organize advanced training to Master's and Doctoral levels.
- Together with key stakeholders, organize training for lecturers in areas of special needs.

### ***Policy Division***

The mandate of this division covers the following key areas;

- Co-ordination and development of Technical and Vocational Education and Training policies.
- Development of Projects
- Budgeting
- Collection and analysis of statistical information within the institutions to ensure that strategic decisions are carried out.
- Facilitates integration of HIV/AIDS into the curricula and ensures formation of HIV/AIDS committees in the technical colleges.
- Publications and marketing
- Contracts management.

### ***Programme Development and Delivery Division***

The Programme Development and Delivery Division is responsible for the development of programmes, provision of support to colleges to assist them to effectively implement programmes and assisting in resourcing new institutions.

### ***Quality Assurance and Assessment Unit (QAA)***

The mandate of the QAA Unit is to manage the quality assurance and certification of the Botswana Technical Education programme (BTEP). The Unit achieves its mandate through;

- Validation of BTEP qualifications
- Approval of institutions that offer BTEP
- Verification of internal assessment
- Moderation of Integrated Projects
- Monitoring of QAA quality assurance processes.

### ***Departmental Management Division***

This Division is the administrative structure of DTJET. It links the DTJET with other government departments and ministries, as well as other educational institutions. It co-ordinates the administrative function of educational institutions, oversees the financial management of educational institutions, as well as supplies management.

## **2.6 Technical colleges**

Under the DTJET, there are eight public technical colleges which offer programmes from the foundation level to the diploma level. In addition to these institutions there are about 41 brigade institutions which offer trade test certificates and national craft certificates. These brigades have been operating as community institutions run by boards of governors. The government of Botswana has taken over almost half of these institutions. The intention is to improve their effectiveness and ensure that they contribute to the national economy. The remaining half of these institutions is yet to be taken over by the Government. A brief overview of each college and the programmes of these institutions are discussed as follows.

### **2.6.1 Botswana College of Engineering and Technology (BCET)**

This college is situated in Gaborone. It was formed as a result of a merger of the former Auto Trades Training College and the University of Botswana Faculty of Engineering and Technology. The College has

student enrolment capacity of about 1500 students but currently enrolls about 700 students. The staff complement is approximately 110. The college has ample classrooms, laboratories and workshops. Boarding facilities can accommodate about 300 students. The college is adequately resourced with the necessary equipment and machinery. The college has highly qualified staff who worked for the former University of Botswana Faculty of Engineering and Technology or the Auto Trades Training School.

#### **2.6.2 Francistown College of Technical Education (FCTVE)**

This college is situated in Francistown in the northern part of Botswana. It is a state of the art facility with modernized laboratories, learning resource centres and workshops. The College opened in 2007. It has an estimated student enrolment of 1500, but currently enrolls on average, 300 students annually. The staff complement is approximately 60.

#### **2.6.3 Gaborone Technical College (GTC)**

Gaborone Technical College is one of the two government technical colleges in Gaborone. The College opened in 2001. It has an estimated student enrolment capacity of 1000, with boarding facilities for about 350 students. The staff complement is about 85. The College offers both fulltime and part-time programmes to pre-service and in-service students.

#### **2.6.4 Jwaneng Technical College (JTeC)**

Jwaneng Technical College is situated in Jwaneng, a small mining town in the Southern District of Botswana, about 190 kilometres from Gaborone. The College is one of five educational training institutions that opened in 1988 as Vocational Training Centres. It has since been upgraded, and is well resourced. The estimated student enrolment is 650, with a staff complement of about 55.

### **2.6.5 Maun Technical College (MTC)**

Maun Technical College is situated in Maun. Maun is a rapidly developing town in the North-West District of Botswana, about 1000 kilometres from Gaborone. The College opened in 1988 as a Vocational Training Centre. It has since been upgraded, and is well resourced. The estimated student enrolment is 600 with staff complement of about 65.

### **2.6.6 Oodi College of Applied Arts and Technology (Oodi CAAT)**

Oodi College of Applied Arts and Technology is situated in Oodi village. Oodi is a small village in the Southern District of Botswana, just 15 kilometres from Gaborone. Oodi College of Applied Arts and Technology is a new college, with state of the art facilities. It opened doors in 2011. The College has an estimated enrolment of 1200, and there are boarding facilities for 250 students. The estimated staff complement is 80.

### **2.6.7 Palapye Technical College (PTC)**

Palapye Technical College is situated in Palapye Village, a village which is developing very rapidly into a town. It is situated in the Central District of Botswana, 350 kilometres north of Gaborone. The college opened in 1988 as a Vocational Training Centre. It has since been upgraded and is well resourced. The estimated student enrolment is 650, with staff complement of about 65.

### **2.6.8 Selibe Phikwe Technical College (SPTeC)**

Selibe Phikwe Technical College is situated in the Copper mining town of Selibe Phikwe, and is also in the Central District of Botswana, about 400 kilometres north of Gaborone. The college opened in 1988 as a Vocational Training Centre. It has since been upgraded and is well resourced. The estimated student enrolment is 650 and the staff compliment is about 65.

Table 2.1 below shows the programmes offered by each college and the level at which they are offered.

Table2.1: A grid showing levels of programmes offered in each college

Level	Programmes	Colleges									
		BCET	GTC	Oodi CAAT	FCTVE	JTeC	PTC	SPTeC	MTC		
Diploma	Building and Civil Engineering	●	●		●						
	Electrical and Electronics	●	●		●						
	Geomatic Engineering	●									
	Mechanical Engineering	●									
	Water and environmental engineering	●									
	Business Administration		●		●						
	Information and Communications Technology		●	●	●						
	Teacher Training				●						
	Multimedia		●	●	●						
	Jewellery Design and Manufacturing			●							
	Fashion Design			●							
	Furniture Design and Manufacturing			●							
	Interior Design			●							
	Performing Arts			●							
	Visual Arts			●							
	Jewellery Design and Manufacturing			●							
Engineering (Mechatronics)			●								
Applied Science			●								
Health and Social Care			●								
Sports, Recreation and Leisure			●								

Level	Programmes	Colleges											
		BCET	GTC	Oodi CAAT	FCTVE	JTeC	PTC	SPTeC	MTC				
BETP Advance Certificate	Electrical and Mechanical Engineering	●	●		●								
	Business Administration		●	●									
	Building Construction	●											
	Information and Communications Technology		●	●									
	Multimedia		●	●									
	Clothing Design and Technology		●	●									
	Hair Dress & Beauty Therapy		●										
	Hospitality and Tourism		●										
	Hospitality operations		●										
	Key Skills	●	●	●									
	Sports Recreation and Leisure			●									
	Travel and Tourism		●										
	Building Construction	●	●				●		●		●		●
	BTEP Certificate	Business Administration		●	●								
Clothing Design and Technology			●										
Electrical and Mechanical Engineering		●	●										
Hair Dress & Beauty Therapy			●										
Hospitality and Tourism			●										
Hospitality operations			●										
Information and Communications Technology		●	●										
Key Skills		●	●	●									
Multimedia			●	●									
Travel and Tourism			●										

Level	Programmes	Colleges									
		BCET	GTC	Oodi CAAT	FCTVE	JTeC	PTC	SPTeC	MTC		
National Craft Certificate	Bricklaying and Plastering		●		●	●	●				
	Carpentry and Joinery		●		●	●	●				
	Painting and Decorating		●			●		●			
	Plumbing and Pipe Fitting		●			●	●	●			
	Electrical Installation		●		●	●	●	●			
	Dress Making						●	●			
	Welding and Fabrication	●						●	●		
	Fitter Machining	●						●	●		
	Auto mechanic	●				●	●	●	●		

## **2.7 Available TVET programmes**

### **2.7.1 National Craft Certificate Programmes**

Before the introduction of BTEP, technical colleges were offering National Craft Certificate (NCC) programme in various vocational areas. The National Craft Certificate is a four year programme where training of apprentices is undertaken by both industry and technical colleges. NCC by its nature is a programme which is co-ordinated by the Ministry of Labour and Home Affairs. Trainees admitted to NCC programmes need to sign a contractual agreement with an employer before they are registered by Madirelo Training and Testing Centre (MTTC), who in turn send them to colleges for one term (4 months) per year for theoretical component of their training whilst industry handled their practical component of training. In time however, it became apparent that the country's small industry base, could not support all prospective apprentices.

To counter this problem, technical colleges introduced a two year full time courses. The idea was to give the trainees both theoretical and practical training. After two years of college training, trainees were required to find companies that could provide them with attachments at least for the remaining two years. Those who could not get work placements and willing to exit the system were certificated at Trade test C level in recognition of the skills they have acquired. This initiative did not succeed because the skills provided by the colleges were not comparable to what the industry could provide, and hence both the student and the industry expectations could not be met.

Despite these interventions a number of youth in need of vocational training increased as not all secondary school leavers could be absorbed into vocational training (Nganunu & Kewagamang, 2001).

### **2.7.2 Botswana Technical Education Programmes (BTEP)**

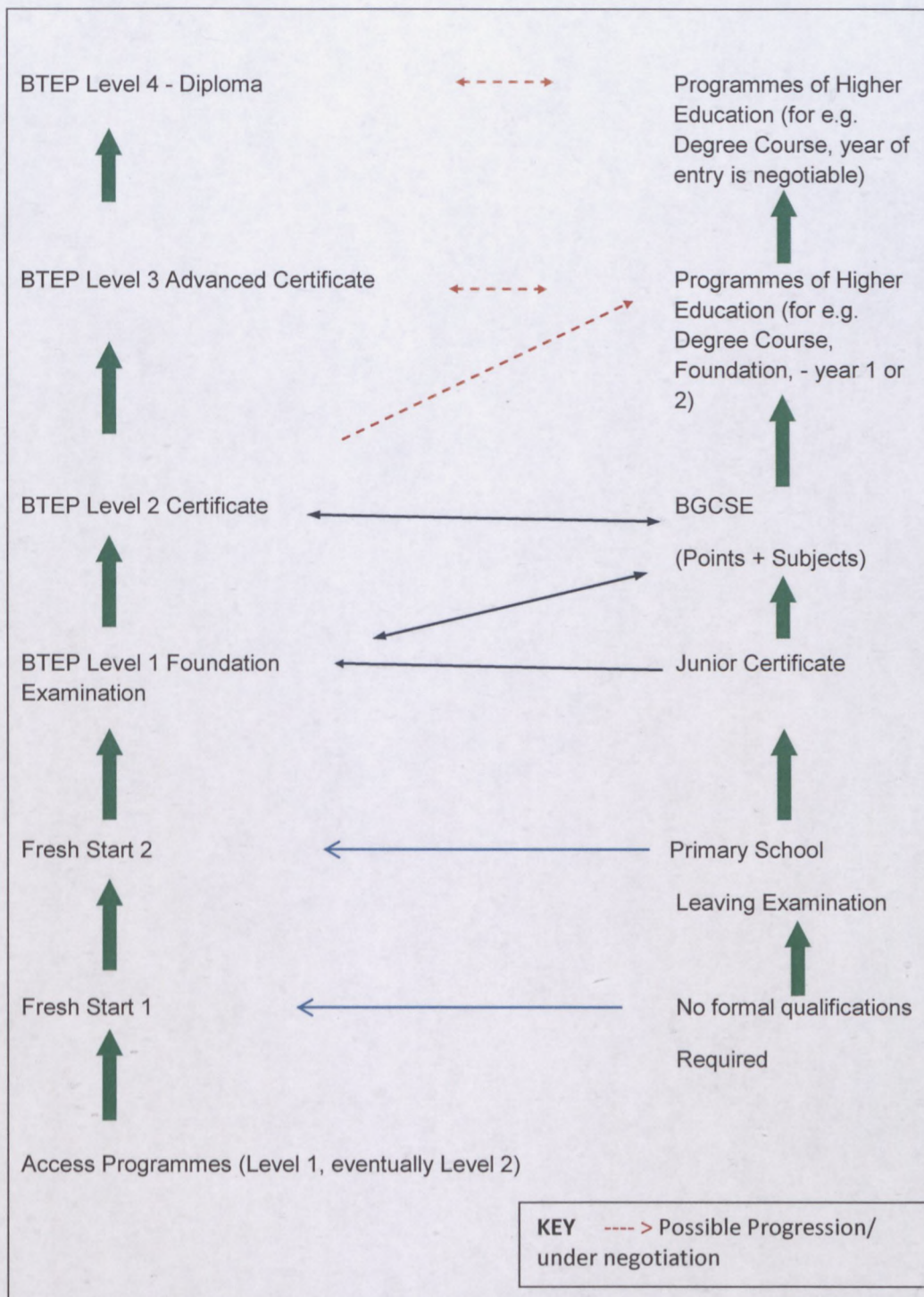
In response to the commission's recommendations, the Ministry of Education introduced some new reforms in technical and vocational

education and training. The reforms included the introduction of the Botswana Technical Education Programmes (BTEP). BTEP is a modular outcomes-based programme which is intended to produce a workforce with the skills and attributes in a number of different vocational fields that will meet the manpower needs of commerce and industry.

The Programme comprises a range of courses in the fields of Electrical and Mechanical Engineering, Building Construction, Information and Communication Technology, Travel and Tourism, Hospitality and Tourism, Clothing Design and Textile, Hairdressing and Beauty Therapy, Sports and Leisure, Health and Social Care, Visual Arts, Performing Arts and Multimedia. These courses provide training that develops the trainee's communication skills, numeracy, entrepreneurship, problem solving and interpersonal skills.

## **2.8 Levels of programmes and progression**

BTEP comprises four levels; Foundation, Certificate, Advanced Certificate and Diploma. The Foundation level admits students with a pass at Junior Certificate. It focuses on the development of basic knowledge and skills that are required by students who intend proceeding to the Certificate level training. The Certificate programme admits students who have passed the Botswana General Certificate of Secondary Education (BGCSE) in required subject areas. The students must meet the assessment and verification requirements of the Certificate programme to progress to the Advanced Certificate. Completion of the Advanced Certificate programme allows students to progress to the Diploma level. Figure 2.2 below shows a diagram which includes the different programme levels.



**Figure 2.2:** The BTE programme framework  
 (Source: BTEP Qualification Blueprint, 2007)

## **2.9 Programme delivery approaches**

The nature of the Programmes dictate that they should be learner-centred if learners are to acquire the learning experiences and attributes that will prepare them for the world of work. Essentially, teaching and learning sessions should be activity-based and should emphasis independent study and the learners' responsibility for his or her learning. Other arrangements to be explored: the seconding of skilled personnel from the industry to the colleges and attaching college staff to the industry. In this way each side will gain insight into the activities of the industry and technological developments. These arrangements will ensure that the trainees are carried out effectively, and according to industry needs.

## **2.10 Assessment and the verification system**

The BTEP has incorporated a three dimensional assessment system. The three dimension of control, assessment, internal and external verification maintain standards and ensure they are applied consistently. The assessment and internal verification are carried out by the college while the external verification process is carried out by the Quality Assurance and Assessment Unit (QAA). The Quality Assurance and Assessment Unit is a semi autonomous unit set up within the Ministry of Education to assure that the technical colleges adhere to the prescribed standards.

## **2.11 Quality issues emanating from colleges**

The Government of Botswana has expended a great deal of resources in the construction and equipping of new colleges, and expanding and re-equipping the existing ones, so that they can accommodate the new and the improved training programmes. However, there are issues that limit the colleges to operate at their optimal efficiencies. These are; shortage of competent staff, delays in developing programmes, and generally lack of strategic planning for TVET activities. Statistics show that all the eight colleges have student enrolments that are far below two thirds of their estimated enrolments. All this is working against the Government's effort to increase access to the TVET programmes.

The Programme Development and Delivery Division is located at the DTVET head office: It does not have sufficient staff to enable it to develop training programmes for all the colleges, and as a consequent, some programmes in some of the colleges had to be withdrawn because they were not validated in due time. This has affected enrolments as was mentioned earlier. The expansion of college offerings is also constrained because the development of programmes for higher levels takes considerably longer than do the lower ones, this has resulted in many of students having to cut short their training and exit the system at the lower levels.

The other core mandate of the Programme Development and Delivery Division is to support the colleges in delivering the programmes. This function is not effectively carried out due to staff shortage alluded to earlier. Because of lack of coordination, there are inconsistencies in the manner each college delivers its programmes.

The recruitment and selection of staff for colleges is done centrally at the Human Resource Division at the head office. This is not working well because staff often lacks the relevant competencies despite having the advertised academic qualification. This has resulted in academic departments having many staff who could not teach/deliver programmes effectively.

The Quality Assurance and Assessment Unit is only responsible for the quality assurance of the BTE Programmes. This means that college programmes outside the BTE system are not subjected to quality assurance. This has resulted in inconsistencies in the delivery and assessment of programmes within individual colleges and across the college system.

Colleges also lack appreciation of the importance of quality management systems and the training of staff on the same. It is imperative that colleges appreciate the necessity of having quality management systems in place and that staff need training if these systems are to be effective.

## **2.12 Conclusion**

This chapter has attempted to describe the research environment by providing background information on the TVET system in Botswana. The structure of the TVET system was described, as were the programmes offered by the constituent technical colleges. The authorities responsible for the assessment and/ or certification of training programmes were mentioned. From the above, it is clear that Botswana's TVET system is delivered by two ministries; the Ministry of Labour and Home Affairs and the Ministry of Education and Skills Development. It is imperative that these two ministries co-operate and co-ordinate their work if the TVET system is to be relevant to the Botswana's economic and development needs.

## CHAPTER 3: LITERATURE REVIEW

### 3.1 Introduction

This chapter explores the literature on the implementation of quality management systems in technical and vocational training institutions, and on the benefits and challenges facing institutions implementing quality management. Quality management strategies are defined and the quality improvement techniques are discussed.

### 3.2 Quality Management System (QMS)

Quality refers to the correctness or appropriateness of an activity or the fitness of an entity; in compliance to a certain standard (Breja & Banwet, 2011:6; Gibb, 2003:15). Accordingly, a quality management system is the organisational structure of responsibilities, activities, resources and events that together provide the procedures and methods of implementation that ensure that an organization is capable of meeting the requisite quality requirements (Tricker & Lucas, 2003:5; Blom & Meyers, 2003:11; SAQA, 2001:6; Finish National Board of Education, 2008).

Quality management aims to facilitate the continuous development and improvement of operations and results, and it is an integral part of a VET provider's operational system (Finish National Board of Education, 2008:8).

In the discussion about quality and standards, there is often confusion over the use of the terms (Harvey, 2008:80). Harvey argues that quality is not the same as quality assurance, nor is standards and quality the same. According to Harvey (2008:80), the simplest way of conceptualizing the difference is to see quality as about process and standards as the means of evaluating outcomes, while quality assurance is a mechanism for ensuring that the institution complies with basic requirements, and is accountable to its stakeholders.

Sahney and Karunes (2010:57) aver that a recent trend has developed that shows that education is becoming much more of a "product" with

varying customers and stakeholders. Sahney and Karunes (2010:57) have in addition noted that with the steep rise in a number of educational institutions, primarily in the fields of engineering and management; there are a lot of alternatives as far as this "product" is concerned. The educational institutions are faced with tremendous competition and are under immense pressure to become more responsive to customer needs as a way of gaining an upper edge. Sahney and Karunes (2010:57), predict that with the demand for improved academic performance and transparency of policies and procedures, there will be a greater focus on matters of funding and finance and an increased emphasis on efficient and effective management.

The educational systems must improve the quality of their services, if they are to gain a competitive advantage and achieve academic excellence (Sahney & Karunes, 2010:57). Furthermore, the forces and dynamics that are behind the new challenges are pushing quality management in education to the fore; in particular, the conceptualization, assessment and measurement are treated as matters of priority.

A major impetus behind the adoption of quality management systems in vocational education and training has been the need for accountability, especially with regard to publicly funded operations (Sutcliffe & Pollock, 1992:12; Gasskov, 2006:281; Sahney & Karunes, 2010:57). As the demand for education and training services grows, quality management systems are seen as a means of reassuring clients and the government that the outcomes of the vocational education and training system are beneficial (Gasskov, 2006:281). Furthermore, there are four crucial areas in implementing quality programme, namely;

- Management of the programme
- Teaching and learning strategies
- Assessment methods
- Review and evaluation of the programme

Sutcliffe and Pollock (1992:12), further point out that there have been calls from the policy makers in government and funding agencies of higher education for the improvement of the quality and quantity of the

courses and students. Sutcliffe and Pollock (1992:12), argues that in higher education quality depends primarily upon the commitment of the academic community, on the improvements of standards and on the maintenance of improved standards. Furthermore, the above cannot be created out of nothing or be imposed on an organisation, the government on behalf of the public must ensure that systems are in place that will give effect to that commitment and will continue to promote them by monitoring college through-puts and outputs (Sutcliffe & Pollock, 1992:12).

It is expected that the implementation of total quality management (TQM) in higher education will potentially be the best means of improving the quality of instruction and administrative and operational efficiency, and even the quality of research (Hartman, 2002:273).

In many parts of the world, the subject of quality assurance (QA) in post-secondary education has been receiving increased attention as a result of the rapid expansion of this educational sector. The expansion has been stimulated by recent educational reform, and by demands that the sector respond to the pressures exerted on national economies by globalization and the ever changing expectations of the constituent communities who see development as the transformation of the economy into knowledge based societies.

Law (2010), further indicates that there is now consensus that in the context of post-secondary education, the concept of quality is multifaceted, value laden and stakeholder relative. Law (2010), avers that new ideas on the nature of quality and its assurance have been proposed, and various approaches to QA, such as total quality management, performance indicator and external quality monitoring, have been practiced.

The report entitled South African Qualifications Authority (SAQA) Quality Management Systems for Education and Training Providers (2001:19), shows that the purposes of quality management systems are to:

- Enhance learning by increasing the number of learners, the frequency of learning, and the relevance and durability of what is learned
- Establish a framework of qualifications and standards that are relevant, credible and accessible.

Based on the report, (SAQA, 2001:8), there are prominent quality management systems and approaches used throughout the world, which include the following;

- ISO 9000/2000 Quality Management Code of Practice – The focus of this international standard is to improve the processes of an organisation in order to enhance performance.
- Malcolm Baldrige National Quality Award – This management system is used successfully in the education and health sectors in the USA. The core criteria remain the same for these sectors.
- European Quality Management Award – This system focuses mainly on self assessment. The self assessment is a comprehensive, systematic and regular review of the organisation's activities.
- The Scottish Quality Management System – The Scottish Quality Management System is a comprehensive auditing system that can be used by organisations to evaluate themselves against requirements and help to guide and support quality developments
- Australian Quality Award - This management system focus also on self-assessment. The criteria are broad in scope and none prescriptive to allow for interpretation that best fits the needs of the organisation
- The South African Excellence Model – As in the case of European and Australian Quality Awards, this system makes use of the terms 'Enablers' and 'Results' when defining their core criteria.
- The Deming Prize – This system focuses on the application of statistical quality control.
- The Balanced Scorecard – The Balanced Business Scorecard has four focus areas; Finance, Customers, Learning and growth and Internal Business Process

- The Koalaty Kid Program – This is an approach, not a prescriptive system. The four key factors are; Active involvement of the whole school Community, Committed Leadership, Continuous Improvement and an Environment that Celebrates Success.

Table 3.1 below summarises the above quality approaches indicating their core values as well as their significance (SAQA: 2001:9-14).

**Table 3.1: Summary of Prominent QMS**

No	QMS	Core values	Significance
1.	The ISO 9000/2000 Quality Management Code of Practice	<ul style="list-style-type: none"> <li>• Customer focus</li> <li>• Leadership</li> <li>• Involvement of people</li> <li>• Process approach</li> <li>• Systems approach to management</li> <li>• Continual improvement</li> <li>• Factual approach to decision-making</li> <li>• Mutually beneficial supplier relationships</li> </ul>	<ul style="list-style-type: none"> <li>• To identify and meet the needs and expectations of its customers and other interested parties.</li> <li>• to achieve a competitive advantage in an effective and efficient manner</li> <li>• To achieve, maintain and improve overall organisational performance and capabilities.</li> </ul>
2.	Malcolm Baldrige National Quality Award	<ul style="list-style-type: none"> <li>• Leadership</li> <li>• Strategic planning</li> <li>• Customer and market focus</li> <li>• Information and analysis</li> <li>• Human resource focus</li> <li>• Process management</li> <li>• Business results</li> </ul>	<ul style="list-style-type: none"> <li>• Is used successfully in the education and health sectors.</li> <li>• Customer and market focus is replaced by Student and Stakeholder focus.</li> <li>• Human Resources focus is replaced by Faculty and staff focus.</li> </ul>
3.	European Quality Management Award	<ul style="list-style-type: none"> <li>• Leadership</li> <li>• Policy and strategy</li> <li>• People management</li> <li>• Resources</li> <li>• Processes</li> <li>• Customer satisfaction</li> <li>• People satisfaction</li> <li>• Impact on society</li> <li>• Business results</li> </ul>	<ul style="list-style-type: none"> <li>• Strongly focuses on self-assessment</li> <li>• A rigorous and structured approach to business improvement</li> <li>• An assessment based on facts and not individual opinions</li> <li>• A means to achieve consistency of direction and consensus on what needs to be</li> <li>• A means to integrate various quality initiatives into normal business operations</li> <li>• An objective assessment against a set of criteria which have become widely accepted across Europe</li> <li>• A means of measuring progress over time</li> <li>• Process-induced improvement activities focused where it is most needed</li> <li>• A means to create enthusiasm amongst the people within the organisation and</li> <li>• give fresh impetus to their pursuit of business excellence</li> </ul>

4.	The Scottish Quality Management System	<ul style="list-style-type: none"> <li>• Strategic management</li> <li>• Quality management</li> <li>• Marketing</li> <li>• Staffing</li> <li>• Staff development</li> <li>• Equal opportunities</li> <li>• Health and safety</li> <li>• Premises and equipment</li> <li>• Communication and administration</li> <li>• Financial management</li> </ul>	
5.	Australian Quality Award	<ul style="list-style-type: none"> <li>• Leadership</li> <li>• Policy and planning</li> <li>• Information and analysis</li> <li>• People</li> <li>• Customer focus</li> <li>• Quality of process, product and service</li> <li>• Organisational performance</li> </ul>	<ul style="list-style-type: none"> <li>• focusing strongly on self-assessment</li> </ul>
6.	The Balanced Business Scorecard	<ul style="list-style-type: none"> <li>• Financial</li> <li>• Customers</li> <li>• Learning and growth</li> <li>• d) Internal business process</li> </ul>	<ul style="list-style-type: none"> <li>• Allows managers to keep track of the deployment of their strategic plans</li> <li>• Improvement of their strategic performance</li> </ul>
7.	The Deming Prize	<ul style="list-style-type: none"> <li>• Policy</li> <li>• Management of organisation</li> <li>• Education</li> <li>• Information gathering</li> <li>• Analysis</li> <li>• Standardization</li> <li>• Control</li> <li>• Quality assurance</li> <li>• Results</li> <li>• Future planning</li> </ul>	<ul style="list-style-type: none"> <li>• Deming's fourteen points for quality</li> </ul>
8.	The South African Excellence Model	<ul style="list-style-type: none"> <li>• <b>The Enablers:</b> Leadership, i.e. strategy and planning; customer and market focus; people management; resources and information management</li> <li>• <b>The Results:</b> Processes, i.e. social responsibility; customer satisfaction, people</li> <li>• satisfaction, supplier and</li> <li>• partnership performance</li> </ul>	<ul style="list-style-type: none"> <li>• Is a longer-term improvement plan for continuous improvement</li> </ul>
9.	The Koalaty Kid Programme	<ul style="list-style-type: none"> <li>• Active involvement of the whole school community</li> <li>• Committed leadership</li> <li>• Employment of a system for continuous improvement</li> <li>• An environment that celebrates success</li> </ul>	<ul style="list-style-type: none"> <li>• Embraces the spirit and substance of 'Total Quality'</li> <li>• Systematic approach to continuous improvement.</li> <li>• Establishes standards of excellence, communicate clear expectations involving all stakeholders,</li> <li>• managing by processes,</li> <li>• measuring progress,</li> <li>• recognizing and awarding success</li> </ul>

(Source: SAQA, 2001:9)

In addition, the SAQA Report (2001:18), outlines what is seen as quality indicators particularly in terms of assessing applications from providers. The following criteria were outlined;

- Their aims are clear
- Processes are identified
- Procedures for quality management policies are in place
- Sustainability of quality management strategies are in place
- They have the ability to develop, deliver and evaluate learning programmes
- They have the necessary financial, administrative and physical resources to deliver their programmes
- They have democratic modes of organisation and practice
- They have clear learner centred policies and ways of dealing with programmes
- They are able to conduct off-site or work site activities
- They have clear policies for assessments and its management
- They have policies for programme development in terms of content, people, procedures and resources.

Furthermore, SAQA (2001:18), stated that the above indicators are based on the objectives of the National Qualifications Framework.

### **3.3 Implementation of QMS in TVET programmes**

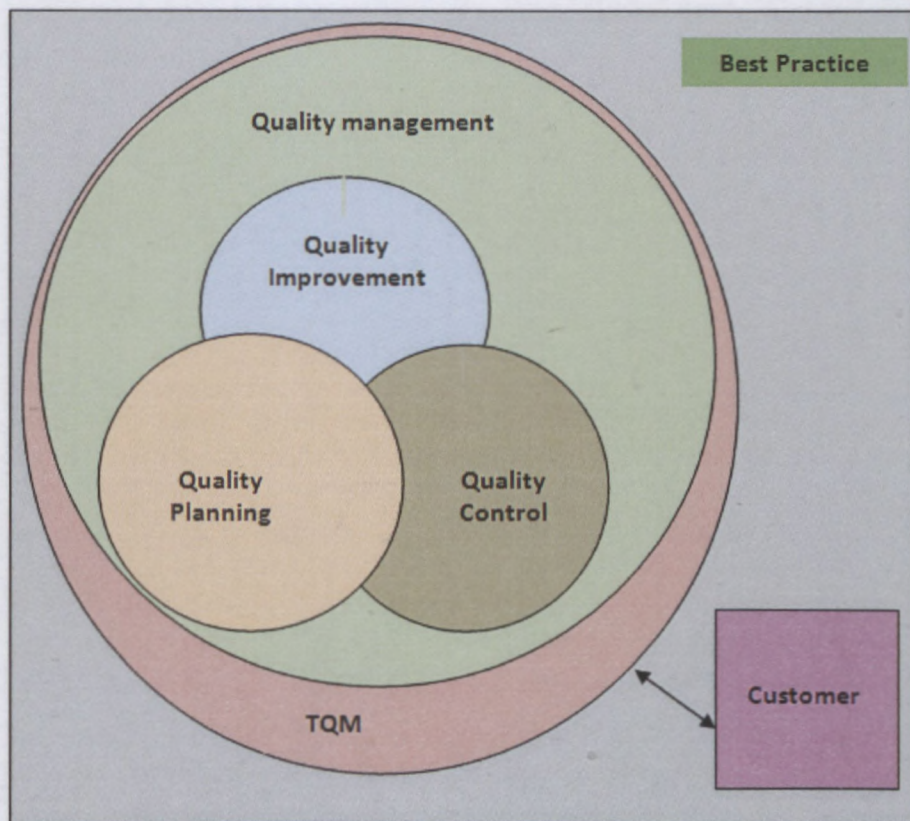
Literature review shows that the 1994 national strategy for vocational education and training (VET) (ANTA, 1994) identified quality and commitment to ongoing improvement as integral features of training organisations throughout the VET sector. Since then there has been a great deal of activities related to quality at all levels of the vocational education and training sector at the national, state, and institute level (Gibb, 2003:15). Applying quality principles to training organisations is a relatively new phenomenon (Gibb, 2003:15).

Vocational education and training systems may also be thought of as being comprised of four interacting subsystems, the performance of each of which is measured against its own quality criteria (Blom & Meyers,

2003:13). The four subsystems are outlined as follows; policies, administration, programme and learning experiences (Blom & Meyers, 2003:13).

The focus on quality revolution has led to a body of theory, with specialist tools and application that has become known worldwide in management as total quality management (TQM) (McEwan & Stenson, 1995:4). Furthermore, successful organisations tend to be those who have build the quality system into the fabric of the organisation through the involvement of all staff in the development of the quality system (McEwan and Stenson, 1995:2).

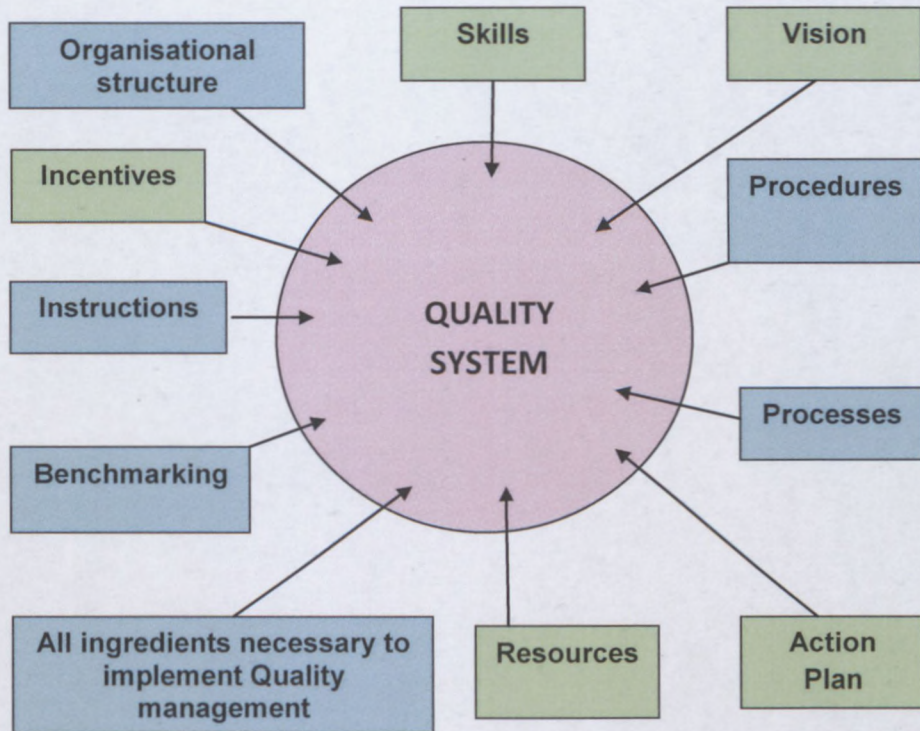
According to McEwan and Stenson (1995:3), the quality system is made up of all the ingredients necessary to implement Total Quality Management and Best practice.



**Figure 3.1:** Model for implementing TQM and Best Practice

(Source: McEwan & Stenson, 1995:2)

The success of or failure of a quality system depends largely on the process of implementation (McEwan & Stenson, 1995:10). If organisations are to succeed in the implementation process, it is critical that they carefully plan the implementation strategies. Below are some key elements of the implementation process depicted in a graphical form.



**Figure 3.2:** Key elements of quality implementation process

(Source: McEwan & Stenson, 1995:2)

Taylor and Hill (1993), argue that an organisation can only become effective when it realizes that every part of it must work in co operation with the other , and that every person and every activity affects, and in turn is affected by all other people and processes internally and externally.

### 3.4 Benefits of implementing a QMS in an educational environment

According to CERCO report on quality (1999:8), there are a number of direct benefits of a Quality Management System. The benefits are outlined as follows;

- Improved customer satisfaction
- Improved quality of products and services
- Worker's satisfaction and more commitment to the organisation
- Better management and a more effective organisation
- Improved relations with suppliers
- Improved promotion of corporate image.

Furthermore, other than the direct benefit, there are other indirect benefits which give an opportunity to:

- Review business goals and assess how well the organisation is meeting those goals
- Identify processes that are unnecessary or inefficient and improve or remove them
- Review the organisational structure, clarifying managerial responsibilities
- Improve internal communication and business process interfaces
- Improve staff morale by identifying the importance of their output to the business and by involving them in the review and improvement of their work.

These benefits are however, applicable to all organisations (CERCO Report, 1999:8).

### **3.5 Challenges of applying QMS in an educational environment**

The following are challenges faced by institutions when applying QMS;

- Short term increase in costs during training and implementation of QMS.
- Dissatisfaction of staff due to new methodology, that is, resistance to change and perceived risk of exposure of individuals.
- Lot of paper work which does not necessarily reflect what is happening on the ground.
- Perceived by staff as additional bureaucratic effort with very little or no gain.

### **3.6 Quality improvement techniques**

Quality improvement refers to all efforts directed to increase effectiveness and efficiency in meeting accepted customer expectations. It is a continuous process to achieve a better understanding of the market; to innovate products and processes; to manage and distributes materials and products, and to provide service to customers (Talha, 2004:17).

The success of quality improvement is based on an understanding by every member of the organization concerning the needs of their customers (Talha, 2004:17). Maintenance of that understanding requires continuing dialogues and negotiations with customers' and measurement of one product and services against customer's expectations. According to Temponi (2005:17), continuous improvement in academic institutions means exploring the needs and expectations of the institution's customer base – who may be the faculty, the students, the staff, the accreditation agencies and members of the public, and evaluating the effectiveness of programs and total quality initiatives at large.

Moyers, Shaw and New (2004:1) outline four leading quality improvement techniques used in the market today, namely;

- Six sigma
- Lean Thinking
- Theory of Constraints
- Customer inspired Quality.

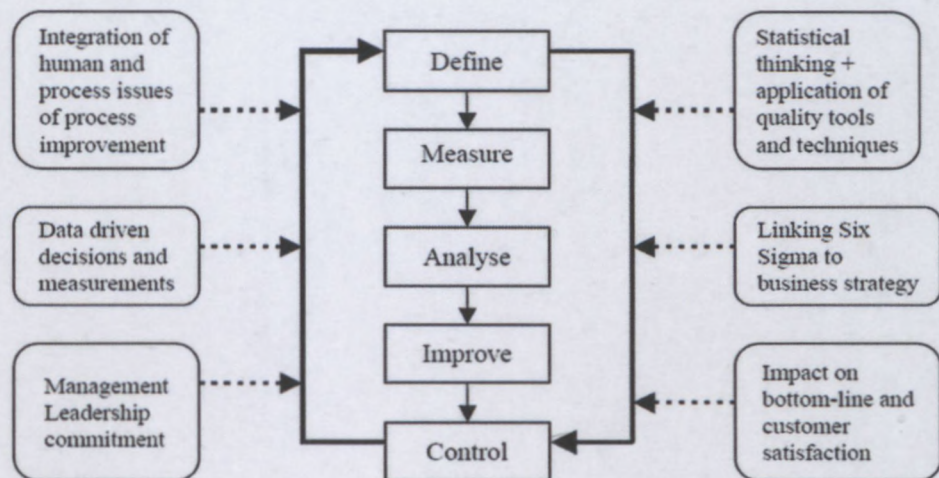
In the following sections, this study looks into these quality improvement methodologies in detail with a view to assessing those that could be use to facilitate quality provision of technical and vocational programmes.

#### **3.6.1 Six Sigma**

Six-sigma may be defined as a business strategy that seeks to identify and eliminate causes of errors or defects of failures in business processes by focusing on outputs that are critical to customers (Antony, 2004:303). It may also be defined as a measure of quality that strives for near

elimination of defects using the application of statistical methods (Antony, 2004:303).

The fundamental objective of the six sigma methodologies is the implementation of a measurement-based strategy that focuses on process improvement and variation reduction (Antony, 2004:303). As a problem solving technique or process improvement framework, six sigma strategy makes use of a series of well-defined steps. This includes definition of the problem (D), measurement (M) of the problem, data analysis (A) to discover the root cause of the problem, improvement (I) of processes to remove the root causes of defects and controlling (C) or monitoring processes to prevent perennial problem (Antony, 2006:239). These steps are simplified in the model shown below in Figure 3.3.



**Figure 3.3:** Six sigma Methodology

(Adopted from Antony, 2006: 239)

Antony (2006:239), outlines the following identified success factors of the six sigma methodology; strong leadership and management commitment

- Organisational culture change
- Aligning six sigma projects to corporate business objectives
- Selection of team members and teamwork
- Six sigma training
- Understanding the DMAIC methodology, tools, techniques and key metrics

- Selection of projects and project management skills
- Linking six sigma to customers
- Accountability.

### **3.6.2 Lean Thinking**

Lean thinking quality improvement technique strives to reduce waste to improve business performance through work flow (Moyers et al. 2004:1). According to Mullenhour and Flinchbaugh (2006:2), lean encourages action along a broad front by empowering people at all levels to contribute. This allows organizations to welcome challenges and implement improvement initiatives. They further contends that lean system of thinking is about empowering people to drive change by following five key principles, namely;

- Directly observe work as activity, connections and flows
- Systematically eliminates waste
- Establish high agreement of what and how
- Systematically solve problems
- Create a learning organization.

### **3.6.3 Theory of Constraints**

The theory of constraints is a management philosophy that has been effectively applied to manufacturing processes and procedures to improve organisational effectiveness (Moss, 2007:2). Though this theory was predominantly common with manufacturing industries, it was also applied to service industries because services can improve their processes and procedures just as can the manufactures.

Moss (2007:2), lists three theories of constraints (TOC) paradigms that have evolved over the years, as follows;

- Logistics paradigm
- Global performance measures
- Thinking process.

### **3.6.4 Logistics paradigm**

The five steps in the theory of constraints logistics paradigm, as outlined by Moss (2007:3), are as follows;

- Identify the system constraint(s) – Find the process that limits the ability of the organization to limits its goals of high performance
- Decide how to exploit the system constraints – Having found out the process that inhibits the organization to achieve its goals, determine what could be done to eliminate the bottlenecks
- Subordinates all else to the decision in step 2 – This is basically ensuring that the process of removing bottlenecks runs smoothly
- Elevate the constraints – This may result in acquisition of additional capacity, that is, machines or new technology to lift or break the constraints
- If a constraint is broken go back to step 1 – It is likely that once a constraint has been identified and addressed, another constraint will become evident. This should be addressed through the same five step process.

There are five steps focusing process that provide the foundation for many of TOC's generic solutions which include the management of processes, inventory, supply chains, product development and projects, personnel and decision-making (Goldratt Institute, 2008:4). To apply the theory of constraint principle in an organization, the above five steps focusing process must be applied. A proper local and global performance measures must be developed and a logistical control system must be designed (Siha, 1999:257).

### **3.6.5 Global performance measures**

Under theory of constraints, all company performance measures are driven by the global goal of making money now and in the future (Moss, 2007:4). Furthermore, the drive to make money is accomplished by increasing throughput, reducing inventory and reducing operational expenses.

Moss (2007:4), have outlined three global measures as follows;

- Net profit
- Return on investment and
- Cash flow.

### **3.6.6 Thinking process**

Managers make three decisions when dealing with constraints; what to change? What to change to; and how to cause the change? (Moss (2007:4).

#### **What to change?**

From a list of observable symptoms, cause-and effect is used to identify the underlying common cause, the core problem, for all of the symptoms. In organizations, the core problem is inevitably an unresolved conflict that keeps the organization trapped in a constant tug-of-war (management versus market, short term versus long term, centralize versus decentralize, process versus results). This conflict is called the core conflict, and it is this conflict which more often causes organisational management to create policies, measurements and behaviors in an attempt to address it (Goldratt Institute, 2008:5).

#### **What to change to?**

Goldratt Institute (2008:6) points out that by challenging assumptions behind the core conflict, a solution is identified. As a consequence, a strategy has to be put in place for resolving all the initial symptoms, once and for all.

#### **How to cause the change?**

This step in the thinking process is how to implement the solution (Goldratt Institute, 2008). The step begins by considering whether the changes will have direct desirable effects. The desired effects can be connected and the future outcome developed. According to Goldratt Institute, (2008), step-by-step the solution is created, and each stem is scrutinized to logically show that once the injections are implemented, the desirable effects can be accomplished.

The theory of constraints logical thinking has evolved to answer these generic questions. The past ten to fifteen years have shown that it is often managerial policies that are most often the constraints (Moss, 2007:4). The thinking process also helps in these situations.

### 3.6.7 Customer Inspired Quality

According to Moyers *et al.* (2004:1), customer inspired quality is a quality improvement methodology that focuses on work processes that directly impact on services provided to customers by identifying, defining, analyzing and improving the quality and effectiveness of processes. They also mentioned that customer inspired quality defines all work processes so that process improvement efforts can be prioritized from the customers' perspective. More importantly, they emphasized that customer inspired quality improvement methodology has the following advantages;

- It is service organization friendly and understandable by all stakeholders, encouraging a broader cross section of workers' input and involvement.
- It provides a comprehensive cross functional work process review and analysis, addressing all problems and constraints found in each process or system
- Administrative and quality measures are implemented to monitor work process changes, to bring deviations back in line with process design, and to alert managers to process variations before serious effects occur
- It takes the quality method used in manufacturing and adapts them so that the service industry can successfully achieve short and long term improvements in quality, safety, and customer satisfaction (Moyers *et al.*, 2004:1).

Below there is a table showing the summary of the methodologies discussed above.

Table 3.2: Summary of quality improvement techniques

Quality Improvement Techniques				
	Six sigma	Lean Thinking	Theory of Constraints	Customer Inspired Quality
Principles	<ul style="list-style-type: none"> <li>definition of the problem</li> <li>measurement of the problem</li> <li>data analysis to discover the root cause of the problem,</li> <li>improvement of processes to remove the root causes of defects</li> <li>controlling or monitoring processes to prevent perennial problem</li> </ul>	<ul style="list-style-type: none"> <li>Directly observe work as activity, connections and flows</li> <li>Systematically eliminates waste</li> <li>Establish high agreement of what and how</li> <li>Systematically solve problems</li> <li>Create a learning organisation</li> </ul>	<ul style="list-style-type: none"> <li><b>Logistics paradigm:</b> identify the system constraints, decide how to exploit the system constraints, subordinates all else to the decision in step 2, elevate the constraints, and go back to step 1</li> <li><b>Global performance measures:</b> Net profit, return on investment and cash flow.</li> <li><b>Thinking process:</b> What to change? What to change to and how to cause the change?</li> </ul>	<ul style="list-style-type: none"> <li>focuses on work processes that directly impact on services</li> <li>defines all work processes</li> <li>process improvement efforts can be prioritized from the customers' perspective</li> </ul>
Identified Success Factors	<ul style="list-style-type: none"> <li>Strong leadership and management commitment</li> <li>Organisational culture change</li> <li>Aligning six sigma projects to corporate business objectives</li> <li>Selection of team members and teamwork</li> <li>Six sigma training</li> <li>Understanding the DMAIC methodology, tools, techniques and key metrics</li> <li>Selection of projects and project management skills</li> <li>Linking six sigma to customers</li> <li>Accountability</li> </ul>	<ul style="list-style-type: none"> <li>reduce waste to improve business performance through work flow</li> <li>encourages action along a broad front by empowering people at all levels to contribute</li> <li>allows organisations to welcome challenges and implement improvement initiatives</li> <li>empower people to drive change</li> </ul>	<ul style="list-style-type: none"> <li>Management of;                             <ul style="list-style-type: none"> <li>processes</li> <li>inventory</li> <li>supply chains</li> <li>product development</li> <li>projects, personnel and decision-making.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Service organisation friendly and understandable by stakeholders</li> <li>Encourages cross section of workers' input and involvement.</li> <li>Provides a comprehensive cross functional work process review and analysis, addressing all problems and constraints</li> <li>Administrative and quality measures are implemented to monitor work process changes</li> <li>Brings deviations back in line with process design</li> <li>Alert managers to process variations before serious effects</li> </ul>
Application	Manufacturing	Manufacturing	Manufacturing	Service Organisation
Possibility for adoption	Yes	Yes	Yes	Yes

### 3.7 Quality management strategies

A strategy is a guide on how to pursue the organisation's mission and vision (Gryna, Chua & Defeo, and 2007:243). Strategies set directions by identifying the key issues or activities that help develop specific goals and plans (Gryna *et al.*, 2007:249). In other words strategies should contribute significantly to the organisational vision, and should aim at both operational effectiveness and achieving a competitive advantage. Examples of quality strategies for both operational and competitive advantage are presented in Table 3.3.

**Table 3.3:** Quality strategies for both operational and competitive advantage

Operational effectiveness	Competitive advantage
<ul style="list-style-type: none"><li>• Reduce costs and cycle time through waste reduction using the six sigma approach</li><li>• Institute formal cross functional process management</li><li>• Decentralize decision making through employees trained in problem solving</li><li>• Realign reward and recognition systems to focus on quality</li><li>• Emphasize both incremental improvement and major breakthrough improvement</li><li>• Pursue ISO certification</li><li>• Work jointly with suppliers to achieve quality excellence</li></ul>	<ul style="list-style-type: none"><li>• Pursue customer loyalty and retention</li><li>• Formalize the product development process</li><li>• Pursue the Baldrige Award</li><li>• Focus on quality/price ratio</li><li>• Build a learning organisation</li></ul>

Gryna *et al.* (2007:249), further point out that strategic quality management is the process of establishing a long range customer focused goals and defining the approach to meeting those goals. Strategic quality management has to become an integral part of the overall strategic plan of an organisation and should be developed, implemented and led by upper management (Gryna *et al.*, 2007:243).

### 3.8 Conclusion

The literature review extensively covered quality management systems as applied to technical and vocational education and training. Different literature sources have shown that while the concept of quality

management in an educational environment, as a new phenomenon, has always been a concern. Indeed, it can also be applied to technical and vocational training programmes.

Based on the relevant literature, the four crucial areas in implementing quality programme are highlighted in this chapter, which include management of the programme, teaching and learning strategies, assessment methods, and review and evaluation of the programme.

## CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

### 4.1 Introduction

This chapter present the research design used and the setting where the study was conducted. The population of the study is identified including methods of selection. The chapter further discusses the research methods used and the rational for their selection.

### 4.2 Research Design

This research was aimed at investigating the implementation of quality management systems in the Botswana public technical and vocational training institutions. Yin (1994:19), Polit and Hungler (1999:155) defined research design as the logical sequence that connects the empirical data to a study's initial research question and ultimately to its conclusion. It forms a plan or blueprint of how the research is to be conducted and determines the methods and procedures, types of measurements, sampling, and data-collection and data-analysis methods that the researcher employs (Mouton & Prozesky, 2010:75).

A case study by using a combination of both quantitative and qualitative research approach was applied in this study. Collins and Hussey (2003:68-70) describe a case study as exploratory research used in areas where there are few theories or deficient body of knowledge. The case study is an intensive investigation of a single unit (Handel, 1991; Yin, 1994). Most case studies involve examination of multiple variables (Mouton & Prozesky, 2010:281)

Qualitative research technique is a research tool or method used in the research that involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, live story, interview, observational, interaction and visual texts – that describe routine and problematic moments and meanings (Naslund, 2002). Qualitative researchers seek to make sense of personal stories and the ways in which they interact. It is a multi-method in focus, involving an interpretive, naturalistic approach to its subject matter (Thomas, 2003).

The design is appropriate for this study because the researcher wants to explore feelings, thoughts, attitudes, interests, concerns and values of stakeholders, and this will help to obtain more holistic information on their perception on the quality of services technical colleges provide.

Welman, Kruger and Mitchell (2005:6), explains that quantitative research, usually referred to as positivist approach, is based on a philosophical approach known as logical positivism. Welman *et al.* (2005:6), further point out that this approach underlines the natural scientific method in human behavioural research and holds that research must be limited to what we can observe and measure objectively, that which exists independently of the feelings and opinions of individuals.

This research is an empirical enquiry that investigates a contemporary phenomenon within academic environment in Botswana. Furthermore, this research study is aimed at determining the quality management strategies that could be implemented by Botswana public technical and training institutions in their programmes. Therefore, the case study method is an appropriate approach for this research.

### **4.3. Data Collection Design and Methodology**

#### **4.3.1 Sampling**

Sampling is the process of selecting a portion of the population to represent the entire population (Polit & Hungler, 1999:207; Mouton & Prozesky, 2010:164). There are two main categories of sampling, namely; 'probability sampling' and 'non-probability sampling' (Leedy & Ormrod, 2010:205; Jackson, 2008:97-99). Probability sampling as explained by Leedy and Ormrod (2010:205); Jackson (2008:97), is the one where the researcher can in advance determine that each segment of the population is represented in the sample, and non-probability sampling as the one where the researcher has no way of forecasting or guaranteeing that each element of the population will be represented in the sample.

In this research study, eight technical colleges in Botswana participated. The researcher used the random sampling under probability sampling category. This approach was suitable as respondents have already been identified as institutional management team members, staff and students. Using Gay and Airasian (2003:113) guidance for selecting a sample size, consideration was made that the total number of staff per college is averagely 57. Since this number is below 100 it was manageable to do all staff in each college. Furthermore, even if these numbers were added, they will total up to 456, which is still less than 500. According to Gay and Airasian (2003:113), if the population is 500, 50% of the population should be sampled, which translate to 250 sample size. While efforts were made to reach the entire sample targeted, the actual sample that participated consisted of 180 people. 70 students were selected from various programmes, 110 members of staff including members of management teams were selected. It was important to establish if staffs in the colleges understand the concept of quality management as applied to their programmes in the same way. These samples were randomly selected. Figure 4.1 and 4.2 below shows proportions of the samples selected across the colleges.

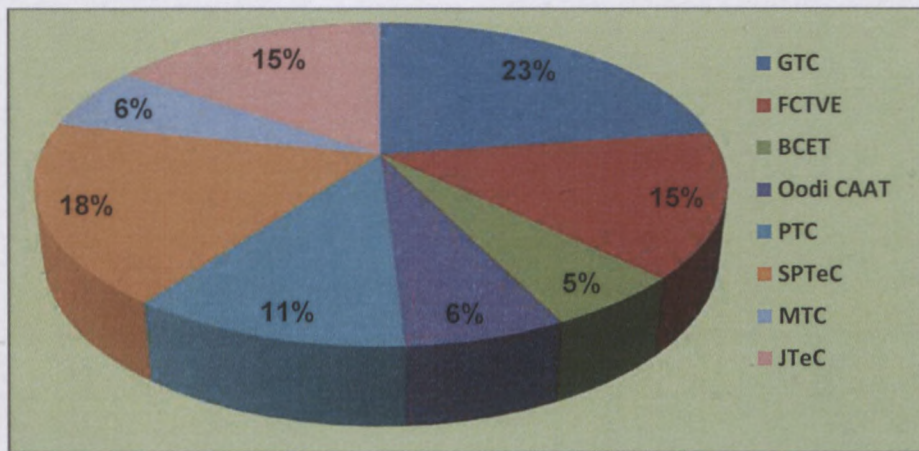


Figure 4.1: Proportions of staff Samples per college

Figure 4.1 shows that GTC, SPTeC, and FCTVE responded well to the survey while BCET, Oodi CAAT and MTC did not respond well to the survey. Many reasons were advanced for not participating, such as staff being away attending workshops, or busy assessing students and some not willing to participate.

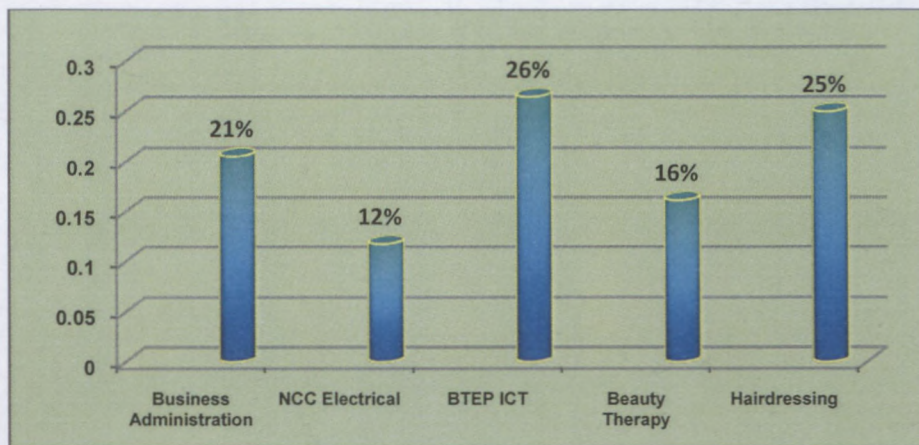


Figure 4.2: Proportions of students selected per programme

### 4.3.2 Research instruments

A large-scale survey approach was adopted for data collection by using questionnaires. Leedy and Ormrod (2010:203), explains that the large-scale survey serves as a data collection methodology for research methods falling within the context of the positivistic (quantitative) research paradigm. Furthermore, this is a common approach to research in business and management and creates the opportunity to collect large quantities of data.

A self-administered questionnaire in Appendix B was utilised as an instrument for data collection. The questionnaire included two sections, and it was prepared before commencing with field study. The first questionnaire was developed for institutional management and staff to explore their perceptions and involvement in the implementation of quality management systems in the college programmes. The questionnaire also addressed institutional constraints in applying quality management systems in the delivery of institutional programmes.

The second questionnaire was formulated for students to explore their perceptions on the quality of the programmes offered by the colleges and to determine what they considered to be done to improve the quality of services in the colleges.

The questionnaires consisted of both close-ended and open-ended questions. The open-ended questions gave the respondents the

opportunity to express themselves freely using their own words. The close-ended questions were designed to save time and reduce lengthy answers from respondents. A Likert - types scale graded with option codes of one to five was used. Anderson, Rungtusanatham and Schroeder (1994), suggest that a Likert scale has a number of advantages beyond the relative ease with which it can be applied. It is in widespread use and is therefore generally accepted by respondents and can be evaluated through standard techniques of item analysis, factor analysis and reliability analysis (Howard & Marshal, 2006).

The eight listed public technical colleges were visited to administer the questionnaires. Institutional management team members and staff were visited in their work offices and asked to take few minutes of their time to answer the questionnaires. The students were selected randomly and seated in classrooms and asked to take few minutes of their time to answer the questions. Upon completion of the questionnaires by the respondents the questionnaires were collected for analysis and interpretation. Below are charts showing college's staff complements as well as student enrolments.

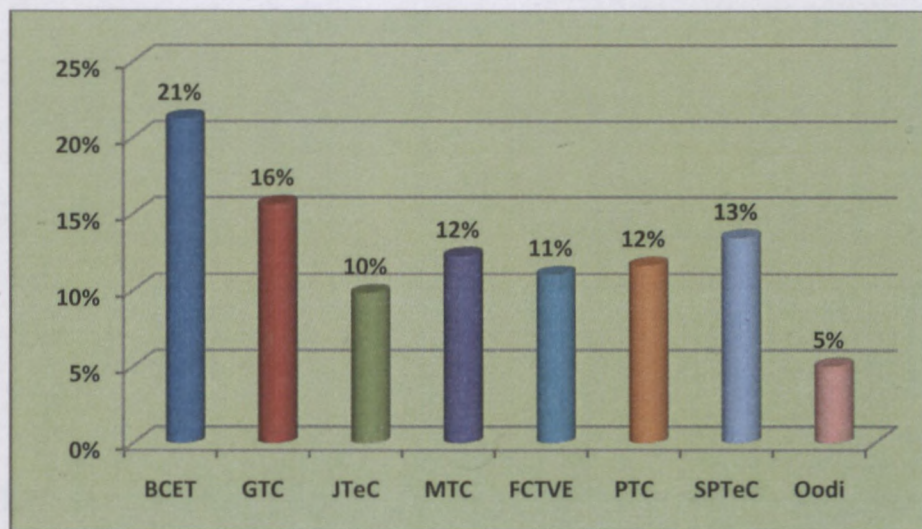


Figure 4.3: The percentage of staff who participated per college

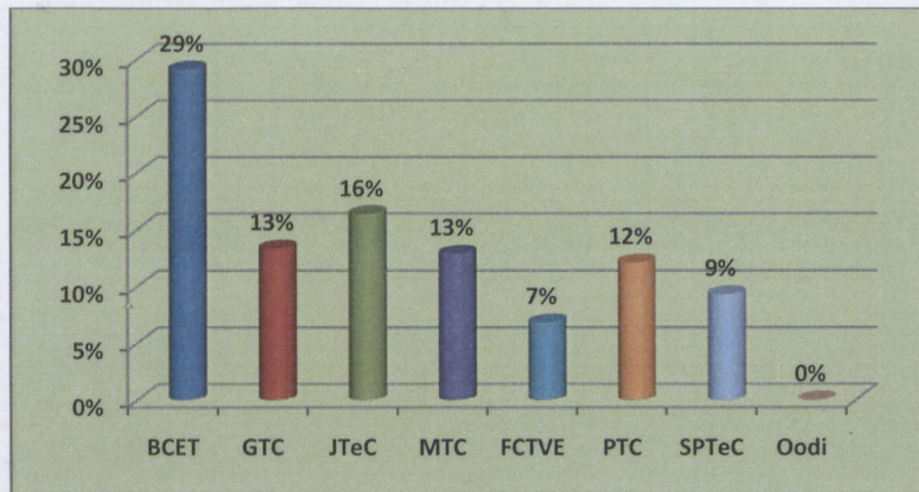


Figure 4.4: The percentage of students enrolled per college

#### 4.4 Ethics

According to Saunders, Lewis and Thornhill (2000:130), “ethics refers to the appropriateness of your behaviour in relation to the rights of those who become the subject of your work, or affected by it”.

Participants were informed in advance about the nature of the study to be conducted and were given the choice of either participating or not participating. Furthermore, participants were given the right to withdraw from the study at any time as participation was strictly voluntary. A consent (Appendix C) form that described the nature of the research as well as the required participation was presented to the participants.

The nature and quality of participants’ performance was strictly kept confidential. Findings are to be reported in an honest fashion. Under no circumstances would data be fabricated to support a particular conclusion.

#### 4.5 The validation survey questions

Polit and Hungler (1999:421); Strugwig and Stead (2007:141), define construct validity as the degree to which a test measures the theoretical construct or abstract variable it was intended to measure. Furthermore, it is more concerned with the underlying attribute than with the scores the instrument produces. Polit and Hungler (1999:421) “known-group

technique" approach was used in this study. After developing the survey questionnaires in appendix B, five members of staff at Head of Department level, Senior Lecturer level, and Lecturers level were selected and asked to answer the questionnaire. This was done to check if the instrument is reliable and valid, and whether it could be answered within the estimated time frame. Their comments and suggestions after answering the questionnaire helped to improve it and ensure its validity.

#### **4.6 Research Assumptions**

The researcher for the purpose of this study assumes that:

- Staffs in the colleges have relevant competencies to ensure effective implementation of programmes.
- Facilities and resources for the programmes are adequate and appropriate.
- The staff performance appraisal is appropriate and relevant to ensure effectiveness.

#### **4.6 Research Constraints**

##### **4.6.1 Research Limitations**

Quality management as applied to TVET is a great deal more than the formal quality assurance process usually carried out by Quality Assurance and Assessment Unit in the technical colleges for the BTE programmes. The majority of institutional staff is not familiar with the concept of quality management and therefore their responses to the questionnaire may not necessarily reflect what is on the ground.

##### **4.6.2 Research de-limitations**

The study was de-limited to investigating the application of quality management system in the eight public technical colleges only. The study excluded private technical colleges as well as Brigades institutions because the research purpose was to primarily focus on the application of quality management systems in public technical colleges.

## **4.7 Conclusion**

In this chapter, the research design and data collection methods were defined. The case study research method adopted for this study was identified to be appropriate as it was able to achieve all the objectives. Sampling and research instruments were also specified. In the course of data collection, the majority of respondents could understand the questionnaire well and provided answers properly, although a few of them lack understanding of some statements from the questionnaire due to their limited knowledge on the concept of quality management. Finally, ethical considerations, the study limitations as well as de- limitations were discussed.

## CHAPTER 5: DATA ANALYSIS

### 5.1 Introduction

The data of a research study are pieces of information obtained in the course of the investigation. Accordingly, data analysis is the systematic organisation and synthesis of research data, and the testing of the research questions / hypothesis using those data (Polit & Hungler, 1999:29). This chapter presents the analysis of the data of the survey conducted in Botswana on the eight public technical colleges to investigate the application of quality management systems in the implementation of these colleges' programmes. It includes analysis methods, format of data, preliminary analysis, the results of inferential statistics, sampling criteria, validity and reliability test.

### 5.2 Analysis Methods

The data collected from the sampled population is presented and analysed by the use of inferential and descriptive statistics. Jackson (2008:190,220), Polit and Hungler (1999:439,469) describe inferential statistics as procedures for drawing conclusions about a population based on data collected from a sample, while descriptive statistics are numerical measures that describe a distribution by providing information on the central tendency of the distribution, the width of the distribution and the distribution's shape. A Statistical Package for Social Sciences (SPSS) for Windows Version 19 software was used to analyse the data.

#### 5.2.1 Data Format

All data were entered into SPSS programme, which followed the requirements of the format of SPSS, to enable data analysis to take place. This information was processed and analysed by the researcher with the guidance of the research Supervisor.

#### 5.2.2 Preliminary Analysis

The reliability of the statements in the questionnaires collected from the sample respondents drawn from the eight public technical colleges are

tested by using the Cronbach's Alpha test. The detailed discussion is shown in the following section. Descriptive statistics was also performed on all variables to determine the means, frequencies, cumulative frequencies, percentages, standard deviations, sample T-test and one way ANOVA. These descriptive statistics are discussed in detail in paragraph 5.3.3. The statistical reports for data analysis are shown in Appendix A.

### **5.2.3 Inferential Statistics**

In order to draw conclusions about the population based on data collected from the sample, the following inferential statistics are performed on the data:

- Cronbach's Alpha test. This is a reliability analysis that allows one to calculate the internal consistency of a given measure of a sample, or an index of the extent to which each item on the scale correlates with every other item on the scale (Devlin, 2006:94; Mouton & Prozesky, 2010:125; Polit & Hungler, 1999:697)
- ANOVA with Friedman's Test. Jackson (2008:237); Levine, Ramsey and Smidt (2001:472), describes ANOVA (analysis of variance) as an inferential statistical test for comparing the means of three or more groups. Polit and Hungler (1999:487), contend that ANOVA Friedman's Test is more appropriate when the researcher is working with paired groups, or when several measures are obtained from a single sample. This test was found to be more appropriate for this analysis as several measures were obtained from the sample.

## **5.3 Analysis**

### **5.3.1 Results of demographical data**

A total of 110 respondents from the eight public technical colleges responded to the questionnaires given to them. The distribution of the respondents from the eight colleges according to the demographic information provided is shown in Table 5.1 to Table 5.7 below.

Table 5.1: Response rate per college

	Institutions	<i>f</i>	%	Valid %	Cumulative %
Valid	GTC	25	22.7	22.7	22.7
	FCTVE	16	14.5	14.5	37.3
	BCET	6	5.5	5.5	42.7
	Oodi CAAT	7	6.4	6.4	49.1
	PTC	12	10.9	10.9	60.0
	SPTeC	20	18.2	18.2	78.2
	MTC	7	6.4	6.4	84.5
	JTeC	17	15.5	15.5	100.0
	Total	110	100.0	100.0	

Table 5.1 above shows frequencies of response for staff from GTC, SPTeC, and FCTVE who responded well to the survey while BCET, Oodi CAAT and MTC did not respond well. Many reasons were advanced for not participating, such as staff being away attending workshops, or busy assessing students, and some not willing to participate.

Table 5.2: Distribution of respondents according to departments

	Department	<i>f</i>	%	Valid %	Cumulative %
Valid	Business	14	12.7	13.2	13.2
	Building Const	17	15.5	16.0	29.2
	Clothing Design	2	1.8	1.9	31.1
	ICT	16	14.5	15.1	46.2
	EME	23	20.9	21.7	67.9
	Hairdressing &Beauty	3	2.7	2.8	70.8
	Hospitality &Tourism	11	10.0	10.4	81.1
	Key skills	7	6.4	6.6	87.7
	Administration	7	6.4	6.6	94.3
	Special Needs	1	.9	.9	95.3
	Applied Science	1	.9	.9	96.2
	Sports and Recreation	1	.9	.9	97.2
	Teacher Training	3	2.7	2.8	100.0
	Total	106	96.4	100.0	
Missing	System	4	3.6		
Total		110	100.0		

Table 5.2 above shows frequencies of response for staff from Electrical and Mechanical Engineering, Building Construction, Information and Communications Technology. Staff from these departments responded well to the survey while staff from Special Needs, Applied Science, Sports and Recreation did not respond well. It is understandable

because the departments that did not respond well are relatively new and have not yet produced any graduates.

Table 5.3: Distribution of respondents per staff level of operation

Position		<i>f</i>	%	Valid %	Cumulative %
Valid	Lecturer	57	51.8	55.3	55.3
	Senior Lecturer	27	24.5	26.2	81.6
	Head of Department	12	10.9	11.7	93.2
	Deputy Principal	3	2.7	2.9	96.1
	Principal	1	.9	1.0	97.1
	Technician	3	2.7	2.9	100.0
	Total	103	93.6	100.0	
Missing	System	7	6.4		
Total		110	100.0		

Table 5.3 shows the frequencies of response for staff according to the staff level of operation. This will assist in determining the level of operation that influences the application of QMS in programme implementation. Figure 5.1 below shows the distribution of respondents according to the level of operation.

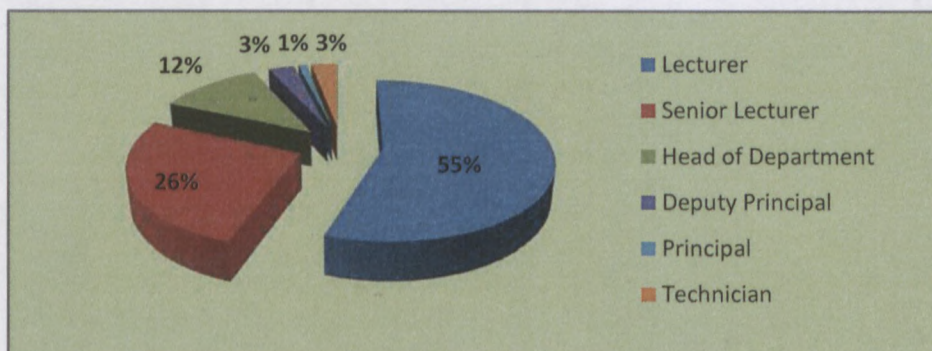


Figure 5.1: Distribution of staff level of operation

Table 5.4: Distribution of respondents according to staff work experience

Work experience		<i>f</i>	%	Valid %	Cumulative %
Valid	0-5 yrs	27	24.5	25.0	25.0
	5-10 yrs	20	18.2	18.5	43.5
	10-15 yrs	16	14.5	14.8	58.3
	15-20 yrs	22	20.0	20.4	78.7
	20-30 yrs	23	20.9	21.3	100.0
	Total	108	98.2	100.0	
Missing	System	2	1.8		
Total		110	100.0		

Table 5.4 shows frequencies of responses of staff according to years of work experience. While the responses are more or less the same throughout, it was hoped that those with more experience would understand issues of quality better than those with less experience.

Table 5.5: Distribution of respondents according gender

Sex		<i>f</i>	%	Valid %	Cumulative %
Valid	Male	59	53.6	54.1	54.1
	Female	50	45.5	45.9	100.0
	Total	109	99.1	100.0	
Missing	System	1	.9		
Total		110	100.0		

Table 5.5 shows frequencies of responses of staff according to gender. It is important to establish whether any gender group has a better understanding of the quality management system as applied to colleges than the other. The group with a better understanding could be used to influence the quality awareness amongst the staff. The result from the table shows little difference between the groups.

Table 5.6: Distribution of respondents according to staff qualification

Qualification		<i>f</i>	%	Valid %	Cumulative %
Valid	Certificate	4	3.6	3.7	3.7
	Diploma	47	42.7	43.5	47.2
	Degree	34	30.9	31.5	78.7
	Post Graduate	23	20.9	21.3	100.0
	Total	108	98.2	100.0	
Missing	System	2	1.8		
Total		110	100.0		

Table 5.6 shows frequencies of responses of staff according to their qualifications. The results from the table show no correlation between level of qualification and understanding of quality as applied to college programmes.

Table 5.7: Distribution for number of staff with training on quality

Training		<i>f</i>	%	Valid %	Cumulative %
Valid	Yes	59	53.6	55.7	55.7
	No	47	42.7	44.3	100.0
	Total	106	96.4	100.0	
Missing	System	4	3.6		
Total		110	100.0		

Table 5.7 shows frequencies of responses of staff according to the quality awareness training they attended. The result shows that a significant number of staff has been trained on quality.

Based on the above tables, the demographical results are generated and showed in a graphical manner below.

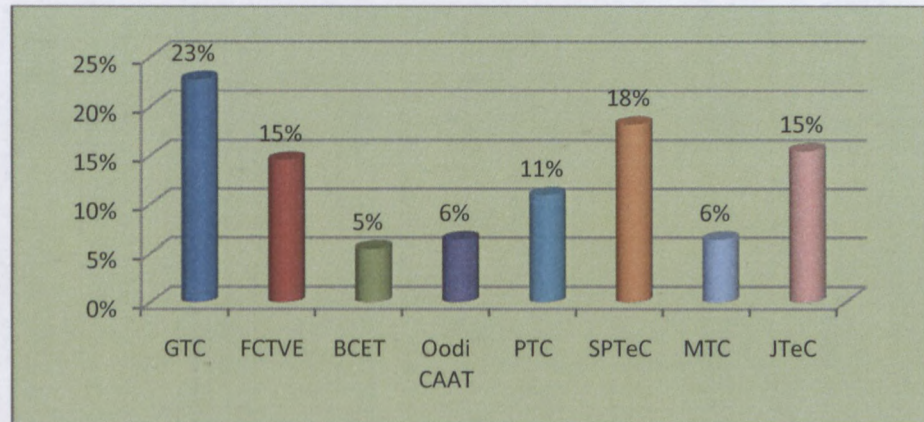


Figure 5.2: Response rate per college

A further distribution of the respondent's rate was arranged according to the various departments of the eight colleges which are shown in Figure 5.2.

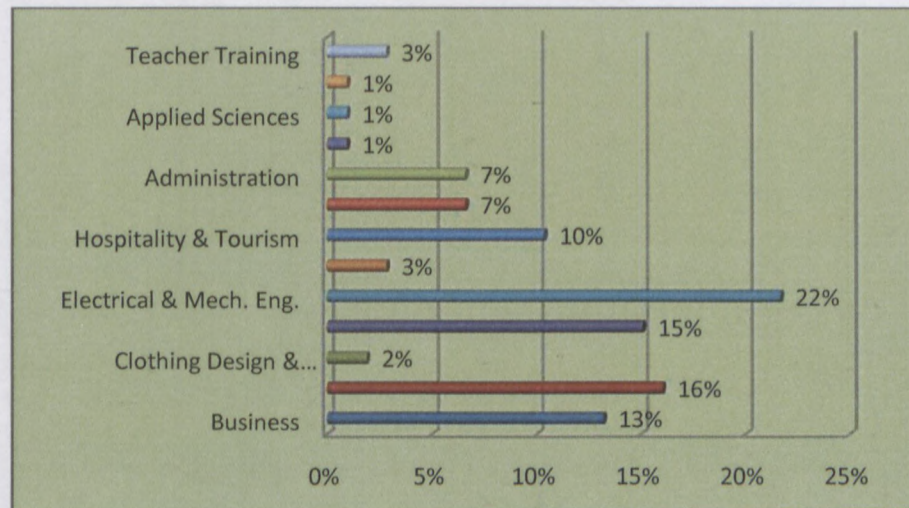


Figure 5.3: Distribution of respondents per department

Figure 5.3 shows the distribution of respondents per department from the eight colleges. It indicates that the department of Electrical and Mechanical engineering has the highest respondents among other

departments. Some departments such as Sports and recreation, Applied Science, and Special needs were the least group of respondents.

### 5.3.2 Reliability Testing

Section B of the questionnaire is made up of five categories, each having statements that addresses each investigative question. Cronbach's Alpha Test was done on all the statements under each category. Table 5.8 shows Cronbach's Alpha test results for categories 1 to 5 (Section B statements 1.1 to 5.10).

Table 5.8: Cronbach's Alpha test results for categories 1 to 5

Category	Cronbach's Alpha	Cronbach's Alpha Based on standardized items	N of items
SECB1.1 - SECB1.11	.927	.928	11
SECB2.1 - SECB2.6	.850	.854	6
SECB3.1 - SECB3.11	.801	.843	10
SECB4.1 - SECB4.7	.864	.869	7
SECB5.1 - SECB5.10	.892	.895	10

An overall Alpha test was done for all the 44 items under all the categories. Table 5.9 shows the test results for all the categories.

Table 5.9: Test results for all the categories

Category	Cronbach's Alpha	Cronbach's Alpha Based on standardized items	N of items
All	.967	.967	44

Based on Cronbach's Alpha test results (0.967) for all the 44 items of the questionnaire, there is sufficient evidence to conclude that this measuring instrument is reliable and consistent since the Alpha coefficient is greater than 0.7 which is the minimum acceptable factor for any reliable measuring instrument.

### 5.3.3 Descriptive Statistics

Table 5.10 shows descriptive statistics for the variables in Section A of the Questionnaire measuring the knowledge and practice of QMS application in the implementation of the college programmes. The table shows the frequencies (also converted into percentages %) of responses for each

variable according to the categories. It is worth noting that the descriptive statistics are based on the total sample. However, there are some questions from the questionnaire that were not answered or left blank. Such questions were treated as "missing systems". A computer printout for the descriptive statistics is also shown in appendix A.

Section A of the questionnaire was intended to find out if there are any particular quality management systems the colleges are using and the time such systems has been in use, the quality arrangements in place if none of the listed systems is employed. The Section further intend to determine if there is any training provided to staff on quality, whether there are members of staff appointed to deal with quality issues, and more importantly to establish whether QMS is incorporated as an integral part of college's strategic plan.

Table 5.10: Descriptive statistics for variables in Section A

Measuring Instrument			
Variables	Categories	f*	%*
Q1. Which QMS systems are in use	ISO 900/2000 QMS	2	1.9
	Balanced Business Scorecard	18	16.8
	Scottish Quality Management	49	45.8
	Don't Know	38	35.5
Q2. Duration of QMS	0 - 4 yrs	7	21.2
	4 - 8 yrs	10	30.3
	8 - 12 yrs	16	48.5
Q3. Quality arrangements in place	Internal Curriculum audits	7	24.1
	Internal verification of assessments	11	37.9
	Monitoring of teaching and learning	8	27.6
	Assessment of students	1	3.4
	Don't know	2	6.9
Q4. Responsible for quality the college	Management	75	78.1
	All staff	10	10.4
	Don't know	7	7.3
	MoESD*	3	3.1
	QAA*	1	1.0
Q5. Provision of training prior to implementation	yes	81	80.2
	No	20	19.8
Q6. Quality awareness to staff	Meeting	3	16.7
	Training	8	44.4
	Appraisals	2	11.1
	Don't know	4	22.2
Q7. Appointment of QMS overseer	Yes	85	81.0
	No	20	19.0
Q8. Is QMS incorporated in the College strategic plan	Yes	91	88.3
	No	12	11.7
Q9. Desire to incorporate QMS in college strategic plan	Yes	16	88.9
	No	2	11.1
Q10. Criteria for determining the of customers and interested parties	Discussions/Meetings	41	51.9
	Questionnaire	25	31.6
	Suggestion box	3	3.8
	Don't know	10	12.7
Q11. Opinion to find out if quality arrangements in place are effective	Yes	59	57.8
	No	17	16.7
	Don't know	25	24.5
Q12. Voluntary comments from respondents	Implementation problems	15	30.6
	Need for QMS	26	53.1
	Training of staff	8	16.3
	Implementation problems	15	30.6

f\* - Frequency of responses; %\* - Percentage out of the total;

MoESD\* - Ministry of Education and Skills Development;

QAA\* - Quality Assurance and Assessment Unit, a unit in the ministry that quality assures the BTE programmes

Based on the above statistical results, the following responses were obtained from the respondents.

Figure 5.4 showed that 45.8% of the respondents have indicated that the colleges use Scottish Quality Management Award, while 16.8% indicated the use of the Balanced Business Scorecard system. 1.9% has indicated the use of ISO 9000/2000 while 35% do not know the system the colleges are using.

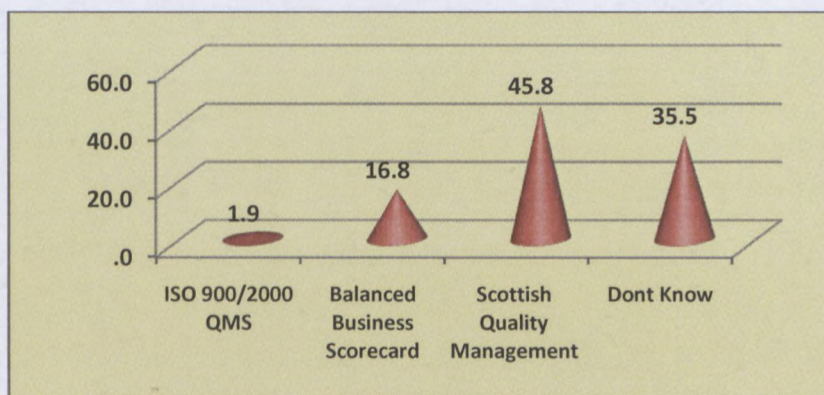


Figure 5.4: Which QMS systems are colleges using?

The respondents have shown in Figure 5.5 that in the absence of a specific quality management system the colleges use internal curriculum audits (24.1%), internal verification of the assessment processes (37.9%), monitoring of the teaching and learning processes (27.6%) as well as assessment of the students (3.4%). 6.9% of the respondents have indicated that they do not know any quality arrangements in place.

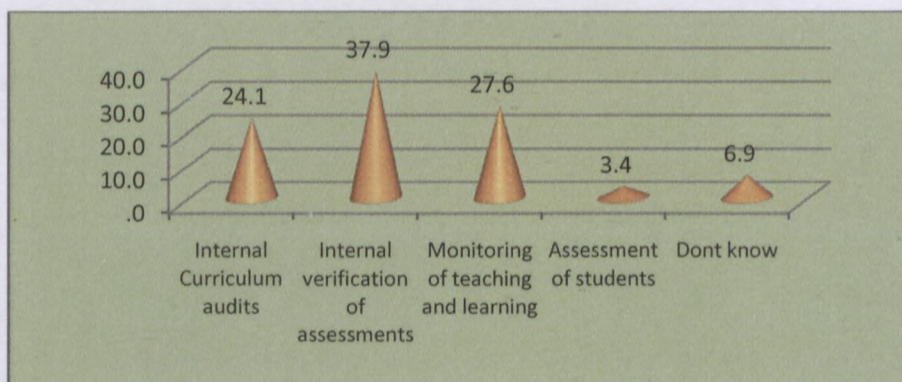


Figure 5.5: Arrangements in place in the absence of a specific QMS system

According to Figure 5.6, 78.1% of respondents have indicated that quality planning is done by management, 10.4% has indicated that the planning is done by all staff while 3.1% and 1% indicated that the planning is done by the Ministry of Education and Skills Development and Quality Assurance and Assessment Unit respectively. However, 7.3% of respondents do not know who plans quality for the colleges.

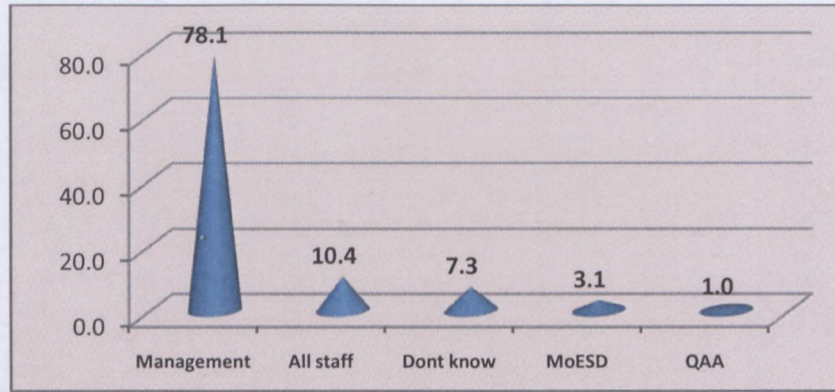


Figure 5.6: Who plans for quality in the college?

Based on Q5 (Provision of training prior to QMS implementation) from Table 5.10, 80.2% indicated that training on quality is provided to staff while 19.8% disagree that there is any provision of training to staff.

With regard to determining the needs of customers and interested parties, Figure 5.7 showed that 31.6% of respondents indicated the use of questionnaires, 51.9% indicated holding of meetings/discussions with customers. 3.8% have indicated the use of suggestion box while 12.7% do not know how colleges determine the needs of their customers.

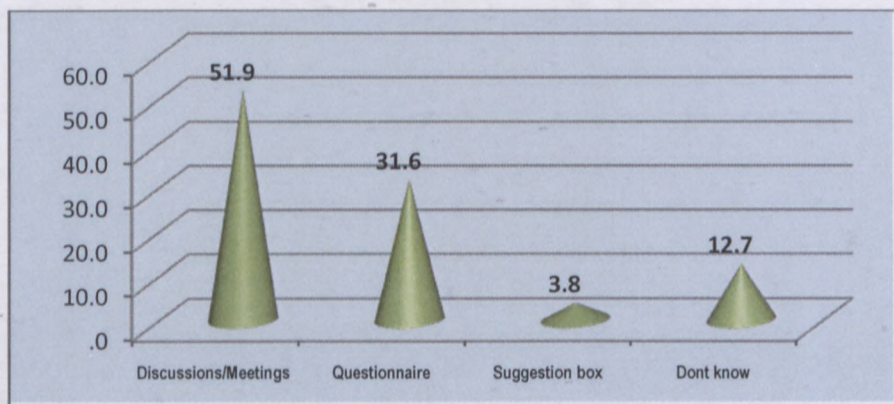


Figure 5.7: How do colleges determine the needs of their customers

In Figure 5.8, 57.8% of respondents feel the quality arrangements in place are effective and are helping their institutions to continually improve. 16.7% disagree with this assertion while 24.5% do not know whether the arrangements in place are effective or not.

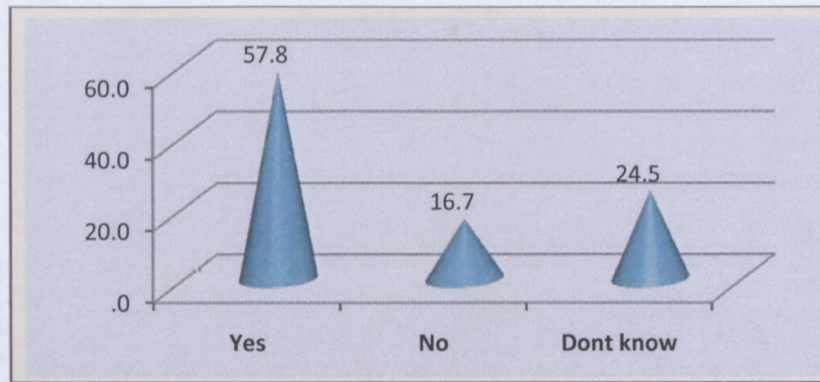


Figure 5.8: Are quality procedures helping colleges to improve their services?

Regarding voluntary comments from respondents, the results of Q.12 from Table 5.10 showed that 30.6% of respondents indicate that quality arrangements are in place but there are implementation problems that inhibit effectiveness. The majority (53.1%) of respondents feel there is need for an effective QMS in the implementation of college programmes. 16.3% respondents mentioned that staff should be trained on quality management.

Based on descriptive statistical results that are shown in Table 5.11, Figure 5.9 to 5.15 are generated in a graphical manner to illustrate the results.

Table 5.11: Descriptive Statistics for Variables in Section B

Category	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Code	SA	A	N	DA	SDA
Variables	Category	f*	%*		
1. To what extent has the institutions outlined the procedures that implement quality management?					
1.1 Your college is implementing quality management system in its training programmes	SA	22	20.6		
	A	41	38.3		
	N	29	27.1		
	DA	9	8.4		
	SDA	6	5.6		
1.2 The organisational structure of your college is able to support achievement of objectives.	SA	20	18.5		
	A	38	35.2		
	N	29	26.9		
	DA	15	13.9		
	SDA	6	5.6		
1.3 The annual operational plan of your college is based on the mission, vision, values and strategic objectives	SA	36	33.6		
	A	36	33.6		
	N	19	17.8		
	DA	5	4.7		
	SDA	11	10.3		
1.4 Your college has developed consistent quality management policies for its functions.	SA	17	16.2		
	A	35	33.3		
	N	36	34.3		
	DA	12	11.4		
	SDA	5	4.8		
1.5 Leadership plays a key role in provision of high-quality VET services and continuous improvement of operations in your college.	SA	17	16.0		
	A	44	41.5		
	N	22	20.8		
	DA	15	14.2		
	SA	8	7.5		
1.6 There is a strategy to communicate values, specific jectives and results achieved to staff, customers and partners	SA	20	18.3		
	A	35	32.1		
	N	27	24.8		
	DA	20	18.3		
	SDA	7	6.4		
1.7 There is a procedure to ensure that operational and academic department management complies with jointly Ad policies and procedures.	SA	14	13.1		
	A	47	43.9		
	N	26	24.3		
	DA	15	14.0		
	SA	5	4.7		

1.8 Your college is using Information management systems to provide strategic information.	SA	16	15.4
	A	34	32.7
	N	39	37.5
	DA	10	9.6
	SDA	5	4.8
1.9 Your college benchmark with other educational training providers to improve its processes.	SA	17	15.9
	A	38	35.5
	N	18	16.8
	DA	23	21.5
	SDA	11	10.3
1.10 The training that is provided by your college is meeting learner's needs.	SA	20	19.0
	A	34	32.4
	N	33	31.4
	DA	12	11.4
	SDA	6	5.7
1.11 The training that is provided by your college is meeting learner's needs.	SA	23	22.1
	A	45	43.3
	N	19	18.3
	DA	13	12.5
	SDA	4	3.8

MEASURING INSTRUMENT			
Variables	Category	f*	%*
2. What policies and procedures are there for staff recruitment, appraisal and development?			
2.1 Your college has a human resources strategy that facilitates staff selection, appraisal and development	SA	16	14.8
	A	32	29.6
	N	25	23.1
	DA	25	23.1
	SDA	10	9.3
2.2 There is a system in place to ensure that staff is competent to carry out assessment in ways that are applied and integrated.	SA	22	20.6
	A	40	37.4
	N	25	23.4
	DA	13	12.1
	SDA	7	6.5
2.3 Findings of reviews, monitoring and/or auditing are used to design staff activities.	SA	14	13.5
	A	31	29.8
	N	31	29.8
	DA	20	19.2
	SDA	8	7.7
2.4 Your college management has an input in selecting staff for the college.	SA	15	14.2
	A	23	21.7
	N	25	23.6
	DA	24	22.6
	SDA	16	15.1
2.5 Your college encourages staff to develop and make extensive use of their own competence.	SA	16	14.8
	A	36	33.3
	N	25	23.1
	DA	20	18.5
	SA	11	10.2
2.6 There is a procedure for ensuring that all staff in your college meets accrediting body's requirements.	SA	19	17.8
	A	29	27.1
	N	26	24.3
	DA	20	18.7
	SDA	13	12.1

Variables	Category	f*	%*
3. How effective is the planning and management of programme development, delivery and evaluation?			
3.1 Your college has clear policies for programme development.	SA	19	17.8
	A	27	25.2
	N	35	32.7
	DA	19	17.8
	SDA	7	6.5
3.2 Your college has the ability to develop, deliver and evaluate learning programmes.	SA	17	15.9
	A	41	38.3
	N	23	21.5
	DA	20	18.7
	SDA	6	5.6
3.4 The teaching materials for the programmes are well prepared and are available for learners.	SA	17	16.5
	A	38	36.9
	N	21	20.4
	DA	23	22.3
	SDA	4	3.9
3.5 There is a procedure for coordinating work placements and integrated projects to ensure that learners acquire core skills.	SA	22	21.0
	A	51	48.6
	N	23	21.9
	DA	6	5.7
	SA	3	2.9
3.6 There is a procedure for ensuring learner centeredness in the delivery of programmes.	SA	27	25.7
	A	43	41.0
	N	22	21.0
	DA	7	6.7
	SDA	6	5.7
3.7 Members of staff in your college plans for the resources required for the delivery of programmes.	SA	25	24.0
	A	37	35.6
	N	30	28.8
	DA	9	8.7
	SA	3	2.9
3.8 Learners get feedback on their assessment.	SA	35	32.7
	A	48	44.9
	N	11	10.3
	DA	9	8.4
	SDA	3	2.8
3.9 Your college uses assessments results to improve their programmes.	SA	50	48.1
	A	38	36.5
	N	6	5.8
	DA	4	3.8
	SDA	6	5.8

3.10 Your college evaluates the programmes on regular basis.	SA	23	22.3
	A	35	34.0
	N	28	27.2
	DA	10	9.7
	SDA	7	6.8
3.11 Your college gives students an opportunity to participate in the programme evaluation exercise.	SA	15	14.3
	A	24	22.9
	N	31	29.5
	DA	25	23.8
	SDA	10	9.5

Variables	Category	f*	%*
4. How can the Department of Vocational Education and Training measure the quality of TVET provision in the technical institutions?			
4.1 There is a procedure of reporting the level of quality of service to Head Office.	SA	13	12.7
	A	16	15.7
	N	30	29.4
	DA	21	20.6
	SDA	22	21.6
4.2 Your college conducts tracer studies to establish the suitability of the students in the job market.	SA	19	18.4
	A	29	28.2
	N	33	32.0
	DA	14	13.6
	SDA	8	7.8
4.3 Your college has an effective training plan to ensure accomplishment of objectives.	SA	14	13.7
	A	15	14.7
	N	36	35.3
	DA	25	24.5
	SDA	12	11.8
4.4 The college has an effective support system for programme delivery.	SA	14	13.7
	A	28	27.5
	N	33	32.4
	DA	19	18.6
	SDA	8	7.8
4.5 Your college information management systems are effective and harmonized.	SA	16	15.4
	A	37	35.6
	N	36	34.6
	DA	11	10.6
	SA	4	3.8
4.6 Head Office collects and consolidates the information from the college on a regular basis to determine effectiveness.	SA	11	10.7
	A	29	28.2
	N	36	35.0
	DA	21	20.4
	SDA	6	5.8
4.7 Your college support staff to conduct research on their environment.	SA	8	7.8
	A	19	18.4
	N	38	36.9
	DA	19	18.4
	SA	19	18.4

Variables	Category	f*	%*
5. What strategies could be put in place to ensure effective and efficient TVET?			
5.1 There is a documented quality management system in your college.	SA	9	8.8
	A	15	14.7
	N	27	26.5
	DA	25	24.5
	SDA	26	25.5
5.2 Your college has a procedure for monitoring implementation of policies.	SA	16	15.1
	A	34	32.1
	N	36	34.0
	DA	7	6.6
	SDA	11	10.4
5.3 Your college have clear outlined policies and procedures on staff selection, appraisal and development..	SA	7	6.6
	A	44	41.5
	N	30	28.3
	DA	18	17.0
	SDA	5	4.7
5.4 Your college have clear policies and procedures for the selection of learners.	SA	11	10.2
	A	27	25.0
	N	36	33.3
	DA	18	16.7
	SDA	14	13.0
5.5 Your college have policies and procedures for forms of assessments that are used.	SA	32	29.9
	A	38	35.5
	N	21	19.6
	DA	9	8.4
	SA	5	4.7
5.6 Your college have policies and procedures for the maintenance of facilities.	SA	32	29.6
	A	46	42.6
	N	20	18.5
	DA	6	5.6
	SDA	3	2.8
5.7 There is a documented procedure for management of resources at your college.	SA	20	18.7
	A	27	25.2
	N	30	28.0
	DA	14	13.1

	SA	15	14.0
5.8 Your college has appointed members of staff to ensure implementation of quality.	SA	22	20.6
	A	23	21.5
	N	34	31.8
	DA	17	15.9
	SDA	10	9.3
5.9 College benchmark with other institutions and use the benchmark information for improvement.	SA	25	23.1
	A	43	39.8
	N	19	17.6
	DA	14	13.0
	SDA	5	4.6
5.10 There are quality-training programmes for staff personal development.	SA	13	12.1
	A	25	23.4
	N	28	26.2
	DA	19	17.8
	SDA	20	18.7

f\* - Frequency of responses

%\* - Percentage out of total

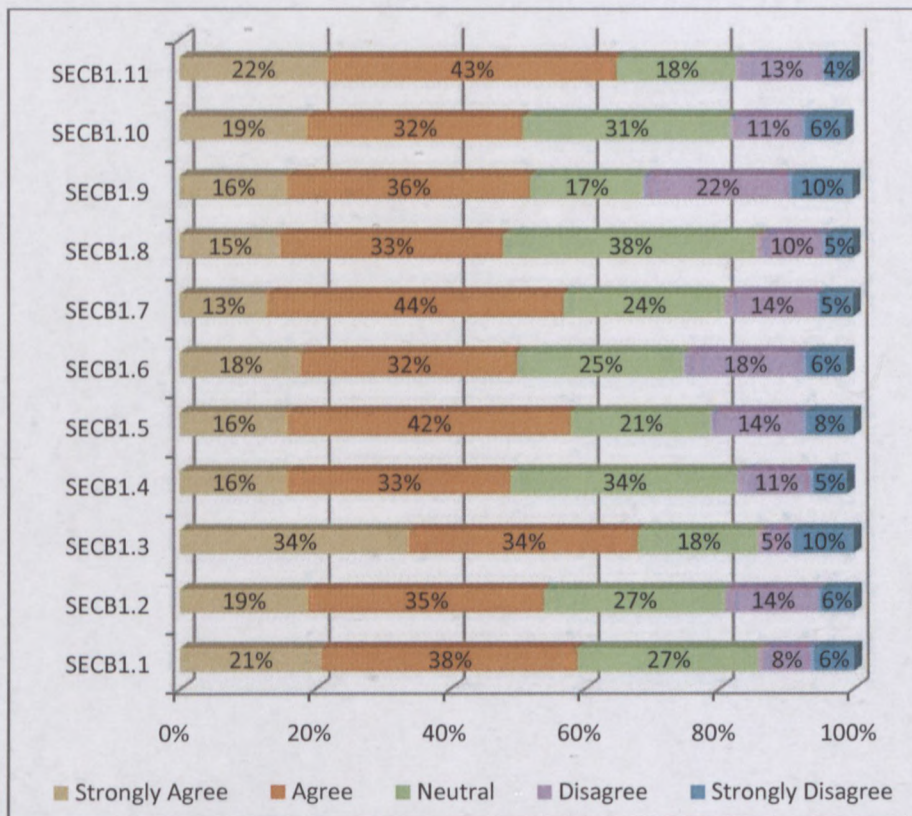


Figure 5.9: Statements regarding Section B category 1 items.

The majority of respondents mostly “Agree” to “Strongly Agree” with all the statements of Section B category 1. These statements are addressing the investigative question 1, which reads: “To what extent has the institutions outlined the procedures that implement quality management? The following statements are the top half of category 1 with responses “Agree” to “Strongly Agree”:

- Operational plans of colleges are based on the vision, mission, values and strategic objectives (67.2%).
- Colleges ensure regular monitoring and review of the learning and assessment activities (65.4%).
- Colleges are applying QMS in the implementation of their programmes (58.9%).
- Leadership plays a key role in provision of high-quality VET services and continuous improvement of operations in colleges (57.5%).
- There are procedures to ensure that operational and academic departments comply with jointly agreed policies and procedures (57%).

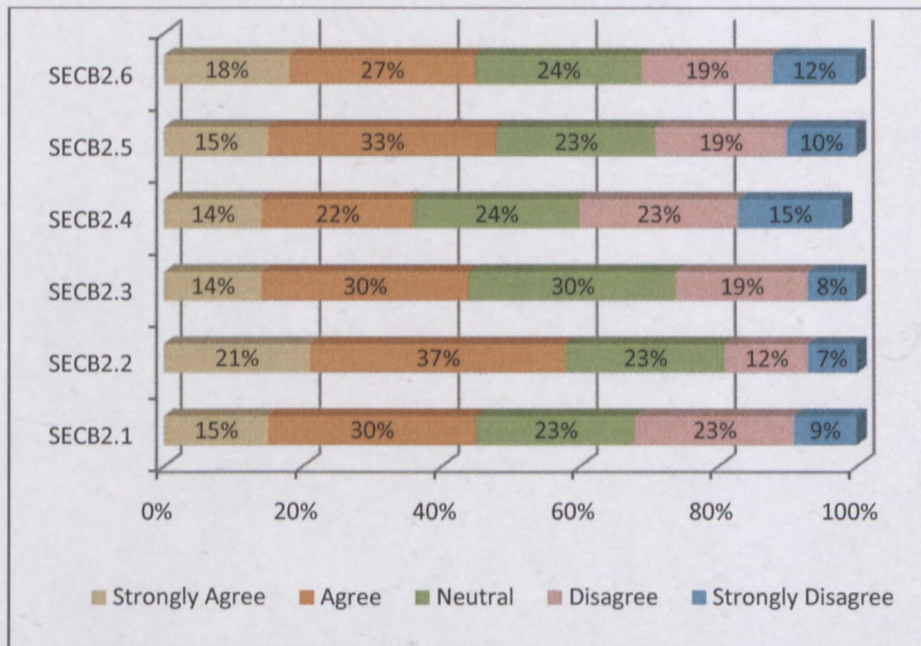


Figure 5.10: Statements regarding Section B Category 2 items

Section B Category 2 statements addresses the investigative question 2: “What policies and procedures are there for staff recruitment, appraisal and

development?" The following statements are the bottom half of category 2 with responses "Agree" to "Strongly Agree":

- Colleges have human resources strategy that facilitates staff selection, appraisal and development (44.4%).
- There is a system in place to ensure that staff is competent to carry out assessment in ways that are applied and integrated (58%). This is the only question that got more than 50% of responses with "Agree" to "Strongly Agree".
- Findings of reviews, monitoring and/or auditing are used to design staff activities (43.3%).
- College management has an input in selecting staff for the college (36.2%).
- Colleges encourage staff to develop and make extensive use of their own competence (48.1%).
- There is a procedure for ensuring that all staff in colleges meets accrediting body's requirements (44.9%).

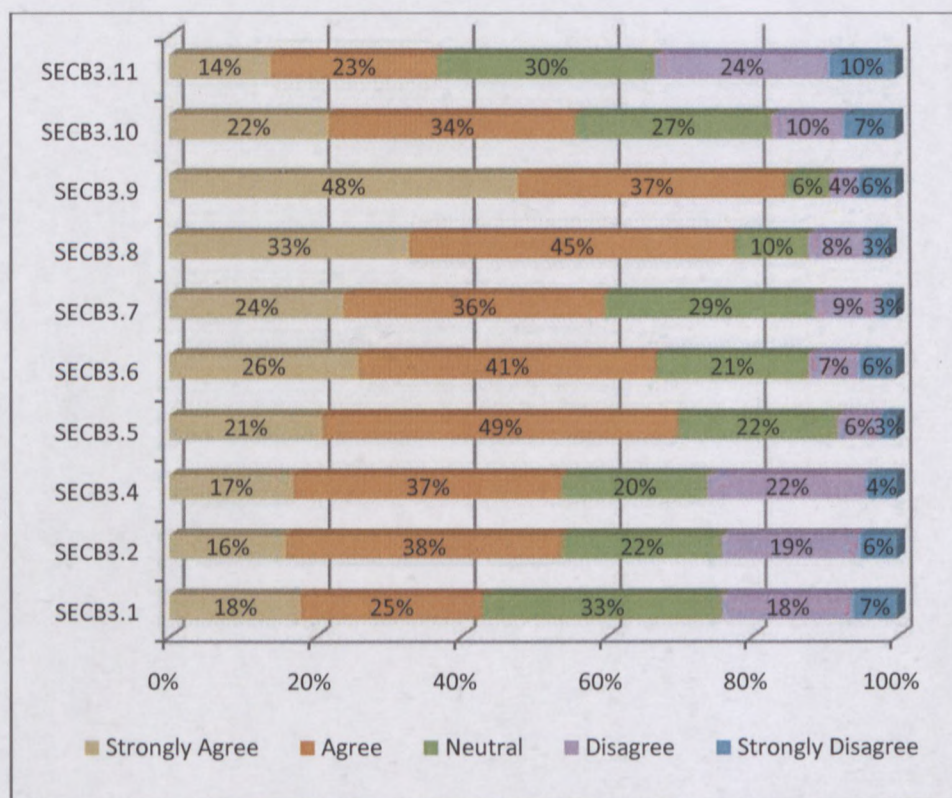


Figure 5.11: Statements regarding Section B Category 3 items

Section B Category 3 statements addresses investigative question 3: "How effective is the planning and management of programme development, delivery and evaluation?" As seen from Figure 5.6 above, the majority of the respondents

mostly “Agree” to “Strongly Agree” with most of the items of category 3. The following statements are the top most of category 3 with responses “Agree” to “Strongly Agree”:

- Colleges use assessments results to improve their programmes (84.6%)
- Learners get feedback on their assessment (77.6%)
- There is a procedure for coordinating work placements and integrated projects to ensure that learners acquire core skills (69.6%)
- There is a procedure for ensuring learner centeredness in the delivery of programmes (66.7%).
- Members of staff plans for the resources required for the delivery of programmes (59.6%).
- Colleges evaluate programmes on regular basis (56.3%).

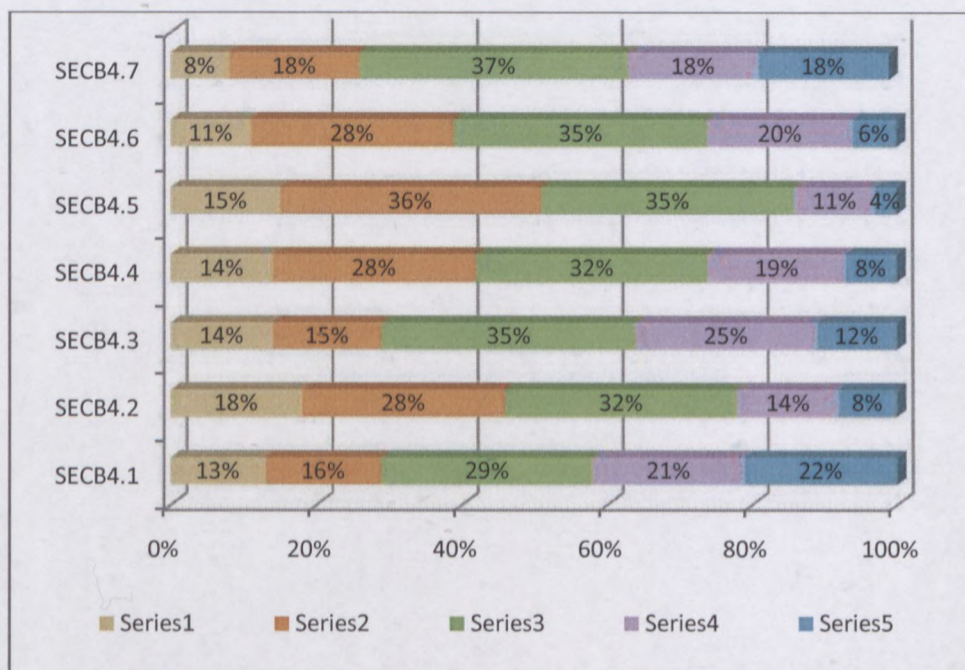


Figure 5.12: Statements regarding Section B Category 4 items

Section B Category 4 statements addresses investigative question 4: “How can the Department of Vocational Education and Training measure the quality of TVET provision in the technical colleges?” As seen from Figure 5.12 above, there is more or less a balance of “Agree” to “Strongly Agree” and “Disagree” to “Strongly Disagree” responses. The bulk of responses for this category also fall within the “Neutral” responses indicating that most respondents are not aware of how head office measure the quality of provision in the institutions.

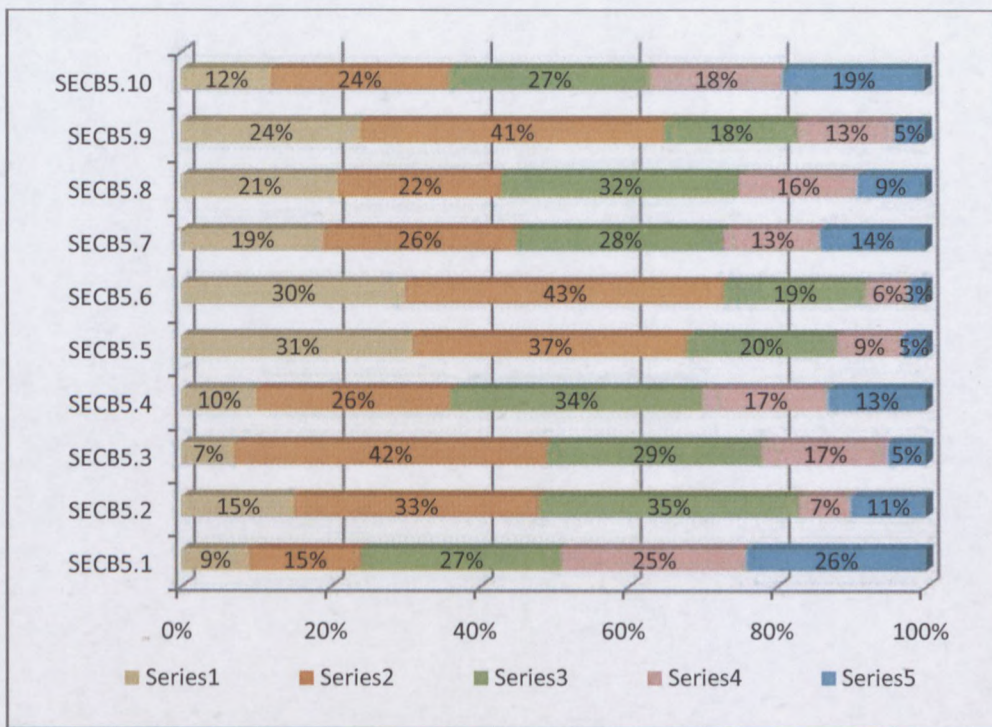


Figure 5.13: Statements regarding Section B Category 5 items

Section B Category 5 statements addresses investigative question 5: "What strategies could be put in place to ensure effective and efficient TVET system?" The responses in this category are varied. The following are the highlights of the responses to this category:

- 50% of responses for Question 5.1 "Disagree" to "Strongly Disagree" that colleges have a documented quality management system, 26.5% responses fall within the "Neutral" category while 23.5% "Agree" to "Strongly Agree" that there is a documented quality management system.
- 47.2% of responses "Agree" to "Strongly Agree" that colleges have procedure for monitoring implementation of policies, 36% of responses fall within the "Neutral" while 17% "Disagree" to "Strongly Disagree".
- 42.1% of responses "Agree" to "Strongly Agree" that colleges have appointed members of staff to oversee the implementation of quality, 31.8% of responses fall within the "Neutral" while 25.2% "Disagree" to "Strongly Disagree".
- 35.5% of responses "Agree" to "Strongly Agree" that there are quality training programmes for staff personal development, 26.2% of responses fall within the "Neutral" responses while 36.5% "Disagree" to "Strongly Disagree".

### 5.3.4 Comparative Statistics

Analysis of variance (ANOVA) F – Test was done to determine whether work experience did influence the responses to the statements in the five categories of Section B. This was done by comparing the means of the responses in each category with the length of service for the respondents. From the report of the statistical software, means of categories were grouped and line graphs (Figure 5.14) were drawn to observe if there is any difference in the response pattern. The line graphs provide sufficient evidence to conclude that there is no difference in the response pattern. This simply shows that work experience did not influence the way the sample responded to statements.

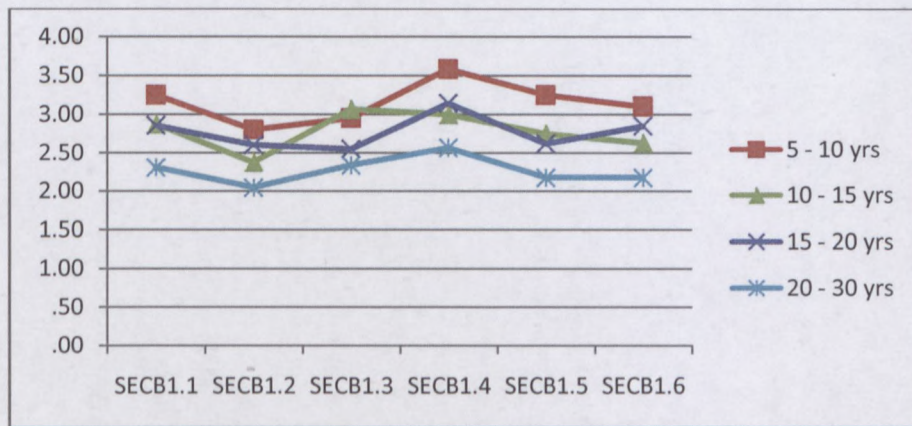


Figure 5.14: Pattern of mean responses in terms of work experience

The F-values of the same category of statements has p-values of more than 0.05 which indicates that the key elements from the research questions of equal means are accepted. Therefore it is conclusive that work experience did not influence responses indicating that the understanding of quality concept as applied to college programmes is the same for all staff. Table 5.12 shows ANOVA Test results for category 1 statements.

Table 5.12: ANOVA Test Results for Section 1 statements

		Sum of Squares	df	Mean Square	F	Sig.
SECB1.1 * Work experience	Between (Combined) Groups	2.358	4	.589	.498	.737
	Within Groups	118.404	100	1.184		
	Total	120.762	104			
SECB1.2 * Work experience	Between (Combined) Groups	11.383	4	2.846	2.454	.051
	Within Groups	117.117	101	1.160		
	Total	128.500	105			
SECB1.3 * Work experience	Between (Combined) Groups	2.197	4	.549	.333	.855
	Within Groups	164.850	100	1.649		
	Total	167.048	104			
SECB1.4 * Work experience	Between (Combined) Groups	6.134	4	1.534	1.451	.223
	Within Groups	103.555	98	1.057		
	Total	109.689	102			
SECB1.5 * Work experience	Between (Combined) Groups	1.104	4	.276	.212	.931
	Within Groups	128.857	99	1.302		
	Total	129.962	103			
SECB1.6 * Work experience	Between (Combined) Groups	4.305	4	1.076	.810	.522
	Within Groups	135.601	102	1.329		
	Total	139.907	106			
SECB1.7 * Work experience	Between (Combined) Groups	6.604	4	1.651	1.593	.182
	Within Groups	103.643	100	1.036		
	Total	110.248	104			
SECB1.8 * Work experience	Between (Combined) Groups	6.077	4	1.519	1.485	.213
	Within Groups	99.266	97	1.023		
	Total	105.343	101			
SECB1.9 * Workexperience	Between (Combined) Groups	13.726	4	3.431	2.275	.066
	Within Groups	150.808	100	1.508		
	Total	164.533	104			
SECB1.10 * Work experience	Between (Combined) Groups	1.137	4	.284	.235	.918
	Within Groups	118.611	98	1.210		
	Total	119.748	102			
SECB1.11 * Work experience	Between (Combined) Groups	1.590	4	.398	.351	.843
	Within Groups	109.988	97	1.134		
	Total	111.578	101			

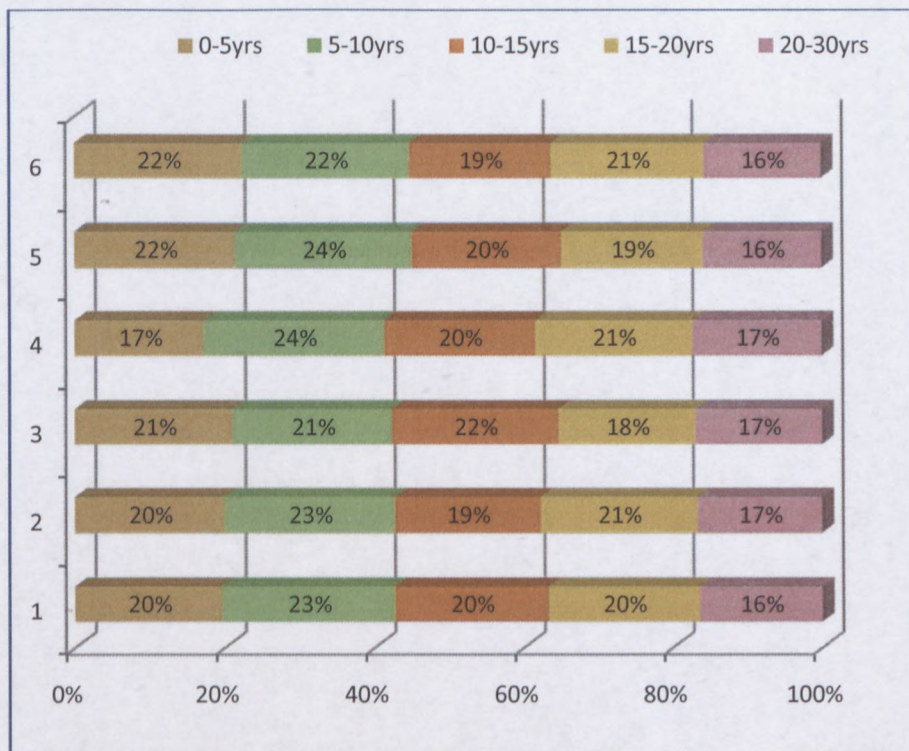


Figure 5.15: Mean responses of work experience for category 2

The means of responses to all the categories as reflected from the above variance chart do not show any significant differences in the way the sample responded to statements.

#### 5.4 Discussions and Conclusions

The survey intended to find out if there are any specific quality management systems that the colleges are applying in the implementation of their programmes, and whether in the absence of specific system/s there are any effective quality arrangements in place to ensure provision of quality services. The following analogies can be drawn from the survey result that was conducted in the eight technical colleges in Botswana:

- Quality management system – Most respondents have indicated that the colleges are using Scottish Quality Management Award and the Business Balance Scorecard systems. A significant number of respondents (35.5%) have indicated that they do not know which system the colleges are using. This is a serious concern, considering that if any system is to be successful; all members of staff must be

involved in its implementation. The fact that part of staff is not aware of the system in use cast aspersions on the ability of institutional managements to communicate the quality vision to staff and ensure the involvement of everybody in institutional quality activities..

- Procedures in place in the absence of a specific QMS - The respondents have shown that in the absence of a specific quality management system the colleges use internal curriculum audits, internal verification of the assessment processes, monitoring of the teaching and learning processes as well as assessment of the students. These arrangements could help the colleges to improve their services. However, other issues like resources provision, maintenance of facilities, training of staff, just to mention a few, need to be considered if effective quality improvement is to be realized.
- Criteria for determining the needs of the customers – Most respondents have indicated that they determine the needs of their customers by holding meetings with them while others have indicated the use of questionnaires. Holding meetings with stakeholders and other interested parties could be time consuming and cumbersome for the institutions considering the large number of customers or stakeholders the institutions have. A significant number (12.7%) of respondents have indicated that they do not know how colleges determine their customer needs. The fact that part of the staff do not know about this procedure cast doubts as to whether the institutions are indeed doing it.
- Comments from respondents regarding QMS – Most respondents who commented have expressed the need for an effective QMS in the implementation of college programmes, particularly realizing that most arrangements in place are not effective.
- Most respondents are agreeing that the institutions have outlined the procedures that facilitate continuous improvement of college processes.
- The survey results show weaknesses in policies and procedures for staff recruitment, appraisal and development. This could be a serious problem for the colleges because any effective system to be successful staff involvement is critical.
- Respondents have shown weaknesses in the procedures for measuring performance of the colleges. There is an apparent lack of communication between head office and the colleges in terms of

performance measurement. There is no sufficient evidence to show that there are tools used to measure performance in the colleges.

- With regard to strategies in place to ensure effective and efficient TVET system, most respondents (50%) have indicated that there is no documented quality management system in their colleges. This assertion is worrying particularly that there is indication that colleges use Scottish Quality Management Award and the Business Balance Scorecard. If there are no documentation to guide the implementation of these system, colleges cannot effectively improve their services.
- Literature review shows that the concept of quality management has always been one of the main concerns of vocational educational and training institutions worldwide (Zuniga, 2003; Blom & Meyers, 2003:6). Zuniga (1989), averred that in a market which is diverse and which has numerous offers, the users of training, have an increasing need to know the best training institutions, which provide the best guarantee of quality. Though the survey results showed positive responses to most statements there is sufficient evidence to conclude that the concept of quality is still new to many, and what might have been referred to as quality might not be necessarily quality. It is therefore incumbent upon institutional managements to effectively communicate the concept of quality not only to its staff, but also to its customers and interested parties if they are to have confidence in the quality of the trainees graduating from the technical colleges.
- The success of or failure of a quality system depends largely on the process of implementation (McEwan & Stenson, 1995:10). If organisations are to succeed in the implementation process, it is critical that they carefully plan the implementation strategies.

## **CHAPTER 6: CONCLUSION AND FINAL RECOMMENDATIONS**

### **6.1 Introduction**

In this study, the scope of the research was presented in Chapter one which also discussed the motivation for this study. It also gives the background to the research problem. The research questions, research objectives and research process were also covered. Chapter two of this study covered the holistic overview of the research environment on Technical and Vocational Education and Training (TVET) in Botswana. Chapter two is divided into four parts. The first part gives an overview of TVET in Botswana. The second part discusses the structural set up of the TVET system in the country, highlighting the colleges that form the population for this study. The third part gives an overview of the VET programmes offered by the colleges and their mode of assessment. Finally the fourth part highlight quality issues emanating from the manner, in which the programmes are developed, implemented and monitored. Chapter three reviews the literature on the implementation of quality management systems in technical and vocational training institutions, benefits and challenges facing institutions implementing quality management. It defines quality management strategies and discusses the quality improvement techniques. Chapter four present the research design used and the setting where the study was conducted. The population of the study is identified including methods of selection. The chapter further discusses the research methods used and the rational for their selection. In Chapter five the survey data was presented, analysed and interpreted. In this final Chapter, the research is concluded. Analogies are drawn and recommendations are made.

### **6.2 Analogies drawn from data analysis**

This study presents the perceptions of staff on the application of quality management systems in the implementation of the college's programmes. The following analogies can be drawn from the survey conducted in the eight public technical colleges in Botswana:

- Scottish quality management award and the business balance scorecard systems are employed by the colleges to improve their efficiency and effectiveness.
- Evidence indicates that there is no documentation guiding the implementation of these quality management systems in the colleges, and consequently, staff lack understanding on these management systems.
- Institutional managements have not done much to communicate the quality vision to their staff and ensure that all staff is involved in the implementation of the quality management system.
- Colleges have internal procedures such as internal curriculum audits, internal verification of the assessment processes, monitoring of the teaching and learning which improves their effectiveness.
- Evidence suggests weaknesses in policies and procedures for staff recruitment, selection and development.
- The survey results show that there are weaknesses in college performance measurements.
- There is no evidence of quality management strategies used by the colleges.
- Comments from the interviews conducted indicate that while there are collegiate arrangements to ensure quality of services, the colleges have weaknesses in implementing such arrangements.
- Through interviews, staff suggested that institutional management should be at the forefront in driving quality activities, and more importantly provide staff with relevant training to ensure proper implementation of quality management system.

### **6.3 Analogies drawn from the literature review**

The literature review extensively covered quality management systems as applied to technical and vocational education and training programmes, benefits and challenges facing institutions implementing quality management. Quality improvement techniques were also discussed. The following analogies were drawn from the literature review;

- The concept of quality management has always been one of the main concerns of vocational educational and training institutions worldwide (Zuniga, 2003; Blom & Meyers, 2003:6).
- In discussions of quality and standards, there is often confusion over the use of the terms (Harvey, 2008:80). Harvey argues that quality is not the same as quality assurance, nor is standards and quality the same. In the case of the technical colleges this confusion was apparent as most of staff understood quality assurance to be quality management system.
- Taylor and Hill (1993), argue that an organisation can only become effective when it realizes that every part of it must work in co operation with the other , and that every person and every activity affects, and in turn is affected by all other people and processes internally and externally. This cooperation did not come out clear in the survey as most respondents showed lack of knowledge on some key issues like the availability of a quality policy.

#### **6.4 The Research Problem Revisited**

The research problem which has been researched within the ambit of this thesis, reads as follows; "Quality management strategies are not applied to technical and vocational education and training programmes in Botswana, resulting in poor implementation of programmes and adversely impacting on the efficiency of the technical institutions".

The survey results of this research have shown lack of understanding of quality management concept by college staff. The quality assurance and assessment processes carried out by Quality Assurance and Assessment Unit in the colleges for the BTE programmes is understood by many as the quality management system of the colleges. This is however not the case as it covers part of the programmes in the colleges, and it is mainly restricted to the assessment processes of the programmes, and more importantly it is not a collegiate system.

The research therefore confirms the problem statement that there are no quality management strategies employed by the colleges in the implementation of their programmes.

## 6.5 The Research Question Revisited

The primary research question forming the crux of the research reads as follows; "Which quality management strategies should be applied to technical and vocational training institutions in Botswana to ensure successful implementation of programmes and an improvement of the efficiency and effectiveness of the technical institutions?"

The research has shown that the concept of quality management can be applied to institutions of high learning as can be done with the manufacturing companies. A number of quality strategies have been discussed in the literature review that could be applied to the college programmes.

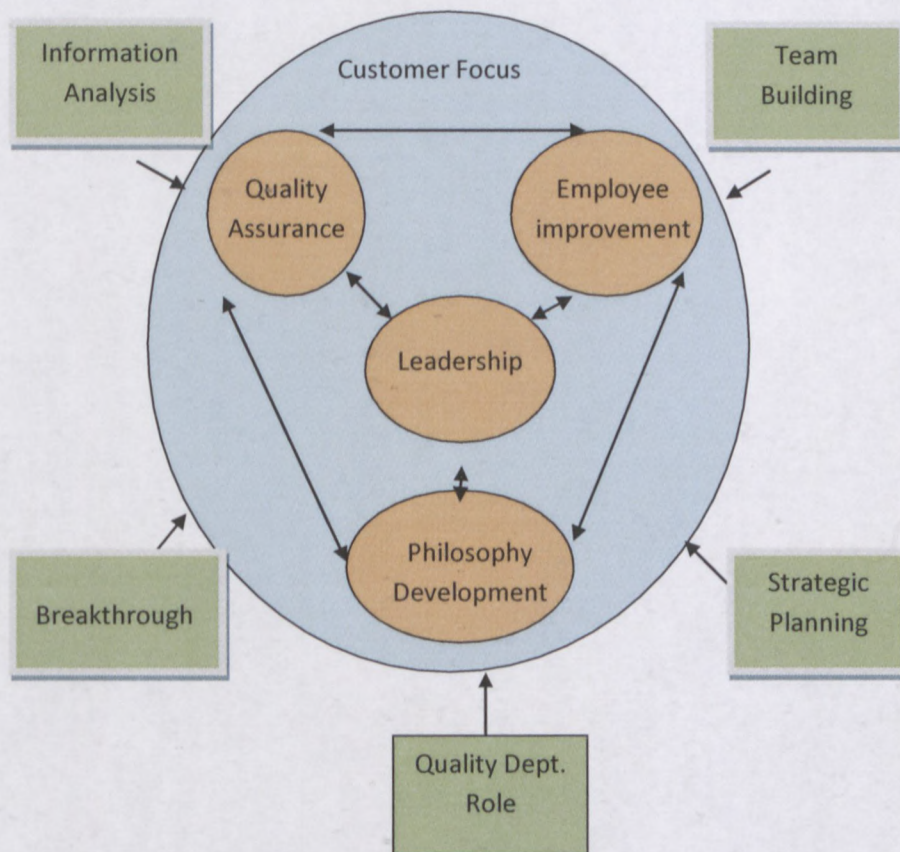


Figure 6.1: A Theoretical framework for quality management  
(Source: Foster, 2007:59)

According to Foster (2007:59), the quality philosophy influences and guides the organisational leader in making decisions concerning quality strategy. Furthermore, the philosophy also helps guide decisions

concerning quality assurance and employee improvement. Foster (2007:59), argues that leadership, quality assurance, philosophy, and employees are encompassed by a focus on the customer.

## **6.6 The Investigative Questions Revisited**

In support of the research question, the following investigative questions were researched.

### **6.6.1 To what extent has institutions outlined the procedures that implement quality management?**

In addressing this investigative question, the survey results have shown positive response, indicating that colleges have indeed outlined the procedures that can facilitate the implementation of QMS. However, evidence point out that though the procedures are in place, institutions are having problems with the implementation.

### **6.6.2 How effective is departmental planning for institutional human resource?**

Responses to this question have shown weaknesses in the system, indicating that there are no strategies guiding human resources issues. Evidence point out that recruitment of staff is centrally done at head office and institutions have little say in the recruitment of staff for their colleges.

### **6.6.3 How effective is the planning and management of programme development, delivery and evaluation?**

Survey results indicate institutional strength in the planning, and delivery of programmes. While there is no evidence of measurement scales to determine the effectiveness of institutions, respondents are positive with their functions.

### **6.6.4 How can the Department of Vocational Education and Training measure the quality of TVET provision in the technical institutions?**

The survey results have shown a weak relationship between the head office and the institutions in terms of performance measurement. As the central administration of the institutions, the head office should be able to

collate information from the institutions and determine the level of performance for each institution. This information could be used by the colleges to improve their services where they are lacking. It has to be noted that quality performance is an indicator of quality measurement.

#### **6.6.5 What strategies could be put in place to ensure effective and efficient TVET systems?**

Responses to address this investigative question have shown weaknesses in the colleges in relation to quality management. Respondents have indicated that there are no documented policies to guide the implementation of quality. A substantial number of respondents have indicated that they are not aware of the quality management procedures in place. Institutional managements appear to have not done enough to communicate the quality vision to their staff.

#### **6.7 The Research Objectives Revisited**

The objective of this research study is to explore ways in which technical colleges in Botswana could implement quality management systems in their programmes. The specific objectives are;

- To establish whether institutions have policies and procedures in place that could facilitate application of quality management system to their programmes: While evidence point out that colleges do not have documented quality manuals, the survey results indicate that colleges do have their administrative policies and procedures that facilitates their smooth running. These administrative policies and procedures could be strengthened and documented in a quality manual to guide the application of quality in the college programmes.
- To establish how effective the planning for institutional human resource is: Sufficient evidence have been availed to show that there is need for the colleges to come up with a human resource strategy that will guide them on issues affecting staff. This strategy should be well communicated to head office that in turn will use it to meet the needs of the colleges in terms of staff needs.
- To establish whether tools exist for evaluation of tertiary institution performance: There are no measurement scales used by the colleges to determine the quality level of their services. There is

need for the colleges to develop consistent standards of performance and indicators that can show whether they are achieving their objectives or not.

- To determine strategies that could be used by institutions to improve their efficiency and effectiveness: Gryna, Chua and DeFeo (2007:249), define a strategy as a guide on how to pursue the organisation's mission and vision. Furthermore strategies set direction by identifying the key issues or activities that help develop specific goals and plans and must contribute significantly to the vision. The colleges could adopt ISO 9001/2008 quality management system and apply for certification. The ISO QMS has specific requirements and guidelines that are easy to follow. Their certification will give them a competitive advantage, particularly that they will be the first learning institution to be certificated in Botswana.

Apart from applying for ISO certification colleges could employ other quality management strategies like Total Quality Management (TQM), Continuous quality Improvement techniques like the Plan-Do-Study-Act (PDSA) model, Six-sigma techniques, Theory of Constraint technique, just to mention a few, that will enhance their operational effectiveness.

## 6.8 Recommendations

In the light of the research findings as presented in chapter five, the following strategies are recommended to further guide the application of quality management in the technical colleges.

- Strategy 1: *Development of colleges' strategic plan* - In drawing up their strategic plans, colleges should include a quality plan as part of their strategic objective. This quality plan must address each quality element in terms of its specific goals and objectives. The plan must be a dynamic and inclusive of all organisational and operational areas that would ultimately be affected. This quality plan must also include methods for monitoring ongoing progress and measuring of performance.
- Strategy 2: *Management commitment* - Institutional management should be committed to the quality initiatives. Management should be both personally and visibly involved in the quality process.

Through their leadership, the importance of quality, its values and its benefits, should be openly communicated through the organisation. Management should explicitly define the responsibilities and accountability for quality implementation.

- Strategy 3: *Staff training* - Specific training on quality management should be arranged for both management and staff of the colleges. This will help staff to understand quality concepts and acquire skills and competencies in the use of quality tools and techniques.
- Strategy 4: *Performance Measurement* - Colleges should have clearly defined criteria for the ongoing measurement of quality. Methods should be outlined to evaluate the scope, reliability, accuracy and accessibility of data that is required to manage the colleges. Head office should monitor quality of services in the institutions and give them feedback on their performance.
- Strategy 5: *Benchmarking* – Colleges should benchmark their performances with other academic and training institutions in order to identify best practices and identify performance gaps as indicators for improvement opportunities.
- Strategy 6: *Adoption of a specific quality management system* – Colleges may assess all the existing quality management systems and identify any for adoption. This will provide the colleges with guidance on how to develop, implement, and manage a quality system

## 6.9 Final Conclusion

The objective of this study was to explore the application of quality management systems in the implementation of technical colleges' programmes. Data has revealed lack of understanding of the quality management concept as applied to college programmes by the college staff. While it is claimed that Scottish Quality Management Award System and the Balance Business Scorecard systems are applied, there is sufficient evidence to conclude that these systems are only applied for the purposes of meeting Quality Assurance and Assessment Unit requirements and not for continuous improvement.

An institution that meets the prerequisites for quality is the one that:

- Reflects full management and staff commitment throughout the organisation
- Has both an understanding of the need for quality and plan of implementation
- Has direction and focus to the goals, objectives, values and benefits of quality
- Has both the structure and environment that can facilitate the implementation of quality
- Provides the training and support that is required to empower its employee to carry out their functions

This study has found most of the above features lacking in the institutions. As it has been pointed out by Zuniga (2003), the concept of quality management has always been one of the main concerns for vocational education and training institutions worldwide, it is therefore imperative for the colleges to start planning for an effective Quality management system if they are to remain relevant to the current societal needs.

This study however, does have some limitations. Data collection excluded employers of the graduates of the colleges whose contribution would have added value to the validity of the survey results.

## REFERENCES

- A National Human Resource Strategy for Botswana.* (2006). Gaborone, Botswana: Republic of Botswana.
- A Tracer Studies for Graduates of Botswana Technical Education Programmes.* (2007). Gaborone, Botswana: Republic of Botswana.
- Anderson, J. C., Rungtusanatham, M., & Schroeder, R. G. (1994). A Theory of Quality Management Underlying the Deming Management Method. *Academy of Management Review*, 19(3), 472-509.
- ANTA. (n.d.). Towards a skilled Australia, Australian National Training Authority. *National Centre for Vocational Education Research Ltd.*. Retrieved November 18, 2011, from <http://www.ncver.edu.au>
- Antony, J. (2004). Some pros and cons of Six Sigma and academic perspective. *The TQM Magazine*, 16(4), 303-306.
- Antony, J. (2006). Six sigma for service processes. *Business Process Management*, 12(2), 234-248.  
*APA formatting by BibMe.org.*
- Armstrong, M. (2003). *A Handbook of Human Resource Management Practice.* USA: Kogan Page limited. (Original work published 1977)
- Armstrong, M. (2003). *A Handbook of Human Resource Management Practice.* London: Kogan Pages.
- Beso, A., Bollaert, L., Curvale, B., & Jensen, T. (2008). *Implementing and using quality assurance: Strategy and practice.* Brussels: European University Association.
- Blom, K., & Meyers, D. (n.d.). Quality Indicators in Vocational Education and Training. International perspective. *National Centre for Vocational Education Research Ltd.*. Retrieved November 14, 2011, from

<http://www.ncver.edu.au>

- Bolaane, B., Chuma, J. M., Toteng, B., & Molwane, O. B. (2010). *Tracer Study on the Employment Outcomes of the Vocational Training Graduates*. Gaborone: Botswana Training Authority.
- Brand, A. (1998). Knowledge Management and Innovation. *Journal of Knowledge Management*, 2(1), 17-22.
- Breja, S. K., & Banwet, D. K. (2011). Quality Strategy for transformation: a case study.. *The TQM Journal*, 23(1), 5-20.
- Collis, J., & Hussey, R. (2003). *Business research: A practical guide for undergraduate and post graduate students*. Palgrave: Macmillian.
- Creswell, J. W. (1998). *Research Design: Qualitative and Quantitative Approaches*. California: Sage Publications.
- Dassonville, L. (1999). *Handbook for implementing a qms in a NMA-vi*. Paris, France: CERCO Working Group on Quality.
- Dassonville, L. (2000). *A Handbook for Implementing a Quality Management System in a National Mapping Agency*. Paris: CERCO Working Group.
- Devlin, A. S. (2006). *Research Methods. Planning, Conducting and Presentin*. USA: Thomson Corporation.
- Finch, C. R., & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education: Planning, content and implementation*. Boston: Allyn and Bacon.
- Gay, L. R., & Airasian, P. (2003). *Educational research: Competencies for analysis and application (7<sup>th</sup> ed.)*. Upper Saddle River, NJ: Merrill/Prentice Hall
- Gasskof, V. (2006). *Vocational education and training institution A management handbook and a cd rom*. Geneva: International Labour Organization.

- Gerrish, K., & Lacey, A. (2006). *The research process in nursing* (Fifth ed.). Oxford: Blackwell Publishing.
- Gibb, J. (1999). Quality in the National Training Framework™, . *The Australian TAFE Teacher*, 33(1), 13-14.
- Goldratt, E. (2008). My saga to improve: The performance advantage. *Business Management Journal*, 6, 32-35.
- Griffin, R. P. (2010). Implementing effective training in the NHS. *Industrial and Commercial Training*, 42(4), 1-4.
- Gryna, F., Chua, R., & Defeo, J. (2007). *Juran's Quality Planning analysis* (Fifth ed.). Arizona State University: Mcgraw-Hill International Edition.
- Hanft, A., & Kohler, A. (2008). *How can External Quality Assurance support Institutional Quality Management?*. Brussels: European University Association.
- Hartman, M. G. (2002). *Fundamental Concepts of Quality Improvement*. USA: American Society for Quality.
- Harvey, L. (2008). *Using the European Standards and Guidelines*. Brussels: Uropean University Association.
- Heyns, R. (2001). *Quality Management System for Education and Training*. Pretoria, South Africa: South Africa Qualifications Authority.
- Howard, G., & Marshal, S. (2006). Evaluatin Management Standards: empirical research into the Scottish Quality Management System. *Thesis: , 1*, 1-308.
- Jackson, S. (2008). *Research Methods: A Modula Approach*. USA: Michael Sordi.
- Leedy, P. D., & Ormrod, J. E. (2010). *Practical Research*. New Jersey,USA: Kevin M. Davis. (Original work published 1993)

- Levine, D., Ramsey, P., & Smidt, R. (2001). *Applied Statistics for Scientist and Engineers*. New Jersey, USA: Prentice Hall.
- Litten, D. (n.d.). Prepare the Quality Management Strategy. *Prince2*. Retrieved July 19, 2011, from daveltten.com
- Maclean, R., & Wilson, D. (2009). *International Handbook of Education for the Changing World of work*. Toronto, Canada: Alix Wurdak.
- McEwan, D., & Stenson, P. (n.d.). Implementing quality: a post compulsory education and training case study. *NCVER*. Retrieved August 9, 2011, from hdl.voiced.edu.au/10707/134986
- Mouton, E. B., & Prozesky, P. V. (2010). *The practice of social research*. Cape Town: Oxford University Press.
- Moyers, H., Shaw, G., & New, W. (n.d.). Choosing a Quality/Performance Improvement Methodology. *Management Systems*. Retrieved November 18, 2011, from <http://www.shawresources.com>
- Mullenhour, P., & Flinchbaugh, J. (2005, May 3). Bringing lean systems thinking to six sigma. *Quality Digest Magazine*. Retrieved November 8, 2011, from [www.qualitydigest.com/mar05/articles/05article.shtml](http://www.qualitydigest.com/mar05/articles/05article.shtml)
- Munn, P., & Drever, E. (1990). *Using questionnaires in small scale research*. Scotland: Scottish Council for Research in Education .
- Mureithi, G. W. (n.d.). Technical, Vocational education and training in Africa: has it lost its significance?. *www.kmafrica.com*. Retrieved November 7, 2011, from [www.kmafrica.com/book/export/html/2067](http://www.kmafrica.com/book/export/html/2067)
- NÅrslund, D. (2002). Logistics Needs Qualitative Research-especially action research. *International Journal of Physical Distribution & Logistics Management*, 32(5), 321-338.
- National Policy on Vocational Education and Training*. (1997). Gaborone,

Botswana: Republic of Botswana.

Ngware, W., & Ndirangu, M. (2005). An Improvement in Instructional Quality: can evaluation of teaching effectiveness make a difference. *Quality Assurance in Education*, 13(3), 183-201.

Norman, K., & Lincon, S. (1994). *Handbook of qualitative research*. USA: Amazon.com.

Park, M. G. (2005). *Vocational Content in Mass Higher Education?*. Bonn, Germany.: Colombo Plan Staff College for Technician Education.

Park, M. G. (2005, September 10). Vocational Content in Mass Higher Education? Responses to Challenges of the Labour Market and the Work-Place. *UNESCO-UNEVOC: UNESCO-UNEVOC*. Retrieved November 9, 2011, from <http://www.unevoc.unesco.org>

Polit, D., & Hungler, B. (1999). *Nursing Research: Principles and Messages* (6 ed.). Philadelphia: Lippincott.

#### References

*Revised National Policy on Education*. (1994). Gaborone, Botswana: Republic of Botswana.

Sahney, S., Banwet, D., & Karunes, S. (2005). Quality Framework in Education Through Application of Interpretative Structural Modelling. *The TQM Journal*, 22(1, 2010), 56-71.

Saunders, M., Thornhill, A., & Lewis, P. (2000). *Research Methods for Business students*. UK: Amazon.co.uk.

Siha, S. M. (2008). Business process improvement: empirical assessment and extention. *Business Process Management*, 14(6), 778-802.

skills, g. y., course, e. i., & information..., h. (n.d.). Dave Litten - Prince2 Project Management Online Tutor. *Dave Litten - Prince2 Project Management*

*Online Tutor*. Retrieved November 9, 2011, from

<http://www.davelitten.com>

Strategy to Revitalize Technical and Vocational Education and Training in Africa.

(2007, May 29). *www.africa-union.org*. Retrieved November 9, 2011,

from <http://www.africa-union.org>

Strugwig, F., & Stead, G. (2001). *Planning, Designing and Reporting Research*.

Cape Town: Hanli Venter.

Strugwig, F., & Stead, G. (2007). *Planning, Designing and Reporting Research*.

South Africa: Maskew Miller Longman.

Sutcliffe, W., & Pollock, J. (1992). Can the total quality management approach

used in industry be transferred to institutions of higher learning. *Journal of*

*Vocational Education and Training*, 44(1), 11-27.

Talha, M. (2004). Total Quality Management (TQM): an overview. *The Bottom*

*Line: Managing Library Finances*, 17(1, 2004), 15-19.

Teh, H., & Pendergast, D. (n.d.). Graduate and employer perspective on course

efficacy - A study of VET in a developing economy. *Avetra: Home*.

Retrieved November 18, 2011, from <http://www.avetra.org.au>

Temponi, C. (2005). Continuous Improvement Framework: Implications for

Academia. *Quality Assurance in Education*, 13(1), 17-36.

Thomas, R. (2003). *Blending Qualitative and Quantitative Research Methods in*

*Theses and Dissertations*. India: Sage Publications.

*Tracer Study on the Employment Outcomes of the Vocational Training*

*Graduates*. (2010). Gaborone, Botswana: Botswana Training Authority.

Tricker, R., & Sherring-Lucus, B. (2003). *ISO 9001:2000 in Brief*. Bodmin,

Cornwall: MPG Books Limited.

Welman, C., & Mitchell, F. (2005). *Research Methodology*. Oxford: Oxford

University Press.

Yakubu, N. A., & Mumah, S. N. (2002). *Implementing the UNESCO / ILO.*

Geneva: UNESCO and ILO.

Ziderman, A. (2005). Financing vocational training to meet policy objectives: Sub-

Sahara Africa. *World Bank*, 12, 1-133.

Zuniga, F. V. (2004). *QualityManagement in Vocational Training: The use of*

*standards and their application.* Geneva: International Labour

Organization.

## APPENDIX A: STATISTICAL REPORTS FOR DATA ANALYSIS

### Statistics for Category 1 Variables

#### Case Processing Summary

		N	%
Cases	Valid	91	82.7
	Excluded <sup>a</sup>	19	17.3
	Total	110	100.0

#### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.860	.907	12

#### Inter-Item Correlation Matrix

	B1.1	B1.2	B1.3	B1.4	B1.5	B1.6	B1.7	B1.8	B1.9	B1.10	B1.11
B1.1	1.000	.617	.529	.574	.582	.567	.627	.584	.358	.284	.518
B1.2	.617	1.000	.654	.715	.548	.607	.671	.526	.442	.430	.549
B1.3	.529	.654	1.000	.678	.538	.562	.599	.571	.509	.460	.568
B1.4	.574	.715	.678	1.000	.533	.566	.619	.644	.555	.401	.555
B1.5	.582	.548	.538	.533	1.000	.654	.565	.587	.472	.456	.489
B1.6	.567	.607	.562	.566	.654	1.000	.627	.607	.499	.435	.511
B1.7	.627	.671	.599	.619	.565	.627	1.000	.689	.593	.469	.500
B1.8	.584	.526	.571	.644	.587	.607	.689	1.000	.642	.432	.450
B1.9	.358	.442	.509	.555	.472	.499	.593	.642	1.000	.504	.319
B1.10	.284	.430	.460	.401	.456	.435	.469	.432	.504	1.000	.513
B1.11	.518	.549	.568	.555	.489	.511	.500	.450	.319	.513	1.000

#### Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.679	2.308	4.099	1.791	1.776	.217	12
Item Variances	1.734	1.072	6.268	5.196	5.849	2.079	12

### Statistics for Category 2 Variables

**ANOVA with Friedman's Test**

	Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig.
Between People	736.987	90	8.189	160.521	.000
Within People					
Between Items	216.941 <sup>a</sup>	11	19.722		
Residual	1135.892	990	1.147		
Total	1352.833	1001	1.351		
Total	2089.821	1091	1.916		

Grand Mean = 2.68

a. Kendall's coefficient of concordance W = .104.

**Case Processing Summary**

		N	%
Cases	Valid	100	90.9
	Excluded <sup>a</sup>	10	9.1
	Total	110	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.853	.857	6

**Inter-Item Correlation Matrix**

	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6
B2.1	1.000	.591	.549	.441	.556	.374
B2.2	.591	1.000	.617	.405	.568	.502
B2.3	.549	.617	1.000	.480	.509	.523
B2.4	.441	.405	.480	1.000	.355	.422
B2.5	.556	.568	.509	.355	1.000	.598
B2.6	.374	.502	.523	.422	.598	1.000

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.792	2.490	2.950	.460	1.185	.027	6
Item Variances	1.535	1.333	1.866	.533	1.400	.043	6

**ANOVA with Friedman's Test**

		Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People		526.125	99	5.314		
Within People	Between Items	13.348 <sup>a</sup>	5	2.670	16.734	.005
	Residual	385.485	495	.779		
	Total	398.833	500	.798		
Total		924.958	599	1.544		

**Statistics for Category 3 Variables**

**Case Processing Summary**

		N	%
Cases	Valid	94	85.5
	Excluded <sup>a</sup>	16	14.5
	Total	110	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.806	.849	10

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.427	1.809	2.894	1.085	1.600	.097	10
Item Variances	1.628	.864	5.246	4.382	6.075	1.647	10
Inter-Item Correlations	.359	.042	.629	.586	14.912	.022	10

**ANOVA with Friedman's Test**

	Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People	551.435	93	5.929		
Within People					
Between Items	81.924 <sup>a</sup>	9	9.103	66.355	.000
Residual	962.576	837	1.150		
Total	1044.500	846	1.235		
Total	1595.935	939	1.700		

Grand Mean = 2.43

a. Kendall's coefficient of concordance W = .051.

**Statistics for Category 4 Variables**

**Case Processing Summary**

		N	%
Cases	Valid	92	83.6
	Excluded <sup>a</sup>	18	16.4
	Total	110	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.877	.880	7

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.935	2.543	3.304	.761	1.299	.091	7
Item Variances	1.327	.976	1.726	.750	1.768	.055	7
Inter-Item Correlations	.512	.381	.680	.299	1.783	.005	7

**ANOVA with Friedman's Test**

	Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People	486.689	91	5.348		
Within People				67.787	.000
Between Items	50.174 <sup>a</sup>	6	8.362		
Residual	358.398	546	.656		
Total	408.571	552	.740		
Total	895.261	643	1.392		

Grand Mean = 2.93

a. Kendall's coefficient of concordance W = .056.

**Statistics for Category 5 Variables**

**Case Processing Summary**

		N	%
Cases	Valid	96	87.3
	Excluded <sup>a</sup>	14	12.7
	Total	110	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.894	.897	10

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.733	2.135	3.479	1.344	1.629	.165	10
Item Variances	1.384	.967	1.728	.761	1.788	.070	10
Inter-Item Correlations	.465	.107	.782	.675	7.334	.016	10

**ANOVA with Friedman's Test**

	Sum of Squares	df	Mean Square	Friedman's Chi-Square	Sig
Between People	674.533	95	7.100	157.344	.000
Within People					
Between Items	142.629 <sup>a</sup>	9	15.848		
Residual	640.571	855	.749		
Total	783.200	864	.906		
Total	1457.733	959	1.520		

Grand Mean = 2.73

a. Kendall's coefficient of concordance  $W = .098$ .

**Statistics for all the Categories**

**Case Processing Summary**

		N	%
Cases	Valid	69	62.7
	Excluded <sup>a</sup>	41	37.3
	Total	110	100.0

a. Listwise deletion based on all variables in the procedure.

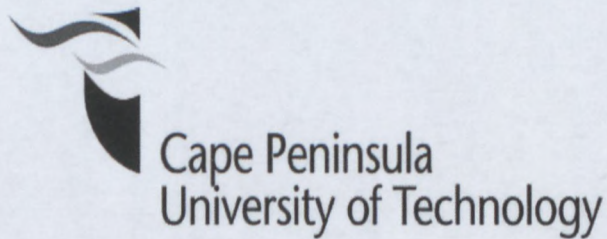
**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.969	.969	44

**Summary Item Statistics**

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.616	1.725	3.565	1.841	2.067	.136	44
Item Variances	1.280	.710	1.777	1.067	2.503	.061	44
Inter-Item Correlations	.418	-.050	.799	.849	-15.842	.016	44

## APPENDIX B: QUESTIONNAIRE FOR DATA COLLECTION



Department of Industrial & Systems Engineering  
Cape Peninsula University of Technology  
Faculty of Engineering  
P. O. Box 1906  
Bellville

### **A Survey to investigate the application of Quality Management Systems in the Public Technical Colleges in Botswana**

This survey is intending to investigate the application of quality management systems in the implementation of the technical and vocational education and training programmes in the public technical colleges in Botswana. The researcher will use the information gathered to compare the ability of the institutions to implement quality management systems and determine if government intervention is required to assist some of the colleges to operate effectively and provide quality services to their customers.

The result of this study will benefit the Department of Vocational Education and Training, and indeed the entire Ministry of Education and Skills Development, by providing a framework for quality management in the entire educational institutions in Botswana

As members of staff, I am thus requesting you to take few moments of your time to respond to this questionnaire. I expect that this exercise will take less than 20 minutes.

#### **Informed Consent:**

Be informed that your participation in this survey is voluntary and that your responses for this questionnaire will be treated as confidential, and will be used only for the purposes of this research.

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Asalepele Tobedza

Cell: +267 71631843

+27 737109693

E-mail: [a\\_tobedza@yahoo.com](mailto:a_tobedza@yahoo.com)

Questionnaire to investigate the application of quality management system in the implementation of college programmes by the public technical colleges in Botswana.

**Biographical Information**

Name of college: \_\_\_\_\_

Department: \_\_\_\_\_

Programme/s offered: \_\_\_\_\_

Position held: \_\_\_\_\_

Work Experience:

Gender: Male  Female

Qualifications: Certificate  Diploma  Degree  Post Grad

Have you attended any training on quality? Yes  No

---

**Instruction for the completion of the attached questionnaire**

1. Your participation in this survey is completely confidential
2. This questionnaire consists of two sections, Section A and Section B. For statistical purposes please answer all questions in each section
3. Questions should be answered in a fair and honest manner
4. Remember there is no right or wrong answer.

**Section A:**

**Q1.** Which of the following quality management system is the college using in implementing its programmes?

Quality Management Systems	<i>Please tick</i>
1. ISO 9000/2000 Quality Management System	
2. Malcolm Baldrige National Quality Award	
3. European quality Management Award	
4. Balanced Business Scorecard	
5. Scottish Quality Management System	
6. South African Excellence Model	
7. Don't know	

**Q2.** If the college is applying any of the quality management system above, for how have you been using it?

\_\_\_\_\_

**Q3.** If the college is not implementing any of the above quality management, systems what measures are in place to ensure quality provision of services?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Q4.** Who plans for quality in the college?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Q5.** Before the application of the quality management system or any measures intended to ensure quality provision of services, was any training provided to staff?

1. Yes  2. No

**Q6.** If the answer to Q5. Above is No, how is quality awareness cascaded to different levels of staff in the college?

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Q7.** Has the college appointed anybody to oversee issues of quality in the institution?

1. Yes  2. No

**Q8.** In developing the annual college strategic plan, is quality management incorporated as part of the strategic plan?

1. Yes  2. No

**Q9.** If the answer to Q8 above is No, will you consider incorporating quality management as part of the college annual strategic plan in the near future?

1. Yes  2.No

**Q10.** How does the college determine the needs of its customers and other interested parties?

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**Q11.** In your opinion, do you think the quality procedures in place are in any way helping your institution to improve its services?

1. Yes  2. No  3. Do not know

If the answer to the above is yes, write the most important advantages.

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**Q12.** Finally, if you wish, I am offering you the opportunity to express your opinion on the quality management system in the institution or in the entire department of technical and vocational education and training, this questionnaire, or this study.

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## SECTION B

Considering the aspects of applying quality management systems in college programmes, indicate, on a scale of 1 to 5, the number that best represent your perception.

Key: VET – Vocational Education and Training

TVET – Technical and Vocational Education and Training

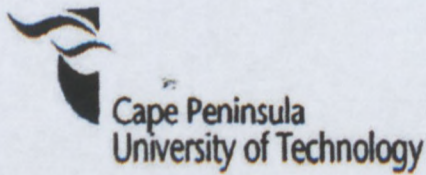
Option Code	1. Strongly Agree	2. Agree	3. Neutral	4. Disagree	5. Strongly Disagree
No.	Questions/statements				
1.1					
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
1.10					
1.11					
2.1					
2.2					
2.3					
2.4					
2.5					
2.6					

Option Code	1. Strongly Agree	2. Agree	3. Neutral	4. Disagree	5. Strongly Disagree				
					1	2	3	4	5
No.	Questions/statements				1	2	3	4	5
3.1	Your college has clear policies for programme development.								
3.2	Your college has the ability to develop, deliver and evaluate learning programmes.								
3.3	The programmes offered are organized consistently throughout the college.								
3.4	The teaching materials for the programmes are well prepared and are available for learners.								
3.5	There is a procedure for coordinating work placements and integrated projects to ensure that learners acquire core skills.								
3.6	There is a procedure for ensuring learner centeredness in the delivery of programmes.								
3.7	Members of staff in your college plans for the resources required for the delivery of programmes.								
3.8	Learners get feedback on their assessment.								
3.9	Your college uses assessments results to improve their programmes.								
3.10	Your college evaluates the programmes on regular basis.								
3.11	Your college gives students an opportunity to participate in the programme evaluation exercise.								
4.1	There is a procedure of reporting the level of quality of service to Head Office.								
4.2	Your college conducts tracer studies to establish the suitability of the students in the job market.								
4.3	Your college has an effective training plan to ensure accomplishment of objectives.								
4.4	The college has an effective support system for programme delivery.								
4.5	Your college information management systems are effective and harmonized.								
4.6	Head Office collects and consolidates the information from the college on a regular basis to determine effectiveness.								
4.7	Your college support staff to conduct research on their environment.								
5.1	There is a documented quality management system in your college.								
5.2	Your college has a procedure for monitoring implementation of policies.								
5.3	Your college have clear outlined policies and procedures on staff selection, appraisal and development.								
5.4	Your college have clear policies and procedures for the selection of learners.								
5.5	Your college have policies and procedures for forms of assessments that are used.								
5.6	Your college have policies and procedures for the maintenance of facilities.								

5.7	There is a documented procedure for management of resources at your college.					
5.8	Your college has appointed members of staff to ensure implementation of quality.					
5.9	There are quality-training programmes for staff personal development.					

**Thank you for taking your time to complete this questionnaire. Your effort is highly appreciated.**

# APPENDIX C: CONSENT LETTERS TO CONDUCT THE STUDY



Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

## CONSENT FORM FOR THE RESEARCH PROJECT

**"Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana"**

**Asalepele Tobedza**

### DECLARATION BY PARTICIPANT:

From: Principal  
Maun Technical College

I declare that:

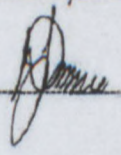
I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

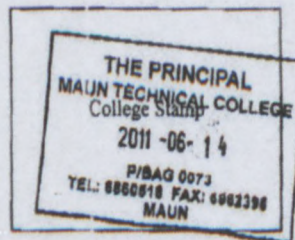
I also consent that my information may be:

- ◆ Used and kept for future research studies
- ◆ Used and discarded

Signed at (place) MAUN TECH COLLEGE on (date) 13/06/ 2011

Print Name: DAVID B. KGOSIMORE

Signature of participant 





JUN-13-2011 06:54

FROM-JWANENG TECHNICAL COLLEGE

+5680690

T-685 P.001/003 F-625

+5880890



Cape Peninsula University of Technology

Faculty of Engineering  
Department of Industrial Systems & Engineering  
Cape Peninsula University of Technology  
P. O. Box 1906  
Bellville  
7535

CONSENT FORM FOR THE RESEARCH PROJECT

“Quality Management Strategies for Technical and Vocational Education and Training Institutions in Botswana”

Asalepele Tobedza

DECLARATION BY PARTICIPANT:

From: Principal  
Jwaneng Technical College

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

I also consent that my information may be:

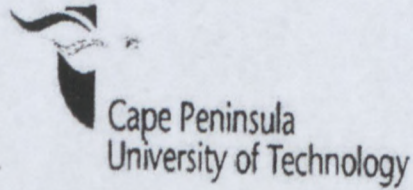
- Used and kept for future research studies
- Used and discarded

Signed at (place) JWANENG on (date) 13 JUNE 2011

Print Name: OLEBOGENA G. KGWADI

Signature of participant





Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

CONSENT FORM FOR THE RESEARCH PROJECT

"Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana"

Asalepele Tobedza

DECLARATION BY PARTICIPANT:

From: Head  
Quality Assurance and Assessment Unit

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

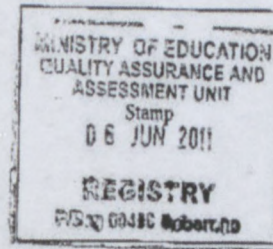
I also consent that my information may be:

- ♦ Used and kept for future research studies
- ♦ Used and discarded

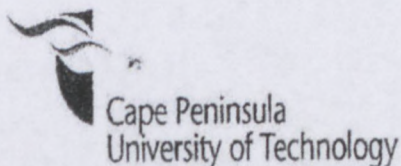
Signed at (place) CAMBORONE on (date) 06/06/ 2011

Print Name: DARABILE AKOONYATSE

Signature of participant



3934696



Faculty of Engineering  
 Department of Industrial Systems &  
 Engineering  
 Cape Peninsula University of  
 Technology  
 P. O. Box 1906  
 Bellville  
 7535

CONSENT FORM FOR THE RESEARCH PROJECT

"Quality Management Strategies for Technical and Vocational Education and  
 Training Institutions in Botswana"

Asalepele Tobedza

DECLARATION BY PARTICIPANT:

From: Principal  
 Oodi College of Applied Arts and Technology

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

I also consent that my information may be:

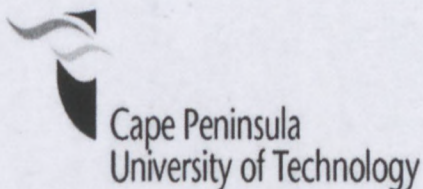
- Used and kept for future research studies
- Used and discarded

Signed at (place) OODI - (BOTSWANA) on (date) 2 - JUNE - 2011

Print Name: MILDRED KERENG BONJWE

Signature of participant [Handwritten Signature]





Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

CONSENT FORM FOR THE RESEARCH PROJECT

“Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana”

Asalepele Tobedza

DECLARATION BY PARTICIPANT:

From: Principal  
Jwaneng Technical College

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

I also consent that my information may be:

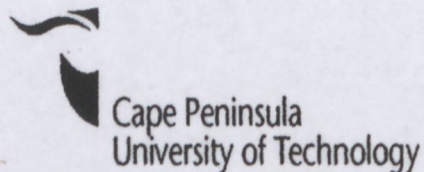
- ♦ Used and kept for future research studies
- ♦ Used and discarded

Signed at (place) JWANENG on (date) 13 June 2011

Print Name: OSBOGENG G. KWADI

Signature of participant [Signature]





Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

**CONSENT FORM FOR THE RESEARCH PROJECT**

**“Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana”  
Asalepele Tobedza**

**DECLARATION BY PARTICIPANT:**

From: Principal

Francistown College of Technical and Vocational Education

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

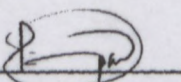
I also consent that my information may be:

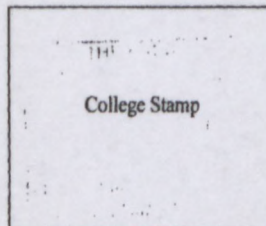
◆ Used and kept for future research studies

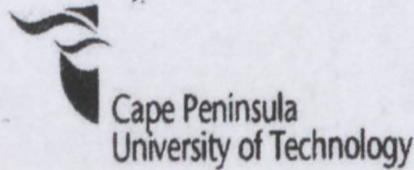
◆ Used and discarded

Signed at (place) FRANCISTOWN on (date) 14 JUNE 2011

Print Name: BABEEDI PHAMPA  
141611

Signature of participant 





Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

CONSENT FORM FOR THE RESEARCH PROJECT

"Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana"

Asalepele Tobedza

DECLARATION BY PARTICIPANT:

From: Principal  
Gaborone Technical College

I declare that:

I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the college as requested.

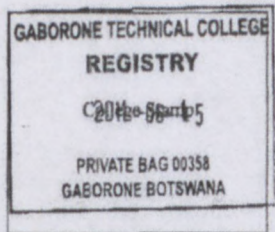
I also consent that my information may be:

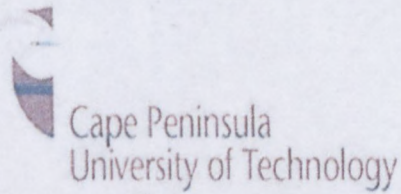
- ♦ Used and kept for future research studies
- ♦ Used and discarded

Signed at (place) GABORONE on (date) 15-06- 2011

Print Name: MAGGIE KHUMALO

Signature of participant





Faculty of Engineering  
Department of Industrial Systems &  
Engineering  
Cape Peninsula University of  
Technology  
P. O. Box 1906  
Bellville  
7535

**CONSENT FORM FOR THE RESEARCH PROJECT**

**“Quality Management Strategies for Technical and Vocational Education and  
Training Institutions in Botswana”**

**Asalepele Tobedza**

**DECLARATION BY PARTICIPANT:**

From: The Director

Department of Technical and Vocational Education and Training

I declare that:


I understand that the project will be conducted as described in your information letter, the copy of which I am in possession of. I am pleased to consent to the survey to be conducted in the Head Office, Quality Assurance and Assessment Unit, and Colleges as requested.

I also consent that my information may be:

- ♦ Used and kept for future research studies
- ♦ Used and discarded

Signed at (place) GABORONE on (date) 14-06- 2011

Print Name: N.L. TSHOME

Signature of participant 



CAPE PENINSULA  
UNIVERSITY OF TECHNOLOGY

