A COMPARATIVE STUDY OF THE QUALITY OF TRAINING OF ELECTRICAL AND ELECTRONICS TECHNICIANS IN PUBLIC AND PRIVATE TVET INSTITUTIONS IN KENYA: A CASE OF UASIN GISHU COUNTY

By

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DECLARATIONS

DECLARATION BY THE CANDIDATE

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This thesis is dedicated to Almighty God the creator and giver of all things and my mother for her love, patience and kind heartedness.

.ABSTRACT

The goals of education in Kenya are usually concerned with access to quality education and training. Recent trends in Kenya have shown a large number of private sector institutions being registered to provide technician training. This study sought to compare the quality of training of electrical technicians in public and private TVET institutions with the aim of unearthing the reasons for the discrimination experienced by the private TVET graduates in the job market and the alleged poor training in private TVET institutions. The study sampled six TVET institutions and eight industries in Uasin Gishu County for data collection. Probability, purposive and snowball sampling methods were used to sample and survey the key stakeholders during data collection. Examination results of the groups in Kenya National Examination Council (KNEC) were also analyzed. Data was collected through questionnaires, personal interviews and observations and analyzed using the One-Way Analysis of Variance (ANOVA) and Independent Sample t-test at 0.05 significant levels. Analysis of results from KNEC examinations revealed that the mean scores of Electrical and Electronics subjects were found to be significantly higher in public institutions than in private TVET institutions. Analysis showed performance is better in public than private TVET institution and that infrastructure, lecturer's classroom performances and motivation of the lecturers affected the performance of the technician. Based on these findings, linkages between training and employment, which are key areas to the development of any nation, should be linked in all skilled areas and especially in Electrical and Electronics Engineering. This will enable the TVET institutions to train the relevant skills and expertise which are needed in the job market. The study further recommended the strengthening of public-private partnership between TVET institutions and the labour market in the training of Electrical technicians. The study also strongly recommended to the quality assurance department in the Ministry of Education Science and Technology to make a thorough audit of the existing TVET institutions as well as regulate the accreditation of new ones.

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LIST OF ABBREVIATIONS

BOG	Board of Governors
CDF	Constituency Development Fund
CHE	Commission of Higher Education
ECDE	Early Childhood Development Education
FIG	Figure
FPE	Free Primary Education
GDP	Gross Domestic Product
GER	Gross Enrolment Rate
GOK	Government of Kenya
GPI	Gender Parity Index
HELB	Higher Education Loans Board
HIV/AIDS	Human Immune Virus / Acquired Immune Deficiency Syndrome
ICT	Information and Communication Technology
ILO	International Labor Organization
ITS	Institutes of Technology
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KESSP	Kenya Education Sector Support Programme
KNEC	Kenya National Examination council
KNUT	Kenya National Union of Teachers
KUPPET	Kenya National Union of Post Primary Teachers
KISE	Kenya Institute of Special Education
KNEC	Kenya National Examination Council
KTTC	Kenya Technical Teachers College
LATF	Local Authority Transfer Fund
MDGS	Millennium Development Goals
MOE	Ministry Of Education
MOEST	Ministry Of Education Science & Technology
MOHEST	Ministry Of Higher Education Science & Technology

NER	Net Enrolment Rate
NFE	Non Formal Education
NFS	Non Formal Education Schools
NGO	Non-Governmental Organisation
PTE	Primary Teacher Education
TEP	Technical Education Programme
TIVET	Technical Industrial Vocational and Entrepreneurial Training
TSC	Teachers Service Commission
TTI	Technical Training Institute
TVET	Technical, Vocational Education and Training
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPE	Universal Primary Education
WEI	World Education Indicators
WFP	World Food Program
YP	Youth Polytechnic

OPERATIONAL DEFINITION OF TERMS

Attitude: - Way of thinking, feeling or opinion about something.

Basic Education: - Primary or Secondary education and their equivalents.

Curriculum: - The content of an education programme.

Entrepreneur: - A person who is able to look at the environment, identify opportunities to improve the environment, marshal resources and implement action to maximize those opportunities (Nelson, 1987).

Higher Education: - Is taken to include undergraduate and postgraduate education.

Informal Sector: - A sector comprising of micro (1-9) employees and small (10-49) employees (Kenya, 1995). Therefore for this study, the term informal sector was used interchangeably with Jua-Kali and micro and small enterprises (SMEs) in manufacturing.

Jua – Kali Artisans: - Active producers of the Jua – Kali sector. It is different from the Artisan under professional training.

Jua - Kali Sector: - Enterprises specializing in the manufacture of products and providing productive services in the informal sector. The name is derived from Kiswahili word, which literally means “hot sun”.

Manpower: - The work provided by humans rather than machines.

Private TVET Institutions:-These are TVET Institutions owned by individuals, churches or companies.

Production: - The process of using the services of labour and other resources to make goods and services

Public TVET Institutions: - These are TVET Institutions owned by the government.

Serendipity: - The ability to produce goods and services by gambles

Skill: - Special ability in task acquired by training or experience

Technical Industrial Vocational and Entrepreneurial Training (TIVET):- Is a Kenyan coinage of TVET so that all programs in Kenya can fit.

Technical, Vocational Education and Training (TVET):- It includes learning designed to develop the skills for practicing particular occupations as well as learning designed to prepare for entry or re-entry into the world of work in general.

Technology: - The use of tools, machines, materials, techniques and resources to make goods and services

Vocational Training Institutions: - It will be used in this study as the specific term for all non-advanced training provision in Kenya.

Tertiary Education: - This is the third stage, third level and post-secondary.

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CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter discusses the background of the study, statement of the problem, the purpose of the study, objectives of the study, research questions, and significance of the study, hypothesis of the study, conceptual framework, assumptions of the study, scope of the study, limitations of the study and operational definitions of terms.

1.1 Background of the Study

According to MOHEST 2012 enrollment rate, there were two (2) TVET University Colleges, that is, Technical University of Mombasa and Technical University of Kenya, two (2) National Polytechnics, nineteen (19) Technical Training Institutes, sixteen (16) Institute of Technology and one thousand and thirty (1030) private TVET institution as of June 2012. Among these TVET institutions, 19% (200) of them both public and private offer Certificate and Diploma in Electrical and Electronics Engineering (KIE July 2012 Report). From the KNEC 2011 calendar of technical examinations enrollment rate, 12% (2,944) of students took Certificate and Diploma in Electrical and Electronics Engineering in Kenya. On analysis of data from the ministry of labour, approximately 20% (588) of these Electrical and Electronics technician graduates get formal employment while the rest are employed in the informal sector of the economy. From time to time, there have been complains that Electrical and Electronics technicians specifically from the private TVET institution perform poorly or dismally in the job market. The study therefore aimed at comparing the quality of Electrical and Electronics Technicians Training in public and private TVET institutions in Kenya with an aim of determining the genuineness of these complaints and finding the reasons for them.

For students who proceed to higher education in Kenya, there are seven (**7)** public universities and seventeen (17) private universities with either full or interim charter (Chris Wosyanju 2008). In 2013 Constituent University Colleges also received charters thus transformed into fully fledged public universities. In addition to

introducing technical courses at the Primary and Secondary school level, Vocational Education has been a focus of the education system. These public and private colleges offer technical hands-on skills in various fields including, Engineering, Medical Sciences, Nursing, Education, Computer Science, Mass Communication, Tourism, and Business.

TVET is an important aspect of education systems in developing economies usually characterized by abundant human resources but lacking in essential skills such as the skills needed by technicians to effectively perform their duties. However, questions have been raised concerning the quality of graduates of Vocational Education and Training, which in turn have raised questions about the employment prospects of these graduates (ILO, 2003). This is because vocational training in Kenya is not adequately structured to respond to new technological challenges and demands from the growing population. The vehicles to TVET in Kenya are Universities Colleges, National Polytechnics, Technical Training Institutes, Institute of Technology, Youth Polytechnics and private TVET institutions which provide TVET at Degree, Diploma and Certificate level.

The current education system in Kenya is in the order of eight years of Primary Education, Four years of Secondary Education and at least four years of University Education (the 8-4-4 system). However there are other institutions, which provide education to the students who do not go through the university, namely National Polytechnics, which offer Ordinary and Higher National Diploma, Institutes of Science and Technology and Technical Training Institutes, which offer Ordinary Diploma and Certificate and the YP's that also offer Certificates (Ogwo, 2004)

The government established the Micro and Small Enterprise Training and Technology Project (MSETTP) to look for alternative approaches of combating unemployment. One of the approaches called for the government to increase funding to Technical Training Institutions. However, rather than finance the country's Technical Schools and Universities, they focused on Jua Kali workers' needs by providing them with vouchers to pay for training of their choosing (ILO 2003). This diverted funds from the TVET Institutions that could have been invested in improving infrastructure. Due

to the low status with which some TVET Institutions are held especially the Youth Polytechnics, it is unlikely that many potential technicians would choose to train there (ILO, 2003).

The current TVET curriculum was set up under the recommendations of the Kamunge Report (1998). According to the report, the future policies in education and training were to lay emphasis on and give priority to, "the quality and relevance of education and training, the eradication of illiteracy, the development of Science and Technology, the vocationalization of education, research, management and entrepreneurship training, the development of the handicapped and the development of centers of excellence". While TVET is intended to be a form of Vocational Education that will provide Science and Technology, its effectiveness in delivering quality and relevance and in creating employment leave a lot to be desired. This is because underfunded TVET Institutions cannot be expected to offer cutting-edge training in a rapidly changing employment environment (Kerre, 1999). Indeed some of the skills they teach and the equipment they use are obsolete, thus condemning the TVET graduates to marginal sector of the economy (Kerre, 1999).

Approximately 80% of the candidates who sit K.C.S.E exams cannot be absorbed into the University (Republic of Kenya 1998). They have to find other means to further their education. Therefore the plight of these students and the quality of training in these TVET institutions represent the only avenue of formal education to those who cannot enter high school (Republic of Kenya 1998).

1.2 Statement of the Problem

Fifty nine per cent (59%) of Kenya's population is below 20 years of age (Republic of Kenya 1998) and are in need of Education and Training. The G.O.K through sessional Paper No. 2 of 1996, observed that there is a mismatch between demand and supply in the skilled labour market and that the majority of the youth lack vocational and technical skills required in the market. This has been especially evident in the 21st Century with potential employers of Electrical and Electronics technicians persistently complaining that the graduates do not have the practical know how

especially those from the private TVET institutions. There is therefore a serious mismatch between demand and supply in the labour market in the skill and technical know-how acquired by Electrical and Electronics technicians. Furthermore it does not make sense for the Ministry of Education to continue accrediting more and more TVET institutions which produce unqualified Electrical and Electronics technician graduates. The study therefore independently examined the training processes undergone by Electrical and Electronics technicians in private and public TVET institutions with a view of determining how availability of Electrical facilities, motivation of Electrical lecturers and lecturers' classroom performances affect the training of Electrical technicians in the two institutions.

1.3 The Purpose of the Study

The fortitude of the study was to examine the quality of training offered to Electrical and Electronics technicians in public and private TVET institutions in Kenya with an aim of unearthing the weaknesses in private TVET institutions and addressing them. The study therefore independently examined the training process undertaken by Electrical and Electronics technicians in private and public TVET institutions. The study was conducted in Uasin Gishu County because of the high number of proliferation of TVET institution.

1.4 Objectives of the Study

The main objective of the study was to compare the quality of Electrical and Electronics technician training process in public and private TVET institutions in Kenya and in Uasin Gishu County in particular. The study was guided by the following objectives:

i. To evaluate the performances of Electrical and Electronics trainees in public and private TVET institutions
ii. To examine how the availability of facilities/infrastructure affects the quality of Electrical and Electronics technician training in TVET institutions.
iii. To establish how Electrical and Electronics lecturers classroom performances affect the quality of Electrical and Electronics technician training in TVET institutions.

iv. To assess how the availability of incentives/motivation of the lecturers affect the quality of Electrical and Electronics technician training in TVET institutions

1.5 Research Questions

The study was guided by the following research questions:

i. Do public TVET institutions perform better than private TVET institutions in Electrical and Electronics Engineering?
ii. Does the availability of facilities/infrastructure affect the quality of Electrical and Electronics technicians training in TVET institutions?
iii. Do the Electrical and Electronics lecturers' classroom performances affect the quality of Electrical and Electronics technicians training in TVET institutions?
iv. Does the availability of motivation/incentives to the teaching staff affect the quality of Electrical and Electronics technicians training in TVET institutions?

1.6 Significance of the Study

A study of this topic is important because it addressed the linkages between training and employment which are key areas to the development of any nation. The study also helps in public–private partnership in the education sector especially if the recommendations are be adopted by TVET institutions. It also addresses facilities/infrastructure which is very vital for any technicians training, teacher training, research and innovations in the TVET institutions. The findings of this study are also very useful to those who are involved in development planning as well as those responsible for starting of colleges at the County levels especially the colleges that would be offering Electrical and Electronics Technology.

The Government's goal of development as outlined in Vision 2030 can also benefit from the findings of this study as large numbers of people with Technical and Vocational Education are a prerequisite for rapid development. However equitable Electrical and Electronics technicians training in Kenya cannot be adequately achieved without equitable distribution of resources in both public and private colleges. Therefore this study is important to the Ministry of Education, Ministry of

Labour as well as Ministry of Planning as it made recommendations that addressed the problem of discrimination, unemployment and maximize the productive capacity.

1.7 Research Hypotheses

The following hypotheses stated in null form guided in the investigations:

H_0 1: There is no significant difference between the mean scores in Electrical Installation Technology, Electrical Principles and Trade Practice in public TVET institutions and private TVET institutions

$H_0$2: There is no significant relationship between the availability of Electrical and Electronics facilities/infrastructure in TVET institutions and the performances of graduate technicians.

$H_0$3: There is no relationship between the lecturers' classroom performances in TVET institutions and the performances of graduate technicians.

$H_0$4: There is no relationship between the availability of motivation/incentives to the Electrical and Electronics lecturers and the performances of graduate technicians.

1.8 Conceptual Framework

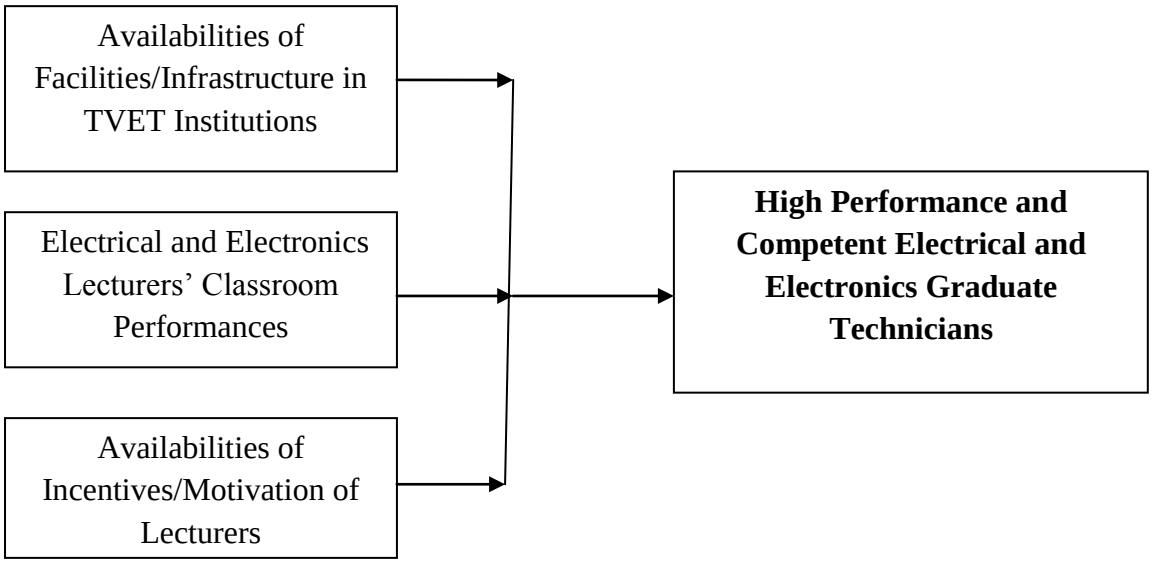

Figure1.1: Factors Affecting the Performances and Quality of Technicians

The study was based on the conceptual relationship between the independent variable and the dependent variable. According to the framework, the researcher conceptualized the variables into independent and dependent variables. The independent variables were those factors which affected the quality of Electrical and Electronics graduate technicians such as availabilities facilities/infrastructure, lecturers' classroom performances, availabilities of incentive/motivation of lecturers while higher performances and quality Electrical and Electronics graduate technicians constituted the dependent variable. This could be arranged before or after completion of the studies. The extraneous variables were institution's management, student leadership and locations of the institutions.

1.9 Assumptions of the Study

The study was governed by the following assumptions:

i. The sample and population for the study were within the same environmental conditions hence giving related responses that were true and reliable concerning the comparative study of public and private institution's provision of Electrical and Electronics technicians training in Uasin Gishu.
ii. The curriculum for Electrical and Electronics technicians were the same in both public and private TVET institutions.
iii. The responses given through the questionnaires were honest responses.
iv. It was possible for the respondents to report their self-perception perfectly.

1.10 Scope of the Study

The focus of the study was a comparative study of the quality of public and private TVET institution's provision of Electrical and Electronics technicians training in Uasin Gishu County of Kenya. The target population consisted of the two (2) national Polytechnic principals in Kenya, thirty five (35) T.T.I.s and Institute of Technology principals in, one hundred and eighty (180) Private TVET institution's principals, approximately three hundred (300) employers of Electrical and Electronics graduates in Kenya, Approximately six thousand (6,000) employed Electrical and Electronics graduates, five hundred (500) Electrical and Electronics instructors in

Kenya and three thousand six hundred (3,600) Electrical and Electronics trainees in all the institutions.

The study was undertaken within Uasin Gishu County of Kenya as the accessible population. It covered respondents from two (2) public TVET institutions, four (4) private TVET institutions and eight (8) companies that are employers of Electrical and Electronics graduates. All the six (6) institutions offered Certificate and Diploma in Electrical and Electronics Engineering. The institutions included Rift Valley Technical Training Institute and The Eldoret Polytechnic which are public TVET institutions. The private TVET institutions included Alphax College, Regions College, Nairobi Aviation and African Institute of Research and Development.

The companies included The Kenya Power, Raiply Woods Ltd, Davis and Shirtliff Company Ltd, Doshi Electricals Company Ltd, Rivatex East Africa Company Ltd, Unga Company Ltd, Rift Valley Bottles Company Ltd and ELDOWAS Company Ltd. Uasin Gishu County was chosen as a research site because of evidence of high number of public and private TVET institutions offering technicians Certificate in Electrical and Electronics Technology being established since 2006 according to MOHEST (KIE July 2012). It has several companies which employ Electrical and Electronics graduates. The study took place between August 2012 and June 2013.

1.11 Limitations of the Study

This study was not able to fully exploit the immeasurable factors on a comparative study of the quality of public and private institution's provision of Electrical and Electronics technician training in the whole Country because to cover them, we needed a wider scope and therefore the research findings are limited and can only be applicable to Uasin Gishu County. These immeasurable factors included parental upbringing of the graduates, attitude and perception of the graduates and the surrounding environment of the institutions.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter covers related literature to the quality of public and private institution's provision of Electrical and Electronics technicians training in the world and the factors that contributes to quality technicians' graduates. The literature reviewed indicated that there were other previous studies done on various aspects of the topic. The issues discussed in these previous studies included TVET issues such as infrastructure and facilities, training of TVET teachers, funding of TVET institutions, research and innovation in TVET institutions. The measures taken to improve the performance of TVET institution are also discussed. Therefore this thesis considered a wide range of published literature from authors in various countries including books, journals, articles and seminar papers in order to address the study topic.

2.1 Quality Teaching

Quality teaching has become an issue of importance as the landscape of higher education has been facing continuous changes. The student body has considerably expanded and diversified, both socially and geographically. New students call for new teaching methods. Modern technologies have entered the classroom, thus modifying the nature of the interactions between students and lecturers (UNESCO/CEPES 2003). The governments, the students and their families, the employers, the funds providers increasingly demand value for their money and desire more efficiency through teaching.

Quality teaching lacks clear definition and to some extent can't be disconnected from debates on quality or quality culture in higher education that remain controversial terms. Some scholars regard quality primarily as an outcome, others as a property (UNESCO/CEPES 2006). Some consider teaching as the never ending process of reduction of defects and so quality teaching can never be totally grasped and appraised. In fact, conceptions of quality teaching happen to be stakeholder relative to

students, teachers or evaluation agencies do not share the definition of what good teaching is or what good teachers are.

The literature stresses that "good teachers" have empathy for students, they are generally experienced teachers and most of all they are organized and expressive. "Excellent teachers" are those who have passions: passions for learning, for their field, for teaching and for their students. But research also demonstrates that "good teaching" depends on what is being taught and on other situational factors (UNESCO/CEPES 2006).

Research points out that quality teaching is necessarily student-centered that is it gives attention to students learning. Thus, attention should be given not simply to the teacher's pedagogical skills, but also to the learning environment that must address the students' personal needs: students should know why they are working, should be able to relate to other students and to receive help if needed. Adequate support to staff and students (financial support, social and academic support, support to minority students, counseling services and others) also improves learning outcomes (UNESCO/CEPES 2003). Learning communities – groups of students and/or teachers who learn collaboratively and build knowledge through intellectual interaction – are judged to enhance student learning by increasing students' and teachers' satisfaction. In this study quality means acquisition of adequate cognitive, pedagogical and effective skills in the field of Electrical and Electronics Engineering.

2.2 Electrical and Electronics Engineering

Electrical and Electronics Engineering has been playing a vital role in producing Scientists and Technologists of highest caliber. The ever challenging needs of Technological excellence in all the major areas of Electrical Engineering such as Control & Automation, Robotics, Power Systems, Power Electronics & Drives, Microprocessors & Microcontrollers, Digital and Analog Electronics and Renewable Energy Resources motivate to opt Electrical Engineering one of the most chosen branches of Engineering & Technology. The Electrical Engineering stream, which is very relevant to the requirement of modern fast developing Industries, is the

evergreen branch and core of all Engineering branches related to the Electrical & Electronics Engineering.

The course is offered at the Post-graduate level and Undergraduate level in the Universities, Diploma level and Certificate level in the TVET Institutions. Upon successful graduation, Degree holders become Engineers, Diploma and Certificate holders Technicians.

2.3 Private and Public TVET Institutions

The major difference between public TVET institutions and private TVET institutions lies in how they are funded. This affects students because funding is tied to tuition prices. Today, state governments pay for most of the cost of operating public TVET institutions. They also oversee these institutions through appointed Board of Governors and Trustees.

The funding of public TVET institutions by the exchequer is the reason why the tuition fees are lower at public TVET institutions. The tuition fees are subsidized. Money raised from tuition doesn't need to cover all of a public college's expenses, such as paying faculty.

The government therefore employs teachers for public TVET institution, constructs buildings and furnishes the workshops and laboratories. In nutshell the Government meets approximately eighty percent (80%) of all the overhead costs in public TVET institutions. Over time some public institutions have come up with parallel programmes offered in the evening and weekends to supplement their sources of income. In addition to these parallel programmes, they also engage in income generating activities such as running of auto garages, rearing of dairy animals and large scale crop farming.

Meanwhile, private colleges do not receive funds from the exchequer. They rely heavily on tuition fees and private contributions. This means tuition rates are generally higher. Private TVET institutions tend to be much smaller in size than

public TVET Institutions and may have only a few students. The private TVET institutions are business oriented and their main goal is to make profit. They therefore tend to minimize the overhead and running costs and maximize their profits. This is the main reason why most of them have very poor facilities.

2.4 History of TVET

Historically, training for productive employment was a private matter. In Kenya the ancient Art and Technical skills were passed from father to son within family or clan in form of an Apprenticeship System. The building of the Kenya Uganda Railway attracted the Indian traders and laborers who were instrumental in the training of Artisans and Craftsmen at Kabete Native Industrial Deport in 1924(G.O.K, 2008). More advanced equipment and machinery came in during the second world war and this meant that advanced training of electricians, drivers and mechanics were required. Industrial depots were upgraded to Vocational Schools and later on converted to Secondary Vocational Schools (G.O.K, 2008).

In 1954 Commission for Higher Education was set up and its main recommendation was the establishment of the Royal Technical College in Nairobi. It later become Nairobi University College and now presently University of Nairobi. The Mombasa Institute of Muslim Education established in 1948 provided Technical and Vocational Education to Muslims students of East Africa. It was later converted to Mombasa Technical Institute which become Mombasa Polytechnic in 1972 and now presently Technical University of Mombasa

Today there are two (2) TVET Technical Universities (Technical University of Mombasa and Technical university of Kenya), (two) 2 National Polytechnics, thirty five (35) Institutes of Technology and Technical Training Institutes and one thousand and thirty (1,030) private TVET institution spread throughout the country (Kenya School Magazine, DTE MOHEST). All the (two) 2 University Polytechnics and (two) 2 National Polytechnics offer Craft Certificate and Diploma in Electrical and Electronics Engineering hence the training of electrical technicians. All the (thirty five) 35 Institutes of Technology and Technical Training Institutes offer Craft

Certificate and Diploma in Electrical and Electronics Engineering. Amongst the one thousand and thirty (1,030) private TVET institutions, only fifty (50) offers Certificate and Diploma in Electrical and Electronics Engineering with the rest offering Art-based courses. This small number is attributed to the expenses incurred by institutions in offering Electrical and Electronics Engineering. It's therefore a real concern to look at why these technicians from the fifty (50) private TVET institutions are being discriminated by their potential employers.

Table 2.1: Distribution of TVET Institutions

Ministry/ Organization	**Type**	**Number**	
		2004	**2012**
Ministry of Education Science and Technology	Polytechnic university Colleges	0	2
	National Polytechnics	4	2
	Technical Training Institutes	19	19
	Institutes of Technology	16	21
	Kenya Technical Teachers Colleges	1	1
Other Ministries	Vocational and Skills Training Centers	9	4
	Youth polytechnics	600	650
	Other Technical Training Institutions	40	40
Private Sector, Religious Organizations and NGOs	Vocational and Skills Training Institutions	800	1030
TOTAL		**1,484**	**1,769**

Data Source: Kenya School Magazine, DTE MOHEST

2.5 Currents Trends

The development of Technical, Industrial, Vocational and Entrepreneurship Training (TIVET) is fundamental in Kenya's efforts to lower the levels of poverty. Further,

vision 2030 places great emphasis on Science, Technology and Innovation in general and TVET is the vehicle for these socio-economic and technological transformation.

The ministry of Education together with other ministries operates institutions that provide specialized technical training. These include institutions managed by the Home Affairs, Youth Affairs and Sports, Office of the President, Agriculture, Health, Immigration, Water Development, Roads and Public Works and Labour among others. Some Parastatals such as Kenya Power also operate TVET institutions. There are also Private investors who have established Technical Training Institutions (Republic of Kenya 2008).

Technical, Vocational Education and Training (TVET) in Kenya is viewed as the kind of education that provides learners with the technical skills that can be used generally in technical fields. The localized term, Technical, Industrial, Vocational, Entrepreneurship and Training (TVET) is used to describe all the programmes under the ministry of education. These programmes are designed to prepare skilled personnel for particular positions in industry and the informal sector. These subjects differ significantly at different levels however the main offering of the TVET subjects is at the National Polytechnics, Institute of Science and Technology (IST), Technical Training Institutes (TTIs) and Private TVET institutions. National polytechnics in Kenya offer Degree programmmes, Higher National Diploma, Diploma and Certificates. Those designated as IST were formerly institutions constructed through community efforts and TTIs are the upgraded Technical Secondary Schools. In practice there is little difference in what IST and TTIs offer which is generally Diploma and Certificate courses. There is a healthy enrolment of students in these TVET institutions ensuring that they can raise adequate recourses to run their affairs. Enrolment is however skewed towards more theoretical programmes such as ICT, Human Resources, Accounting, Management and other Business courses. Enrolment in the more practical courses such as Electrical, Electronics, Mechanical, Automotive and Building Construction Trades are much lower (Republic of Kenya 2008).

The government has developed a blue print to establish an independent TVET authority that is yet to be approved by the Legislature. The umbrella body would

coordinate all TVET activities under one organization Known as TIVET Authority (TIVETA). Clearly there is room for expansion at all levels both in private and public institution as increased access to general education has created a large pool of youth looking for training in various fields. Although University education is the preferred choice of the larger proportion of the youth, the sheer number of those completing Secondary Education with the minimum entry requirements cannot find places in higher education. TVET institutions remain the alternative choice for most. The private TVET institutions is therefore vital and play a key role in training Electrical and Electronics technicians since they are more than public TVET institutions.

Education is the best investment we can make, one that pays off in countless dividends, for us, for our children and for the society (American Association of School Administrators 1999). If we hope to maintain or improve the quality of life in our communities, attract new industries, and continue to prosper as a nation, top-notch schools are essential (American Association of School Administrators 1999).

2.6 Training and Staffing of TVET Institutions

The Teachers' Service Commission (T.S.C) employs teaching staff for all public TVET institutions. However, in situations where the commission is unable to attract staff in some areas of specialization or where there is staff deficit, the affected institutions engage qualified personnel from both the private sector and also from other public institutions (Republic of Kenya 2008). The majority of TVET teachers are Diploma and Bachelor's Degree holders accounting for thirty four (34%) and thirty six percent (36%) respectively. Institutes of technologies have the bulk of the teachers with forty two percent (42%) followed by TTIs with thirty three percent (33%). The national polytechnics have twenty one percent (21%) of the total teacher establishment (MOE).

Table 2.2: Distribution of TVET Teachers by Qualification

Type of Institution	Qualifications						
	PhD	**Masters**	**Bachelors**	**Higher Diploma**	**Diploma**	**Other**	**Total**
National Polytechnic	1	112	340	186	61	-	690
KTTC	2	51	59	15	4	-	131
T.T.Is	-	74	240	201	522	42	1,079
ITs	-	57	523	210	522	44	1,356
TOTALS	**3**	**290**	**1,162**	**612**	**1,109**	**86**	**3,256**

2.7 Incentives of the Teaching Staff

Incentives are a form of encouragement to take action. They are the direct and indirect benefits offered to teachers as internal motivators. In other words, they are the application of additional inputs that shape the education process to achieve the eventual outputs of education in desirable ways (American Association of School Administrators 1999). Three kinds of incentives have particular relevance for teachers namely Monetary Incentives (Direct and Indirect), Non-monetary Incentives and Perverse Incentives.

Monetary incentives can either be direct or indirect benefits. Direct monetary incentives refer to salary and allowances teachers receive for their work. The most direct and effective way to increase the number of secondary school graduates entering teaching and to encourage those already in teaching to remain as teachers is to increase salary to a level that makes teaching more attractive than alternative career options (Innovation in Staffing 2009). While raising salaries is an effective incentive for building a more qualified teaching force, it is not very useful for shaping the specific behaviors of individual teachers. Furthermore, once a teacher is given a salary increase, it is generally permanent. If the behavior being sought is temporary, such as

accepting a three-year teaching assignment in a remote area, giving a permanent incentive is not very productive.

Allowances help solve this problem. Allowances are cash incentives, but tied to the specific action that education officials are trying to encourage, such as teaching in a double-shift school or taking that remote assignment. When the teacher leaves the position to which the allowance was tied, the allowance ends. Consequently, allowances have two advantages over just increasing salaries: allowances have less impact on the recurrent education budget of a country and they can be more directly tied to the specific behavior that education officials are trying to encourage. Indirect monetary incentives include all the other financial resources offered to teachers. These might include: professional support such as initial and ongoing training, teacher guides, resource books, instructional supervision and personal support such as free and/or subsidized housing, food and transportation. To the extent that incentives do work, research suggests that financial incentives appear to be more effective than other types of inputs **(**Innovations in Staffing 2009)

Non-monetary incentives: Given the choice between monetary and non-monetary incentives, most teachers want the money. However, the education budgets of many countries are severely constrained, limiting governments' use of direct financial incentives. Consequently, there has been an intense search for low-cost or non-monetary benefits that still have sufficient incentive value to shape teachers' behavior. For example, effective incentives include public recognition, respect from peers and supervisors, and promises of preferential next assignments (American Association of School Administrators 1999).

Perverse incentives: Incentives are not always positive. Some can operate in perverse ways. For example, the widespread reliance on private tutoring has emerged as a major problem in some countries, such as Egypt and Cambodia (Teacher Motivation and Incentives in Rwanda 2010). Many teachers supplement their income by offering special instruction for those students able to pay. This has created a negative incentive, as teachers have a financial motive to withhold their expertise during their regular teaching as a way of encouraging students and their families to invest in

remediation outside of school hours. Improving their classroom teaching could jeopardize their income flow (Chapman and Miric 2005).

Incentives are sometimes used by Government and education leaders to encourage teachers to behave differently, presumably in ways that promote the ends desired by those giving the incentives. For example, incentives might be designed to attract current teachers to remain in teaching, to accept assignments in remote schools, or to use new teaching methods in their classroom. The idea of using incentives to shape teacher behavior is has been there in existence for some time. Virtually all educators understand the basic idea. Nonetheless, while some incentive systems work well, many fail. When an incentive system fails, the resources used for those incentives are gone and the intended goals are still not achieved. This leaves the education system worse off than if no special incentives had been used (Teacher Motivation and Incentives in Rwanda 2010).

While some incentives, such as increased salary, are easy to understand and implement, many others are not. One risk, then, is a tendency of policy-makers to favor incentive systems that are easy to design and implement over incentive systems that are likely to yield more substantial and longer term outputs, but which are more expensive or complicated. Variations in teacher motivation do appear to exist with respect to type of provider and also teacher qualifications. Most scholars internationally point out that job satisfaction and motivation tends to be higher in private than public schools. It is alleged that, in the past, teachers were resigning from public schools to work in private schools. While to some extent this is true, it should however, be borne in mind that private schools themselves are quite diverse ranging from those at the top end of the market serving higher income groups, which pay higher salaries than schools that cater for low income groups, which charge much lower fees. Other factors which may account for the perceived higher levels of job satisfaction among teachers in private schools include more conducive teaching and learning environments such as smaller class sizes, close supervision by management and proprietors and, to some extent, the availability of resources which help to reduces work-related stress arising from conditions of the work environment (American Association of School Administrators 1999). Though teachers in private

schools seem to have higher morale than teachers in public schools they are more insecure about their positions. The VSO study on valuing teachers also reports that some teachers who left public schools to join private schools returned to the public sector following the introduction of house allowances (Tudor-Craig 2002).

There was a broad consensus among all stakeholders that teacher's main motivator is the payment and thus boosting their morale. Both KUPPET and KNUT (teacher unions) believe that teacher's pay is not adequate and does not match with the demands of the job nor does it meet their basic needs. Some officials observed that for higher grades the pay is adequate, but for lower grades pay is too low to meet the minimum requirements for basic needs. In particular, starting salaries are very low for untrained teachers. This is the main reason for the teachers strike in Kenya that lasted for 3 Weeks in September 2012.

A major reason for the low current levels of job satisfaction and morale among public sector teachers frequently mentioned by stakeholders is the absence of any meaningful career paths for most teachers. Teacher morale is low because their career paths are not well defined.

2.8 Facilities and Infrastructure in Education

The task of providing educational facilities to support the goal of providing universal access to education is very great. The approaches required to make sustainable progress are increasingly clear, but challenges to implementation remain considerable. Most researchers agree that the number of students admitted should be proportionate to the facilities available. Libraries should be modern, well stocked with books that are up to date and not few copies compared to the number of students. The students should not compete for space in the libraries especially during periods of assignments and examinations (Government of Kenya, 2008). The computers should be quite modern in terms of their hardware and software specifications and should be enough for the number of students. Since Information Technology as a course has been given a major preference on most of the syllabi, it should not only be done theoretically for a whole year without an opportunity to touch a computer. The students should not

have a limited access to the Internet. There is an increased number of students which is unmatched by the number of facilities, which has impacted adversely on the quality of higher education (Kasozi 2005).

The lecture rooms should be big enough for the number of students with sufficient seats. From the previous researches, in some institutions in Kenya students normally lose time by transferring seats from one room to another and occasionally attend lectures standing up with an overflow on the verandas. In addition, the lecture rooms are not sound proof; therefore lecturers are interrupted by heavy rain, human noise and mowers. Quite often lecturers are put off because of unbearable noise. The lecturers use dusty chalk on chalkboards which is a health hazard (Government of Kenya 2008).

Public address systems for classes as big as five hundred (500) students are normally recommended for efficient communication (Government of Kenya 2009). However previous studies in some tertiary institutions in Kenya show that where public address systems are available, they are unreliable because of power cuts and also there are no standby generators yet lectures go up to 10:00 PM. Consequently lectures end as soon as power goes off and this occurs quite often because Kenya is faced by insufficient supply of electricity resulting in frequent load shading and power cuts especially in the rural TVET institutions. The students complain of lack of constant flow of water which is barely enough even for lecturers to wash hands after teaching. This affects the sanitation especially of the students' toilets as student numbers are too high for the available facilities.

In the Engineering wing, there has been constant outcry amongst the educational stakeholders that there are inadequate workshops to train Engineering courses such as Electrical, Mechanical, Auto-motive and Building Construction (MOHEST Report 2010). Where the workshops are available, they either have inadequate machines and equipment or they are stocked with obsolete teaching equipment. These have adversely affected Electrical and Electronics Engineering wing which requires very expensive equipment and machines to operate. However from 2010, the problem has

partially been solved with the World Bank and the Norwegian's Government initiative to construct and equip workshops in public TVET institutions

2.9 The Link between Qualified Trained Teachers and Education

Teachers are the single greatest influence in a student's academic performance. Therefore the goal of every institution both private and public is to have adequately qualified teachers and produce research-based learning tools and assessments that can be used to advance quality and equity in learning and teaching. The products and services of an institution should measure knowledge, skills and abilities; promote learning and educational performance and support education and professional development for all people (Government of Kenya 2009).

Well qualified teachers are likely to be better motivated than poorly trained teachers. However, there are widespread concerns that pre-service teacher education in Rwanda is too academic and theoretical with the bulk of lecturers having little or no direct experience of the day to day challenges of classroom teaching. If teachers are not adequately prepared, this makes it much more difficult for them to cope, especially during the early stages of their career, which in turn could well have a negative impact on motivation (Teacher Motivation and Incentives in Rwanda 2010).

According to Teacher Motivation and Incentives in Rwanda: A situational Analysis and Recommended Priority Actions only ten percent (10%) of teacher questionnaire respondents have completed or are currently undertaking further studies in order to acquire additional qualifications. This is a very low percentage compared to most other countries in Africa. The bulk of the Rwandan studying was done independently with no formal support or guidance from MOE. Only eight percent (8%) of the surveyed teachers had ever been granted study leave.

2.10 Research and Innovation in Education

For any meaningful training of any Engineering especially Electrical and Electronics Engineering, Research and Innovation is very vital. This ensures keeping up to date with the current technologies in the area of study. A number of researches are done by

both lecturers and students but no publications made (MOHEST Report 2009). "NGOrisation" of research where NGOs come with specific themes and topics is another factor affecting research. Because of poverty, researchers jump on the band wagon regardless of their areas of specialization which undermines the quality of research output. Currently in the Electrical and Electronics Engineering, a lot of researches and Innovations have focused on the Robotic Studies with annual competitions being held among the Public TVET Institutions

2.11 Education and the Economy

It has often been asserted, particularly by education advocates and public leaders, that high quality schools and tertiary institutions have a positive impact on economic development. This argument has been increasingly made at all levels. Among the many governors known for their interest in education, Arkansas Governor Mike Huckabee (2002) states matter-of-factly, "Looking for salvation for the Mid-South Delta? Look no farther than the Public Schools. If we improve them, economic development will follow." With respect to local officials, the U.S. Conference of Mayors (1999) asserts, "The economic vitality of a city is linked to the performance of its schools".

According to the National League of Cities' survey of its members in 2000, "It is clear that city officials view the quality of public education and private schools as the cornerstone of their cities' success." As for the general public, in a public opinion survey the assertion that public schools "improve the local economy and attract business" was identified as the second most important benefit which schools bring to communities (Education Week and Public Education Network 2002). The only benefit of public schools ranked above local economic improvement was the "benefit to families." Below economic improvement, survey respondents ranked other benefits such as lowering crime rates, creating community pride, and instilling civic values. Education has also been a field of growing interest for economists.

Since 1970, the percentage of academic studies within the economic field that address the topic of education has grown by more than fourfold (Krueger 2000). However,

this literature, while very strong in particular areas, is often compartmentalized, rather than brought together as a whole. Furthermore, for even the most talented and ambitious researchers, the complexity of the education/economic relationship at all levels causes measurement difficulties that belie easy answers. Given how often the theme is mentioned in public debate, it is stunning that few studies or compilations describe how Schools can or cannot benefit the economy at both the national and local level.

Meanwhile, advocacy groups with an interest in this subject, mainly education organizations and local development associations, have rarely combined their efforts. When these advocates or the general public do make the economic case for public schools, the facts behind their assertions are rarely mentioned. If schools can impact economic development then how do they do it? This subject seems particularly important given today's economic climate and the demands of increased global economic competition. While public opinion continues to value education highly, all levels of government face increasing pressure to reduce spending or to spend more efficiently. Also, given the rise in interest in how to better link schools with their surrounding communities, the economic nature of those linkages is beginning to receive more attention. Smaller, more neighborhood based schools, some suggest, can benefit student learning as well as community and economic revitalization efforts (National Association of Realtors 2002, Chung 2002, Lawrence, et al 2002).

2.12 Link between TVET Institutions and Location Decisions of Lower-skill Industries

There is general agreement that education does play some role in the site location of Lower-Skill Industries (Bucciarelli 2003, McCandless 2003, Warden 1986). These businesses depend highly on the state and local school system to produce competent workers with adequate interpersonal skills (McCandless 2003) and value high school training and apprentice programs (Bucciarelli 2003). Supporting this view are case studies, like the study by Matthew Murray, Paula Dowell, and David Myers (1999) for the Tennessee Department of Economic Development, on the location decisions of automotive suppliers in Tennessee. The researchers, based on a mail survey of automotive suppliers considering locating in Tennessee, find an "increasing concern

regarding the skill level and availability of workers, with poor public education being a frequently cited shortcoming of the state".

2.13 Link between Colleges and Location Decisions of Higher-Skill Industries

In contrast to the viewpoint on Lower-Skill Industries, debate exists about the extent to which knowledge dependent companies pay attention (the extent to which local areas wishing to attract such companies should pay attention) to the quality of schools. For example, Mary Ellen McCandless, in her article "The State of Education" in Business Facilities (2003), argues that the quality of the School System is not a major factor for businesses seeking skilled employees.

These businesses, according to McCandless, do not depend as much on local public schools for an educated workforce because they only recruit employees that have completed Post-Secondary Education. However, quality of life does seem to be an increasingly important consideration when higher skilled employees consider where they want to live. Richard Florida, in his influential book The Rise of the Creative Class (2002), concludes that educated, skilled workers a group he calls the "creative class" consider quality of life extremely important in where they settle. In his argument, because the "creative class" will likely choose to live in communities with a high quality of life, these areas will have a higher population of skilled workers and may influence Business Location Decisions.

However, he does not consider local schools to be a strong part of quality of life and instead notes factors such as Universities, diversity, nightlife, and recreation, among others. Although Florida himself pays scant attention to public schools, interestingly, the business community in Austin, Texas, one of the cities Florida considers high in "talent" and "creativity," is increasingly recognizing the importance of investing in public education. The Austin American-Statesman (2002) reports that Austin economic development efforts clearly emphasize education as part of their agenda to improving the economy and attract the creative class. According to an official with the Greater Austin Chamber of Commerce quoted by the newspaper, "Without a good school system, you're not going to have industry."

2.14 Role of the Private Education Sector in West Africa

The private sector share of the education market ranges from four percent (4%) in Mauritania to twenty one percent (21%) in Gambia, with Senegal and Côte d'Ivoire at fifteen percent (15%) and nineteen percent (19%) respectively. At some education levels, the private sector is dominant. For example, in 1999 the private sector accounted for nearly all of the early childhood education market and twenty eight percent (28%) of the middle school market in Senegal, all of the professional education market and thirty six percent (36%) of the secondary school market in Côte d'Ivoire and seventy six percent (76%) of the Senior Secondary market in Gambia. The number of students in the private sector ranged from fifteen thousand (15,000) in Mauritania to over four hundred thousand (400,000) in Côte d'Ivoire, while the number of private providers ranged from eighty (80) in Mauritania to over eight hundred (800) in Senegal.

In West African countries where deliberate efforts have been made through the right 'mix' of policy and regulatory framework, major gains have been recorded on enrolments (LaRocque, 1999; Tooley, 1999). For instance, the number of students in private schools in Gambia grew by nearly fifty percent (50%) between1993-1996. Between 1991/92 and 1995/96, the share of the private tertiary education market grew from three percent (3%) to twenty three (23%) and between 1987/88 and 1997/98, the number of students in private schools in Senegal grew by over seventy five percent (75%).

2.15 Summary of Literature Review

The foregoing literature has reviewed issues concerning relevance of TVET institutions. A number of analyses done clearly indicate the challenges faced by TVET institutions towards the provision of Electrical and Electronics technicians training. It points out that the major stumbling blocks are inadequate facilities and infrastructure, incentives and motivations and the teachers' classroom performances. These also happen to some of the TVET issues which if adequately addressed then Kenya will not only produce competent Electrical Technicians but also attain the Vision 2030.

These stumbling blocks not only affects the public TVET institutions but also has greatly affected the private TVET institutions. This is because the private TVET institutions entirely depend on their inadequate tuition fees for the financing of their day to day operations. Other than the tuition fees, the public TVET institutions also depend on the Government of Kenya, the neighboring community and other donors such as World Bank for their operations.

On the positive side, the situation of the TVET institutions appears to have somewhat improved in the recent years in a number of respects. There is now more recognition on the part of the Government for the important role it plays in providing incomes and employment to number of the population. With regard to skill development for some TVET institutions however, the picture is still rather bleak. While the introduction of TVET institutions programmes is a step in the positive direction, constant review of its curriculum is needed to make it demand driven and flexible.

From the literature reviewed, several researches have been done on the quality of education in general but none has been done specifically on the training of electricians. The study therefore seek to comparatively study the quality of Electrical and Electronics technicians graduates in public and private institutions with a view of addressing the short comings.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The study compared the quality of Electrical and Electronics technicians training in public and private TVET institutions in Uasin Gishu County. This chapter outlines the methodology and procedures and modalities used in data collection. It also covers research design, determination and identification of the population sample size, sampling design, sampling procedure, the instruments of data collection, validity and reliability of data collected, sources of data, methods of collecting data and methods of analyzing the data.

3.1 Research Design

The researcher employed descriptive survey method. This was chosen because survey research is capable of collecting background information and hard-to-find data and the researcher would not have the opportunity to motivate or influence's responses. Sproull (1995, p.30) recommended the survey technique for research where attitudes, ideas, comments and public opinions on a problem or issue are studied. The descriptive survey approach was chosen for the present day because it seeks to gain insight into phenomena as a means of providing basic information in an area of study (Bless and Higson-Smith, 1995). The strength of the survey method is also evident in its ability to study, describe, explore and analyze relationships among geographical subjects.

Descriptive survey designs are used in preliminary and exploratory study to allow researchers to gather information, summarize, present and interpret for the purpose of clarification. Orodho (2003) noted that descriptive survey research is intended to produce statistical information about aspects of education that interests policy makers and educators.

3.2 Area of study

The study was conducted in Uasin Gishu County. The County was sampled using biased sampling or non- probability sampling. Specifically, maximum variation and homogenous sampling were used. Borg et al refers to maximum variation as a method of sampling where effort is made to get a sample containing very varied cases whereas homogenous sampling is where a sample of similar cases is selected to enable in-depth study of the group (Mungenda and Mugenda 1999).

The area where the study was conducted had several public and private TVET institutions offering Certificate and Diploma in Electrical and Electronics Engineering. The area is also Agriculturally productive practicing both crop farming and livestock rearing thus had got several Agriculturally related industries and factories which were the potential employers of Electrical technician graduates. The County had also enjoyed a good political rapport with the government of the day since independence with being in opposition only between 2003 -2007.

They therefore had a lot of job opportunities for the TVET graduates at the public service, local government, parastatals, state corporations and companies. The county was chosen by the researcher for study because the public and private TVET institutions were more accessible and the fact that several factors played a critical role to their existence. It was therefore best suited for providing the study of comparison between public and private institution’s provision of Electrical and Electronics technicians training in Kenya.

3.3 Target Population

Population refers to a group of people or study subjects who are similar in one or more ways and which forms the subject of the study in a particular survey (Sproul 1999). According to Leedy (1993), nothing comes out at the end of a long and involved study that is any better than the care, precision, consideration and the thought that goes into the basic planning of the research and the careful selection of the population. The target population refers to the population which the researcher

wants to generalize the results and ideally, researchers would like to generalize results to the absolute population (Mugenda and Mugenda 1999).

In this research the target population consisted of two (2) national polytechnic principals in Kenya, thirty five (35) technical training institutes and institute of technology principals in Kenya, ninety seven (97) private TVET institution's principal offering Electrical and Electronics Engineering in Kenya, two hundred (200) employers of Electrical and Electronics technicians graduates in Kenya, twelve thousand (12,000) employed Electrical and Electronics technicians graduates, five hundred (500) Electrical and Electronics lecturers in Kenya and five thousand six thousand (5,600) Electrical and Electronics trainees in all the institutions (MOHEST 2012 Enrollment Rate). These were shown in table 3.0 below.

Table 3.1: Target Population

Target Population	**Frequency**
Principals of Public Polytechnic	2
Principals of Public Technical Training Institutes and Institute of Technology	35
Principals of Private TVET Institutions Offering Electrical and Electronics Engineering	97
Employers of Electrical and Electronics Technicians Graduates	200
Electrical and Electronics Lecturers	500
Employed Electrical and Electronics Technicians	12,000
Electrical and Electronics Trainees	5,600
TOTAL	**18,434**

Data Source: MOHEST 2012 Enrollment Rate

3.4 Accessible Population

Accessible population is a more narrowly defined and manageable population with an aim of saving time, money and personnel required to locate all the members in order to select a representative sample (Mugenda and Mugenda 1999). The accessible

population of this study comprised of one (1) national public polytechnic principal, one (1) public technical training institutes principal, six (6) private TVET institution's principal offering Electrical and Electronics Engineering, thirty (30) employers of Electrical and Electronics technicians graduates, eighty (80) employed Electrical and Electronics technicians graduates, fouty eight (48) Electrical and Electronics lecturers and six hundred (600) Electrical and Electronics trainees in the institutions within Uasin Gishu County.

There was one (1) National Polytechnic in Uasin Gishu County, one (1) Technical Training Institute in Uasin Gishu County and six (6) private TVET institution offering Electrical and Electronics Engineering in the County. The collective student population doing Certificate and Diploma in Electrical and Electronics Engineering was approximately six hundred (600) students. These were shown in table 3.2 below:

Table 3.2: Accessible Population

Accessible Population	**Frequency**
Principals of Public Polytechnic	1
Principals of Public Technical Training Institutes and Institute of Technology	1
Principals of Private TVET Institutions Offering Electrical and Electronics Engineering	6
Potential Employers of Electrical and Electronics Technician Graduates	30
Electrical and Electronics Lecturers	48
Employed Electrical and Electronics Graduate Technicians	80
Electrical and Electronics Trainees	600
TOTAL	**766**

Data Source: MOHEST 2012 Enrollment Rate

Note: The data above was subjected to changes from time to time

3.5 Sampling Technique and Sampling Size

Sampling refers to the process of the selection of a portion of the population to represent the entire population in a study (Polit & Hungler 1996:652). The population can serve as a sample for a study (John &Christensen 2000:150). A sample was taken from the public and private college principals, lecturers of Electrical and Electronics Engineering, employers of Electrical and Electronics graduate technicians, Employed Electrical and Electronics graduate technicians and Electrical and Electronics trainees. All the samples were drawn from Uasin Gishu County which was the accessible population. Their views indicated the aspects that needed to be improved. The recommendations were described to address the comparative study of public and private institution's provision of Electrical and Electronics Technicians training in Kenya based on the findings.

A sample in a research study refers to any group on which information is obtained (Bless and Higson-Smith, 1995). To obtain a sample size there are factors to be put into consideration such as: type of research design, method of data analysis and the size of accessible population.

Sampling error arise from two factors in research study of this kind; the sample size and the amount of diversity in the sample (Newman, 1990), which are taken into account under sample size determination and sampling procedure in this study. In this study, the researcher determined the sample from the target population and there are different methods of determining the sample size. The researcher used simple random sampling method in selecting respondents since the study was not able to cover the whole study population because of distance and terrain.

Biased sampling or non-probability sampling methods were also used from time to time. These included purposive sampling that allowed the researcher to use cases that have the required information with respect to the objectives of the study, snowball sampling in which case, the initial subjects with the desired characteristics were identified using purposive sampling technique. The few identified subjects then named others that they knew had the required characteristics until the researcher got

the number of cases he required. Convenient sampling was also used to select cases or units as they became available to the researcher.

Lininger, (1975) argued that, “The main factor considered in determining the sample size is the need to keep it manageable enough. This enables the researcher to derive from it detailed data at an affordable cost in terms of time, finances and human resource (Mungenda and Mugenga 1999). In this study the researcher used two hundred and four (204) respondents as the sample size. The sample units of target population were included in the research task using two approaches. The non-probability sampling and specifically purposive sampling was used in determining the focus groups, key informants and instructors in the study. These respondents were chosen because they had the required characteristics. In addition to this, probability sampling and specifically stratified random sampling was used to identify the lecturers from the list of lecturers.

The purpose of stratified random sampling technique was to achieve a desired representation from various strata of the population. Stratified random sampling was adopted since the target population was diverse. In the sampling choice process, the population was divided into strata. The size of each stratum was determined in terms of magnitude. Then the sample was chosen with stratum comparable to that of the population at the same time maintaining their size in the sample. This was shown in table 3.3 below:

Table 3.3: Sample Size of Respondents

Respondents	Total Number	Ratio Selected	Sample Size
Principal of Public Polytechnic	1	100%	1
Principals of Public Technical Training Institutes	1	100%	1
Principals of Private TVET Institution Offering Electrical and Electronics Engineering	6	67%	4
Potential Employers of Electrical and Electronics Technician Graduates	30	26.67%	8
Electrical and Electronics Lecturers	48	20.8%	10
Employed Electrical and Electronics Graduate Technicians	80	25%	20
Electrical and Electronics Trainees	600	22.67%	160
TOTAL	**766**		**204**

3.6 Instruments of Data Collection

Data was collected by means of survey questionnaires, semi-structured interviews, observations and survey of documentary records methods. The instruments are discussed in the successive subtopics.

3.6.1 Questionnaires

Questionnaires are appropriate for gathering the views of a large number of people about a particular phenomenon (Stroh, 2000). Questionnaires were used to gain a general picture of a comparative study of public and private institution's provision of Electrical and Electronics technicians training in Kenya. The questionnaires consisted of questions that were related to the possible factors affecting the quality of training of Electrical and Electronics technicians.

There were Two (2) types of questionnaires. The first questionnaire was issued to the lecturers to get information on how the availability of incentives/motivation of the teaching staff affected the quality of provision of Electrical and Electronics

technicians training in private and public TVET institutions. The second questionnaire was issued to the Electrical and Electronics trainees to get information on how the lecturer's classroom performances affected the quality of provision of Electrical and Electronics technicians training in private and public TVET institutions.

The questionnaires were designed to elicit information that could be obtained through the written responses of the subject (Burns & Grove 1993:777). The items were derived from literature review in line with the conceptual framework. The questionnaires were in two sections:

Section A: This was designed to obtain background information of the respondents. It was broken down into age, gender, type of institution, relationship with the institution, period/tenure of training, level of training, tenure of service, level of education.

Section B: Aimed to investigate the extent to which the respondents were of the opinion that the various reasons were related to the research objectives. The focus covered the research questions related to a comparative study of the quality of public and private institution's provision of Electrical and Electronics technicians training. Likert scale questionnaire was adopted for the study. Likert scale questions consisting of a series of opinion statements about a particular issue, event or person ranging from 'strongly agree' to 'strongly disagree' were used as a basis of questions. Respondents indicated the extent to which they agree or disagree with each statement.

3.6.2 Interviews

The semi-structured interviews were designed to qualitatively analyze respondent's views on comparative study of the quality of public and private institution's provision of Electrical and Electronics technicians training in Uasin Gishu County. The interviews were recorded by note taking and phones. An interview schedule was used during the personal interviews with key informants. According to Nachmias (1996) a personal interview is a face to face interpersonal role situation in which the interviewer asks respondents questions designed to elicit answers pertinent to the research hypotheses. The researcher adopted what Nachmias (1996) refers to as "the

schedule structured interview" whereby questions, their wordings and sequence are fixed and are identical for every interviewee. This was done to ensure that differences in responses were due to differences between respondents and not variation in the interview.

The interviews were used to verify and understand the data collected from the survey. In this research, three (3) types of interview schedules were used. The first interview schedule was used to interview potential employers of Electrical and Electronics technicians. Its aim was to get information on the differences in job performances in the industries of Electrical and Electronics technicians from public and private TVET institutions with an aim of comparing their performances. The second interview schedule was used to interview the employed Electrical and Electronics technicians. Its aim was to get further information on the availabilities of infrastructure and facilities in the various institutions in which they trained. The third interview schedule was used to interview the institutions principals. It aimed at getting further information on all the three (3) research questions that were how the availability of facilities/infrastructure, lecturer's classroom performances, availabilities of incentives/motivation of the lecturers affected the quality of provision Electrical and Electronics technicians training.

Personal interviews with key informants were chosen for the following reasons: First flexibility allowed the interviewer to clarify terms that were unclear and probed for additional information and details. Here the researcher was able to seek explanations, elaborations and clarifications from the respondents on uncertain answers. Secondly, interviews have a high response rate and finally interviews allowed personal contact with the respondents and in effect made them psychologically comfortable through listening and encouragement to continue giving more views on the subject of study. The above advantages are not available in self-administered questionnaires, mail questionnaires, observations or focus group discussions.

3.6.3 Observation

Observational indicators are useful for assessment of physical conditions of the study area. Observation was only used to get information on how the availability of facilities/infrastructure affected the quality of provision of Electrical and Electronics technicians training in private and public TVET institutions. The researcher was able to observe infrastructures/facilities of the institution such as electrical workshops, electrical machines, electronics laboratories, drawing rooms and boards and lecture halls. This instrument allowed the researcher to gain first-hand experience, record information as it occur (Kathuri and Pals, 1993). This method was employed side by side during interviews in order to capture non-verbal behavior. Here it was necessary that the researcher focuses only on issues relevant to the study.

3.6.4 Documents Analysis

Information about distribution of public and private TVET institutions in Kenya were gathered from documents such as TVET annual report, journals and industry magazines to get better understanding of the research problems and findings. Also, web pages of TVET were accessed from internet in order to get latest information about the private institutions' activities, services offered and future services being planned.

3.7 Reliability and Validity of Instruments

Reliability is a measure of how consistent, replicable, predictable and repeatable the research findings can be under different circumstances. If an instrument is reliable, we can depend on its performance being consistent and predictable over time and use (Kathuri and Pals, 1993). In the study, reliability was established through the pilot-test in a different County to allow for modification of the instruments. This provided a good measure of reliability because holding other factors constant, the more similar the test content and conditions of administration are, the greater the internal consistency reliability (Mugenda and Mugenda, 1999). Generally the purposes of piloting the instruments were to establish the clarity of meaning and comprehensibility of each item in the research instruments and also to determine the time needed to complete and get the necessary information from respondents.

To ensure reliability, the first drafts of the instruments were presented to the supervisors for opinion on format and content in the quality of Electrical and Electronics technicians training. Their opinions were incorporated in the final drafts. The pilot-test was carried out in Nandi County. This was because Nandi County has exactly two (2) public TVET institutions with both offering Certificate and Diploma in Electrical and Electronics Engineering just like Uasin Gishu County. It also has almost the same number of private TVET institution like Uasin Gishu County. The two counties experiences similar climatic conditions and entirely depend on crop farming and animal rearing as their main source of livelihood. They therefore had almost the same number of agriculturally related industries which were the potential employers of Electrical and Electronics technicians. The results of the pilot study were presented as sessional paper in an International Interdisciplinary Conference in a local university with a view of making it better based on the opinions of other scholars.

3.8 Data Collection Procedures

Clearance to conduct the research was sought from the Ministry of Higher Education Science and Technology in conjunction with University of Eldoret. The research permit obtained was used to secure permission from the County Education office in Uasin Gishu County. The researcher before collecting data from the public and private TVET institutions informed the institution's principals in advance about the questionnaires and then brought them to the attention of the Electrical and Electronics trainees and lecturers. It was the responsibility of the researcher to establish rapport with the trainees. The research assistants were trained by the researcher and assisted in the distribution and collection of the questionnaires from the respondents. The completed instruments were verified and collected within a period of fifteen days from the day of distribution.

The researcher himself conducted the interview to the institution's principals, the technician's potential employers and the employed Electrical and Electronics technicians. Different interview schedule for the same were prepared and interviewing took place separately.

Observation as a method of data collection was carried out by the researcher himself. Observation checklists were prepared to get information on the availabilities of infrastructure/facilities of Electrical and Electronics department in the various TVET institutions.

3.9 Ethical Issues in the Research

Ethics is branch of philosophy which deals with one's conduct and serves as a guide to one's behavior. Some of the ethical issues that were considered in this study included misuse of privileges, confidentiality and privacy, anonymity and voluntary and informed consent.

To ensure that these ethical issues were taken into consideration the researcher first made a letter of introduction which accompanied all the research instruments in the field. It clearly explained the purpose of the research study, guaranteed anonymity and confidentiality, identified the researcher and also indicated the members of the subjects involved. In addition a research authorization letter from the National Council for Science and Technology further helped to explain the purpose of the research study.

3.10 Data Analysis Procedures

Data collected using the questionnaires and observation checklist were sorted out to check their completeness and clarity. Then items in the instruments were coded and entered into the Statistical Packages for Social scientist (SPSS) Computer Programme. The data was analyzed quantitatively. Descriptive methods were employed and data presented in the form of frequency distribution tables and graphs that facilitated description and explanation of the study findings. SPSS was used to generate frequency distribution tables.

Data from interviews were first transcribed that is turning the data into transcripts that can be read. Secondly familiarization of data was carried out that is reading the transcribed notes to take notes of what data was collected. Thirdly coding was carried out which took place in three stages namely open coding, axial coding and selective

coding. The relevant information from TVET Journals was also used in the study specifically at the literature review.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter discusses data representation of findings, analysis and interpretation of the findings. The main purpose of this chapter is to present the results of data analysis in a systematic way. The principle in the presentation of data is to give all the evidences relevant to the research questions and hypotheses.

4.1 Research Questions

The study was guided by the following research questions:

i. Do public TVET institutions perform better than private TVET institutions in Electrical and Electronics Technology?
ii. Does the availability of facilities/infrastructure affect the quality of Electrical and Electronics technicians training in TVET institutions?
iii. Do the Electrical and Electronics lecturers' classroom performances affect the quality of Electrical and Electronics technicians training in TVET institutions?
iv. Does the availability of motivation/incentives to the lecturers affect the quality of Electrical and Electronics technicians Training in TVET institutions?

4.2 Hypotheses

The study was also guided by the following hypotheses which were generated from the research questions and stated in null form:

i. **$H_0$1**: There is no significant difference between the mean scores in Electrical Installation Technology, Electrical Principles and Trade Practice in public and private TVET institutions
ii. **$H_0$2:** There is no relationship between the availability of Electrical and Electronics facilities/ infrastructure in TVET institutions and the performance of graduate technicians.
iii. **$H_0$3:** There is no relationship between the lecturers' classroom performances in TVET institutions and the performances of graduate technicians.

iv. **$H_0$4:** There is no relationship between the availability of motivation/incentives to the lecturers and the performance of graduate technicians.

4.3 Data Collected on the Variables

The data in this section were collected from two (2) public TVET institutions and six (6) private TVET institutions. The data were collected on the following variables:

1. College Type - Public or Private.
2. Availability of Electrical and Electronics facilities/infrastructure - Very Poor, Poor, Just Ok, Good, Excellent.
3. Electrical and Electronics lecturers' classroom performances - Very Poor, Poor, Just Ok, Good, Excellent.
4. Availability of incentives/ motivation to Electrical and Electronics lecturers - Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree.
5. Scores in Electrical Installation Technology.
6. Scores in Electrical Principles.
7. Scores in Trade Practice.

N.B The scores were the results of KNEC Certificate in Electrical and Electronics Engineering (Power Option) July 2012 sitting. The results were taken purely on sampling basis.The results were tabulated below

Table 4.1: Summary of the Data Collected from the Seven (7) Variables

CASE	Variable1	Variable2	Variable3	Variable4	Variable5	Variable6	Variable7
1	Public	1	2	1	7	7	6
2	Public	2	1	2	5	6	6
3	Private	2	1	2	8	8	8
4	Public	4	3	4	4	5	3
5	Private	3	3	3	7	6	7
6	Private	3	4	3	6	6	7
7	Public	5	4	5	2	1	1
8	Public	4	4	3	1	2	1
9	Private	3	3	2	7	6	6
10	Private	2	2	2	6	7	7
11	Private	3	3	2	6	7	8
12	Public	3	4	3	3	4	4
13	Public	3	3	3	4	5	5
14	Public	3	4	3	5	5	5
15	Private	2	3	2	7	8	7
16	Private	3	2	2	6	8	8
17	Public	3	3	4	6	6	5
18	Private	2	3	1	8	7	7
19	Private	2	1	2	8	7	8
20	Public	3	3	2	5	4	5
21	Private	1	2	2	8	8	8
22	Public	3	3	4	4	3	4
23	Private	1	2	2	7	8	7
24	Public	4	4	5	2	1	2
25	Public	4	5	4	2	3	1
26	Private	4	3	4	6	5	6
27	Private	1	2	2	7	7	8
28	Private	1	2	2	6	8	7
29	Public	5	4	4	2	1	2
30	Public	4	5	4	2	2	1

From table 4.1 above, on the availability of Electrical and Electronics facilities/infrastructure column (Variable 2) and Electrical and Electronics lecturers' classroom performances (Variable 3), 1 denoted Very Poor, 2-Poor, 3–Just Ok, 4–Good and 5-Excellent. On the availability of incentives/motivation column (Variable 4)**,** 1 denoted Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly Agree.

The score of the 3 subjects (Electrical Installation Technology, Electrical Principles and Trade Practice) were chosen since they are the core subject in Electrical and Electronics Engineering hence determining the quality of training and technicians' performances in the job market. On the scores, 1 and 2 denoted a Distinction, 3 and 4 denoted a Credit, 5 and 6 denoted a Pass, 7 denoted a Referred and 8 denoted a Fail.

4.4 Comparison of the Mean Scores of Public TVET and Private TVET Institutions

To compare the mean scores of the three (3) subjects that were scores in Electrical Installation Technology, scores in Electrical Principles and scores in Trade Practice in public and private TVET institutions, an Independent Sample t-test was chosen. This was because two (2) means were to be compared.

The null hypothesis tested was, "there is no significant difference between the mean scores in Electrical Installation Technology, Electrical Principles and Trade Practice in public TVET institutions and private TVET institutions". The results were as follows:

Table 4.2: The Numbers, the Mean, Standard Deviation and Standard Error of the Mean of each Subject

	College Type	N	Mean	Std. Deviation	Std. Error Mean
Scores in Electrical Installation Technology	Public	15	3.6000	1.76473	.45565
	Private	15	6.8667	.83381	.21529
Scores in Electrical Principles	Public	15	3.6667	1.98806	.51331
	Private	15	7.0667	.96115	.24817
Scores in Trade Practice	Public	15	3.4000	1.91982	.49570
	Private	15	7.2000	.86189	.22254

Table 4.2 showed that fifteen (15) respondents from public and fifteen (15) respondents from private TVET institutions were sampled in each case. The table also gives the means scores, standard deviations and standard error of the mean in both the public and private TVET institutions.

The mean scores in public TVET institutions were 3.6000 for Electrical Installation Technology, 3.6667 for Electrical Principles and 3.4000 for Trade Practice. All the three mean scores denoted a Credit. The Mean Scores in private TVET institutions were 6.8667 for Electrical Installation Technology, 7.0667 for Electrical Principles and 7.2000 for Trade Practice denoting a Pass, Refer and Refer respectively.

Going by the mean scores in the three subjects, the researcher could easily conclude that the mean scores was higher in private TVET institution denoting a low pass and lower in public TVET institutions denoting a higher pass. However this was authenticated in the next table giving the Independent Sample t-test results.

Table 4.3: Independent Sample t-test for the Scores in the 3 subjects

		Levene's Test for Equality of Variance		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Scores in Electrical Installation Technology	Equal variances assumed	10.60	.003	-6.482	28	.000	-3.26667	.50395	-4.29897	-2.2343
	Equal variances not assumed			-6.482	19.95	.000	-3.26667	.50395	-4.31805	-2.2152
Scores in Electrical Principles	Equal variances assumed	10.89	.003	-5.963	28	.000	-3.40000	.57016	-4.56791	-2.2320
	Equal variances not assumed			-5.963	20.20	.000	-3.40000	.57016	-4.58855	-2.2114
Scores in Trade Practice	Equal variances assumed	19.64	.000	-6.994	28	.000	-3.80000	.54336	-4.91302	-2.6869
	Equal variances not assumed			-6.994	19.42	.000	-3.80000	.54336	-4.93559	-2.6644

From table 4.3 above, in Electrical Installation Technology, the p-value in the box labeled Sig. (2-tailed) was 0.000 which was less than 0.003 significant levels as shown in the column labeled Sig. In Electrical Principles, the p-value in the box labeled Sig. (2-tailed was 0.000 which was less than 0.003 significant levels shown in the column labeled Sig. Finally, in Trade Practice, the p-value in the box labeled Sig. (2-tailed) was 0.000 which was equal to 0.000 significant levels shown in the column labeled Sig.

The write ups were therefore as follows:

a. Electrical Installation Technology: $t(28) = -6.482, p < 0.05$
b. Electrical Principles: $t(28) = -5.963, p < 0.05$
c. Trade Practice: $t(28) = -6.994, p < 0.05$

Consequently from the p-value in all the three (3) scores the researcher rejected the null hypothesis. The researcher therefore adopted the alternative hypothesis which was stated as "there is a significant difference between the mean scores in Electrical Installation Technology, Electrical Principles and Trade Practice in public TVET institutions and private TVET institutions". Clearly the performances in Electrical and Electronics Engineering were higher in public TVET institutions than in private TVET institutions going by the mean scores.

Having analyzed and concluded that there were significant differences in the mean scores in private and public TVET institutions, the preceding tasks were consequently to investigate the factors that might have caused the changes in the mean scores. Therefore using data in table 4.1, each and every research question and null hypothesis was therefore analyzed in details and results given in the subsequent sub-topics.

4.5 Effects of the Availability of Facilities on the Quality of Technicians Training

The research question was, "does the availability of Electrical and Electronics facilities/infrastructure affect the quality of Electrical and Electronics technicians training in TVET institutions?" This question was mainly guided by an observation

checklist which entailed inspecting the prerequisite Electrical and Electronics Engineering equipment, tools, machines, workshops, well stocked libraries and laboratories required for the training of Electrical and Electronics technicians.

The data were sought out through the following manner:

i. Very Poor (labeled as 1)
ii. Poor (labeled as 2)
iii. Just Ok (labeled as 3)
iv. Good (labeled as 4)
v. Excellent (labeled as 5)

Very Poor reflected the complete absence of the facility/infrastructure (negative attitude) while Excellent reflected the complete presence/adequacy of the facilities/infrastructures (positive attitude). These were in regard to whether the facilities/infrastructures were adequate or not adequate. Other intermediate responses were Poor, Just Ok and Good. The results were as follows:

Table 4.4: Statistics of Availability of Engineering Facilities in Public TVET Institutions

		Very Poor	**Poor**	**Just Ok**	**Good**	**Excellent**
N	Valid	15	15	15	15	15
	Missing	0	0	0	0	0
Mean		.0667	.2000	.7333	.6667	.3333
Median		.0000	.0000	1.0000	1.0000	.0000
Mode		.00	.00	1.00	1.00	.00
Std. Deviation		.25820	.41404	.59362	.61721	.61721
Range		1.00	1.00	2.00	2.00	2.00
Minimum		.00	.00	.00	.00	.00
Maximum		1.00	1.00	2.00	2.00	2.00
Sum		**1.00**	**3.00**	**11.00**	**10.00**	**5.00**

A total of two (2) public TVET institutions' facilities were inspected during the research. Each observation checklist had a total of fifteen (15) Electrical and Electronics equipment/facilities which were keenly inspected. During the inspection process, special attention was paid to the working conditions, types, obsoleteness and maintenance status of these Electrical and Electronics equipment/facilities. In the two (2) institutions tests were also carries out on some equipment such as Cathode Ray Oscilloscope and lathe machines to ascertain their working conditions.

From table 4.4 it was observed that most of the Electrical and Electronics Engineering facilities/infrastructure were Just Ok that was eleven (11) entries in the public TVET institutions. This was followed by Good with ten (10) entries. The least entries were that the facilities were Very Poor in public TVET institutions with just one (1) entry. It was therefore concluded that Electrical and Electronics facilities/infrastructure in public TVET institutions ranged from Just Ok to Good meaning they could effectively handle the prerequisite practical needed during the training process.

With availability of Electrical and Electronics facilities/infrastructure ranging from Average to Good, it was therefore expected that the performances and hence the quality of Electrical and Electronics technicians were therefore above board. However this could not be authenticated at this stage until $H_0 2$ was tested.

Table 4.5: Statistics of Availability of Engineering Facilities in Private TVET Institutions

		Very Poor	Poor	Just Ok	Good	Excellent
IN	Valid	15	15	15	15	15
	Missing	0	0	0	0	0
Mean		2.1333	2.3333	.9333	.4000	.2000
Median		2.0000	2.0000	1.0000	.0000	.0000
Mode		2.00	2.00	1.00	.00	.00
Std. Deviation		1.12546	1.11270	.79881	.50709	.41404
Range		4.00	3.00	3.00	1.00	1.00
Minimum		.00	1.00	.00	.00	.00
Maximum		4.00	4.00	3.00	1.00	1.00
Sum		**32.00**	**35.00**	**14.00**	**6.00**	**3.00**

A total of six (6) private TVET institutions were inspected during the data collection process. Each observation checklist had a total of fifteen (15) Electrical and Electronics equipment/facilities which were keenly observed. In addition to the presence of these Electrical and Electronics equipment, their conditions and obsoleteness was also observed and tested.

From table 4.5 it was observed that most of the Electrical and Electronics Engineering facilities/equipment were Poor with thirty five (35) entries in the private TVET institutions. This was followed by Very Poor with thirty two (32) entries. The least observations were that the facilities were Excellent with only three (3) entries.

Therefore going by the highest entries, it's of no doubt that Electrical and Electronics facilities/infrastructures in private TVET institutions ranged from Poor to Very Poor. This meant that the technicians who underwent those private TVET institutions were either under baked during the training processes or were not trained at all on practical. This seriously compromised on the quality of graduates. However at this stage, the

researcher could not effectively conclude that Poor to Very Poor availability of facilities/infrastructure compromised the quality/performances of graduate technicians until $H_0$2 was analyzed.

4.6 Analysis of $H_0$2

The null hypothesis was "there is no relationship between the availability of Electrical and Electronics facilities/infrastructure in TVET institutions and the performances of graduate technicians". In order to analyze this null hypothesis, One-way Analysis of Variance (ANOVA) was used. This was because there were more than two mean scores to be compared at once.

The results were as shown below:

Table 4.6: Statistics for Scores against the Availability of Facilities

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Scores in Electrical Installation Technology	Very Poor	5	7.0000	.70711	.31623	6.1220	7.8780	6.00	8.00
	Poor	6	7.0000	1.26491	.51640	5.6726	8.3274	5.00	8.00
	Just Ok	11	5.3636	1.28629	.38783	4.4995	6.2278	3.00	7.00
	Good	6	2.8333	1.83485	.74907	.9078	4.7589	1.00	6.00
	Excellent	2	2.0000	.00000	.00000	2.0000	2.0000	2.00	2.00
	Total	30	5.2333	2.14449	.39153	4.4326	6.0341	1.00	8.00
Scores in Electrical Principles	Very Poor	5	7.6000	.54772	.24495	6.9199	8.2801	7.00	8.00
	Poor	6	7.1667	.75277	.30732	6.3767	7.9567	6.00	8.00
	Just Ok	11	5.4545	1.43970	.43408	4.4873	6.4217	3.00	8.00
	Good	6	3.0000	1.67332	.68313	1.2440	4.7560	1.00	5.00
	Excellent	2	1.0000	.00000	.00000	1.0000	1.0000	1.00	1.00
	Total	30	5.3667	2.31164	.42205	4.5035	6.2298	1.00	8.00
Scores in Trade Practice	Very Poor	5	7.2000	.83666	.37417	6.1611	8.2389	6.00	8.00
	Poor	6	7.1667	.75277	.30732	6.3767	7.9567	6.00	8.00
	Just Ok	11	5.8182	1.47093	.44350	4.8300	6.8064	4.00	8.00
	Good	6	2.1667	1.60208	.65405	.4854	3.8479	1.00	5.00
	Excellent	2	1.5000	.70711	.50000	-4.8531	7.8531	1.00	2.00
	Total	30	5.3000	2.42331	.44243	4.3951	6.2049	1.00	8.00

From table 4.6 above, there were five (5) students who did examinations with Very Poor Electrical and Electronics facilities/infrastructure, six (6) with Poor, eleven (11) with Just Ok, six (6) with Good and three (3) with Excellent Electrical and Electronics facilities/ infrastructure. The table also gave the mean scores and standard deviations in each of the categories of facilities/infrastructure.

In Electrical Installation Technology, the highest score (2.0000) occurred when the availability of Electrical and Electronics facilities/infrastructure were Excellent. This denoted a Distinction. In Electrical Principles, the Highest Score (1.0000) again occurred when the availability of facilities/infrastructure were Excellent denoting a

Distinction. In Trade Practice, the Highest Score (1.5000) once more occurred when the availability of Electrical and Electronics Facilities/Infrastructure were Excellent denoting a Distinction.

The researcher therefore concluded that the highest performances of students occurred when the availability of Electrical and Electronics facilities/infrastructure were Excellent. Table 4.6 also listed the standard error, 95% Confidence Interval for the mean for each group and the range of scores for each group.

Table 4.7 : Test of Homogeneity of Variances

	Levene Statistic	**df1**	**df2**	**Sig.**
Scores in Electrical Installation Technology	2.620	4	25	.059
Scores in Electrical Principles	2.875	4	25	.044
Scores in Trade Practice	2.083	4	25	.113

From table 4.7, in Electrical Installation Technology, p=0.059, in Electrical Principles, p=0.044 and in Trade Practice, p=0.113. In Electrical Installation Technology and Trade Practice, the p-value does not exceed alpha (either 0.05 or 0.01). In scores in Electrical Principles, the p-value exceed alpha (either 0.05 or 0.01). The researcher therefore moved on to the next step of analysis process.

Table 4.8: Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Scores in Electrical Installation Technology	Between Groups	89.988	4	22.497	12.965	.000
	Within Groups	43.379	25	1.735		
	Total	**133.367**	**29**			
Scores in Electrical Principles	Between Groups	116.206	4	29.052	18.738	.000
	Within Groups	38.761	25	1.550		
	Total	**154.967**	**29**			
Scores in Trade Practice	Between Groups	129.697	4	32.424	19.964	.000
	Within Groups	40.603	25	1.624		
	Total	**170.300**	**29**			

From table 4.8, in the Sig. box, in Electrical Installation Technology, the p-value was <0.001 or less than 0.05 or 0.01. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis. In Electrical Principles, the p-value was <0.001 or less than 0.05 or 0.01. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis**.** Finally, in Trade Practice, the p-value was <0.001 or less than 0.05 or 0.01. Thus again at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis.

Thus the researcher consequently concluded that there were relationships between the availabilities of Electrical and Electronics facilities/infrastructure in TVET institutions and the performances of graduate technicians and the higher the availability the better the performances.

The write ups were as shown below:

a. Score in Electrical Installation technology- $F(4,25)=12.965$, $p<0.05$
b. Scores in Electrical Principles- $F(4,25) = 18.738$, $p<0.05$
c. Scores in Trade Practice- $F(4,25) = 19.964$, $p<0.05$

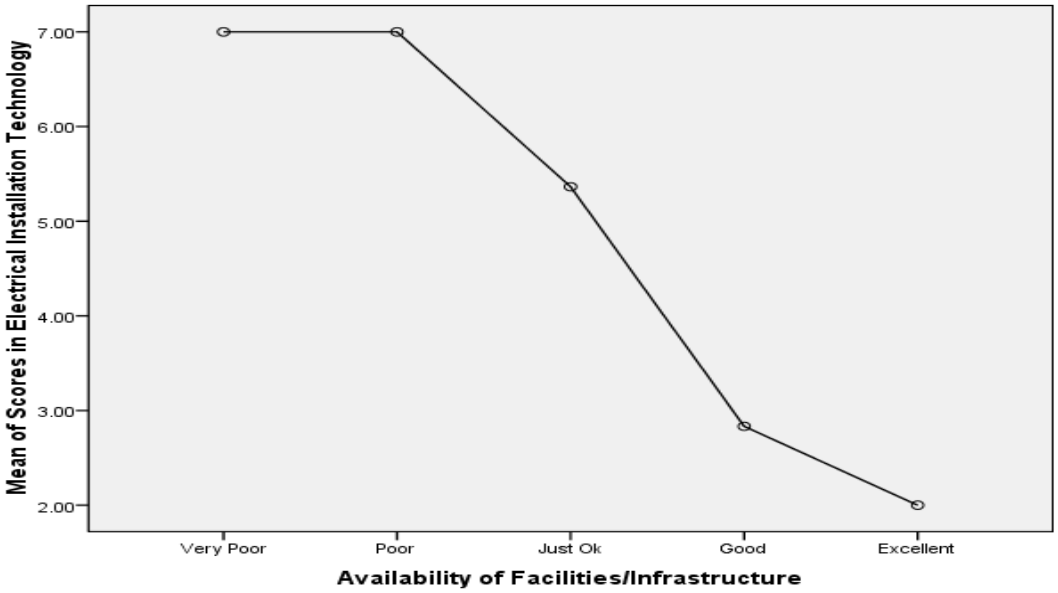

Figure 4.1: Graph of Scores in Electrical Installation Technology verses Availability of Facilities

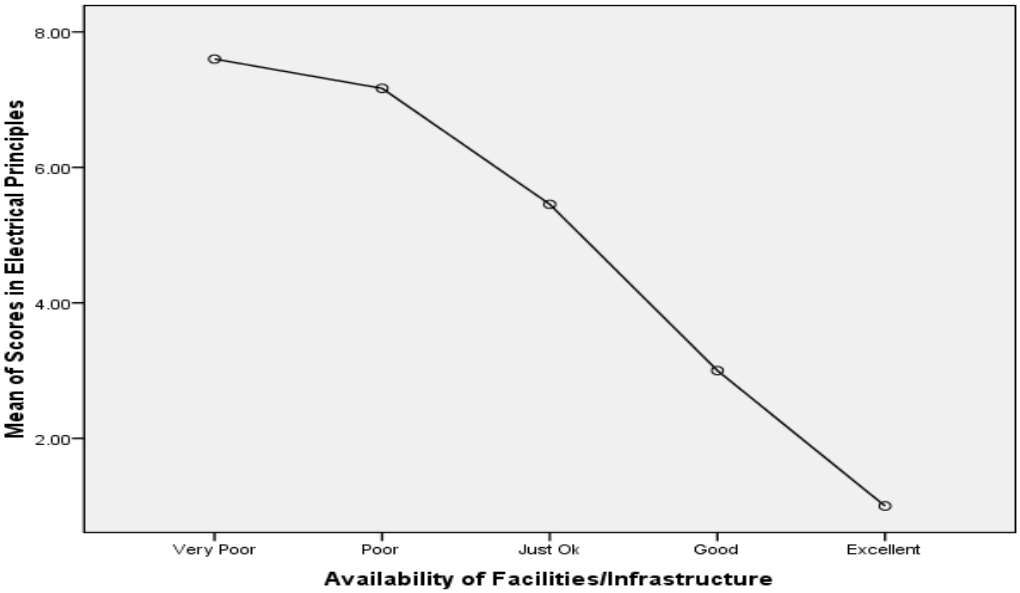

Figure 4.2: Graph of Scores in Electrical Principles verses Availability of Facilities

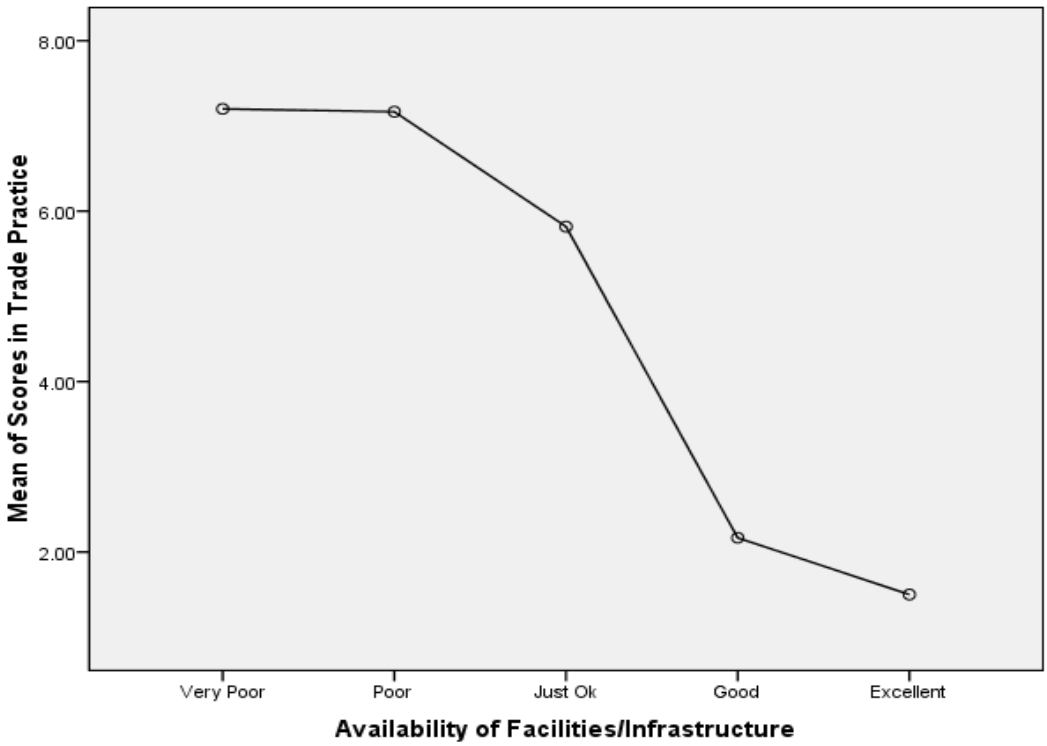

Figure 4.3: Graph of Scores in Trade Project verses Availability of Facilities

4.7 Interview Schedules results on how the Availability of Facilities affects the Quality of Technicians Training

The opinions of employers of technicians, principals, and employed technicians were also sought on how the availabilities of facilities/infrastructure affected the quality of technicians training through interview schedules. Therefore three (3) different interview schedules were prepared towards the same. The aim of the interviews were to get an insight on the quality of training in public and private TVET institutions having examined the availabilities of Electrical and Electronics facilities/infrastructure using personal observations. The interview results were discussed in the subsequent sub-topics.

4.7.1 Interview Results from Potential Employers of Technicians

A total of eight (8) companies were visited with their Chief Engineers being interviewed independently. In two (2) companies where the Chief Engineers were not available, the Human Resource Managers were interviewed. All the employers were

in unanimous agreement that Engineering facilities/infrastructures were the backbone of its training. One (1) company for instance affirmed that they indeed employ technicians from public TVET institutions only. Their main reason for this was that it's only the public TVET institutions that have the prerequisite facilities/infrastructures to adequately train Electrical and Electronics technicians.

Amongst the eight (8) employers of Electrical and Electronics technicians interviewed, seven (7) had got direct linkages with the public TVET institutions. The linkages included internship programs, industrial attachments schedules, upgrading of their Electrical workshops and periodical educational tours. However none of them had any linkages with the private TVET institutions. They attributed this to the profit oriented nature of private institutions. These linkages were very vital since they bridged the gap between classroom training and industrial needs.

On the job performances, all the employers had the opinion that all their technicians fresh from colleges needed some little training of the specific tasks they were assigned. They therefore carried out some induction workshops programs to their fresh graduates which ranged from two (2) weeks to two (2) years depending on the scale of employment such as Craftsmen, Technicians, Technologists or Engineers. Specifically on the technicians, the employers alluded that their training were purely practical oriented ranging from two (2) weeks to six (6) months depending on the specific tasks and the company. However six (6) employers acknowledged that public TVET institutions technicians had fasters learning skills on the practical aspects due to their practical exposure in the public TVET institutions as compared to their private counterparts.

Most technicians from public TVET institutions could efficiently and effectively carry out single phase installations, rewinding, laminations and light repairs of motors and transformers; operate lathe machines, welding machines, shaping machines and grinding machines at their first month of employment. However these were direct opposite to their counterparts from private TVET institutions. For instance, the Human Resource Manager at a certain company itemized that two (2) of their technicians from private TVET institutions could not differentiate between a lathe

machine and a shaping machine leave alone operating them. On three phase installations, all the employers responded that they only allow their fresh graduates to work on them under very strict supervision from their experienced seniors due to the high voltages they carry.

4.7.2 Interview Results from Principals of TVET Institutions

A total of six (6) principals were interviewed, two (2) from public TVET institutions and four (4) from private TVET institutions. In two instances in the private institutions, the principals also doubled as the proprietors of their respective institutions. Generally, the principals pointed out that other factors remaining constant, psychomotor dimensions of education are very vital in any training process. They further added that Psychomotor Skills in any career/trade can only be attained through the relevant facilities/infrastructures Electrical and Electronics Engineering notwithstanding.

The two (2) public TVET institutions pointed that they have got modern Electrical and Electronics workshops for training. They said that they had greatly relied on the GOK, the World Bank, the German Government and the Norwegian Government for their refurbishment and upgrading. However they still did not have some very expensive but important equipment like Cathode Ray Oscilloscope, lathe machines and cable bending machines. In cases where they existed, they were either in poor working conditions or they were rendered obsolete with technology.

Interviewing principals from private TVET institutions proved rather hard as they felt very secretive since the institutions were their own private businesses and divulging some sensitive information could amount to sharing business secrets. The researcher therefore had to employ a lot of indirect questioning to get information on the subject matter after they had requested for unanimity of their responses. Here the researcher took a lot of caution on ethical issues in research. Out of the four (4) principals interviewed, only one (1) acknowledged that his institution had got an Electrical and Electronics workshop. However the workshop was substandard and lacked almost all the basic Electrical Engineering facilities like mounting boards, conduit bending

machines, instructor's rooms and first aid equipment. The workshop could only handle very simple Electronics practical like soldering and mounting Electronics components on strip boards.

The other three (3) private TVET institutions' principals said that they had got store rooms where they kept the simple components they had and only used them for demonstrations in classes. The main reason for these ill equipped institutions were the costs of these Engineering equipment/facilities and the urge of private institutions to make more profit. Asked how they handled their practical examinations, one (1) principal responded that they hired the practical requirements and a technician during examinations while the other three (3) said that they registered their students in public TVET institutions. From the interview responses, there were therefore convictions that the qualities of training in private TVET institutions were highly compromised at the expense of making profit.

4.7.3 Interview Results from Employed Technicians

A total of twenty (20) employed Electrical and Electronics technicians were interviewed from the eight (8) companies sampled. It's worth noting that out of the twenty (20) technicians only four (4) trained in private TVET institutions while the rest trained in public TVET institutions. This from the onset suggested some kind of discrimination in terms of employment between public and private technicians given the fact that more private TVET institutions existed in Uasin Gishu County.

Most of the respondents from public TVET institutions acknowledged that their former institutions had very strong ties with companies and industries. During their training they got enough practical and also attended compulsory industrial attachment for three (3) months. Most of them said that they would recommend their relatives to undergo similar training in the institutions they underwent meaning that they fully had faith in the training. On job performance, majority accepted that due to advance in technology they periodically needed training, seminars and workshops on emerging trends in their career. They however said that they have got the prerequisite practical

skills needed to perform their various tasks and therefore could efficiently and effectively work on their first month of employment without supervision.

Amongst the four (4) employees who trained in private TVET institutions, three (3) said that their institutions have no any linkages with an industrial set-up. Moreover two (2) alleged that industrial attachment was optional to them during their training hence they did not attend it. All the four (4) alleged that they were ill equipped to carry out any basic practical tasks during their first month of employment. They further attributed that their inability to handle practical was ascribed to the poor training they got in the private TVET institutions. All the Four (4) alluded that they lacked adequate Electrical and Electronics workshops and their rarely handled practical during their training sessions. Asked whether they could recommend their relatives to undergo a similar training, none of them accepted meaning they greatly had negative attitudes towards their training processes.

4.8 Conclusion of the Second Research Question

Having tabulated and analyzed the results from the observation checklists, results from the various interview schedules and the null hypothesis which was developed from the research question, the researcher concluded that the availability of Electrical and Electronics facilities/infrastructure greatly contributed to the quality of technicians training. In private TVET institutions, the availability of facilities is generally poor and this adversely affected their scores in Electrical Installation Technology, Electrical Principles and Trade Practice as pointed out by the ANOVA results. The interview results also showed that technicians from private TVET institutions were generally poor performers in the job market compared to their public TVET institutions counterparts. Therefore the public TVET institution technicians generally performed better than their private TVET institutions counterparts due to the availability of Electrical and Electronics Engineering facilities in their institutions.

4.9 Effects of the Lecturers Performances on the Competence of Technicians

The research question was “do the Electrical and Electronics lecturers classroom performances affects the quality of Electrical and Electronics technicians training in TVET institutions?” The opinions of the trainees towards the lecturer’s class teaching

skills, commitment to their work and other engagements with the students were sought through questionnaires and classified in the following manner:

a. Very Poor (labeled as VP)
b. Poor (labeled as P
c. Just Ok (labeled as JO)
d. Good (labeled as G)
e. Excellent (labeled as E)

Very Poor response reflected a negative attitude while positive attitude was regarded as Excellent. This was in regard to whether the lecturers' classroom performances affected the quality of training of technicians graduates. Other intermediate responses were Poor, Just Ok and Good.

The results were as follows:

Table 4.9: Showing the Statistics of Lecturers Performances in Public Institutions

		Very Poor	Poor	Just Ok	Good	Excellent
N	Valid	12	12	12	12	12
	Missing	0	0	0	0	0
Mean		6.0000	12.3333	36.8333	17.0833	7.7500
Median		4.5000	9.0000	37.0000	10.5000	7.5000
Mode		.00[a]	8.00	37.00[a]	10.00	8.00[a]
Std. Deviation		5.87754	9.13866	1.31483E1	1.32147E1	4.93826
Minimum		.00	2.00	12.00	4.00	2.00
Maximum		20.00	31.00	60.00	50.00	21.00
Sum		**72.00**	**148.00**	**442.00**	**205.00**	**93.00**

In the public TVET institutions, a total of eighty (80) Electrical and Electronics trainees were sampled and questionnaires administered to with a set of twelve (12)

questions in each questionnaire. From table 4.9, most of the Electrical and Electronics trainees responded that the lecturers' classroom performances were Just Ok with four hundred and forty two (442) responses in public TVET institutions. This was followed by Good with two hundred and five (205) responses. The least responses were that the lecturers' performances were Very Poor with seventy two (72) responses.

Therefore going by the highest responses it's undoubtedly that the performance of lecturers in public TVET institutions fell between Averages to Good. The competence of technicians training in these public TVET institutions was as a result taken as either Average or Good. The graduates thus channeled to the job market from these institutions were thus expected to be competent enough in the industries and companies. Nonetheless this could not be authenticated at this stage until $H_0 3$ was evaluated.

Table 4.10: Showing the Statistics of Lecturers Performances in Private Institutions

		Very Poor	**Poor**	**Just Ok**	**Good**	**Excellent**
N	Valid	12	12	12	12	12
	Missing	0	0	0	0	0
Mean		13.2500	31.0000	19.9167	8.4167	7.4167
Median		11.5000	30.5000	26.5000	8.5000	7.0000
Mode		10.00	20.00	30.00	6.00[a]	4.00[a]
Std. Deviation		7.25039	1.16697E1	1.12772E1	3.20393	3.57919
Range		23.00	35.00	27.00	10.00	11.00
Minimum		1.00	13.00	3.00	3.00	2.00
Maximum		24.00	48.00	30.00	13.00	13.00
Sum		**159.00**	**372.00**	**239.00**	**101.00**	**89.00**

In private TVET institutions, a total of eighty (80) Electrical and Electronics trainees were sampled for the research. Questionnaires with a set of 12 questions in each were then administered to them. From table 4.10, most of the Electrical and Electronics trainees responded that the lecturers' classroom performances were Poor with three hundred and seventy two (372) entries in private TVET institutions. These were followed by Just Ok with two hundred and thirty nine (239) responses. The least responses were that the lecturers' classroom performances were Excellent with only seventy two (72) responses.

Consequently going by the highest responses, it's of no doubt that the classroom performance of lecturers in private TVET institutions varied from Poor to Average. This could mean that the technicians who underwent these private TVET institutions were either not well trained during the training process or were not trained at all. When the lecturers performances in class is poor and are incompetent in class, then Very Poor results are expected of them. This nevertheless could not be determined at this stage until $H_0$3 was investigated.

4.10 Analysis of $H_0$3

The null hypothesis was "there is no relationship between the lecturers' classroom performances in TVET institutions and the performances of graduate technicians". In order to analyze this null hypothesis, One-way Analysis of Variance (ANOVA) was used. This was because there were more than two (2) mean scores to be compared at once.

The results were as shown below:

Table 4.11: Showing the Statistics for Results in the subjects against the Lecturers Performances

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Scores in Electrical Installation Technology	Very Poor	3	7.0000	1.73205	1.00000	2.6973	11.3027	5.00	8.00
	Poor	7	6.7143	.75593	.28571	6.0152	7.4134	6.00	8.00
	Just Ok	11	5.8182	1.40130	.42251	4.8768	6.7596	4.00	8.00
	Good	7	3.0000	1.82574	.69007	1.3115	4.6885	1.00	6.00
	Excellent	2	2.0000	.00000	.00000	2.0000	2.0000	2.00	2.00
	Total	30	5.2333	2.14449	.39153	4.4326	6.0341	1.00	8.00
Scores in Electrical Principles	Very Poor	3	7.0000	1.00000	.57735	4.5159	9.4841	6.00	8.00
	Poor	7	7.5714	.53452	.20203	7.0771	8.0658	7.00	8.00
	Just Ok	11	5.6364	1.43337	.43218	4.6734	6.5993	3.00	8.00
	Good	7	2.8571	2.11570	.79966	.9004	4.8138	1.00	6.00
	Excellent	2	2.5000	.70711	.50000	-3.8531	8.8531	2.00	3.00
	Total	30	5.3667	2.31164	.42205	4.5035	6.2298	1.00	8.00
Scores in Trade Practice	Very Poor	3	7.3333	1.15470	.66667	4.4649	10.2018	6.00	8.00
	Poor	7	7.2857	.75593	.28571	6.5866	7.9848	6.00	8.00
	Just Ok	11	5.6364	1.50151	.45272	4.6276	6.6451	3.00	8.00
	Good	7	3.1429	2.26779	.85714	1.0455	5.2402	1.00	7.00
	Excellent	2	1.0000	.00000	.00000	1.0000	1.0000	1.00	1.00
	Total	30	5.3000	2.42331	.44243	4.3951	6.2049	1.00	8.00

From table 4.11 above, there were three (3) students who alluded that lecturers' classroom performances were Very Poor, seven (7) said that they were Poor, eleven (11) mentioned that they were Just Ok, seven (7) cited that they were Good and two (2) indicated that they were Excellent. The table also gave the mean scores and standard deviations at each group of lecturers' classroom performances.

In Electrical Installation Technology, the highest score (2.0000) occurred when the lecturers classroom performances were Excellent. This denoted a Distinction. In Electrical Principles, the highest score (2.5000) occurred the lecturers' classroom performances were Excellent denoting a Distinction. In Trade Practice, the highest score (1.0000) occurred when the lecturers' classroom performances were Excellent denoting a Distinction.

The researcher therefore concluded that the highest performances of students occurred when the performances of lecturers in the classroom were Excellent. Table 4.11 also listed the standard error, 95% confidence interval for the mean for each group and the range of scores for each group of the lecturers' classroom performances.

Table 4.12: Showing the Test of Homogeneity of Variances

	Levene Statistic	**df1**	**df2**	**Sig.**
Scores in Electrical Installation Technology	2.430	4	25	.074
Scores in Electrical Principles	4.505	4	25	.007
Scores in Trade Practice	4.183	4	25	.010

From table 4.12 above, in Electrical Installation Technology scores, p=0.074, in Electrical Principles scores, p=0.007 and in Trade Practice scores, p=0.010. In Electrical Installation Technology score, the p-value exceed alpha (either 0.05 or 0.01) while in the remaining 2 scores, the p-value does not exceed alpha (either 0.05 or 0.01). The researcher therefore moved on to the next step of the analysis process.

Table 4.13: Showing the Results of ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Scores in Electrical Installation Technology	Between Groups	84.302	4	21.075	10.739	.000
	Within Groups	49.065	25	1.963		
	Total	**133.367**	**29**			
Scores in Electrical Principles	Between Groups	103.350	4	25.837	12.514	.000
	Within Groups	51.617	25	2.065		
	Total	**154.967**	**29**			
Scores in Trade Practice	Between Groups	110.802	4	27.701	11.639	.000
	Within Groups	59.498	25	2.380		
	Total	**170.300**	**29**			

From table 4.13 above, in the Sig. box, in Electrical Installation Technology, the p-value was <0.001. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis. In Electrical Principles, the p-value was <0.001. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis. Lastly, in Trade Practice, the p-value was <0.001. Thus again at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis.

Thus the researcher consequently concluded that there were relationships between the lecturers' classroom performances in TVET institutions and the performances of graduate technicians and the better the lecturers' classroom performances, the higher the scores.

The write ups were as shown below:

a. Score in Electrical Installation technology- $F(4,25)=10.739, p<0.001$
b. Scores in Electrical Principles- $F(4,25)=12.514, p< 0.001$
c. Scores in Trade Practice- $F(4,25)=11.639, p<0.001$

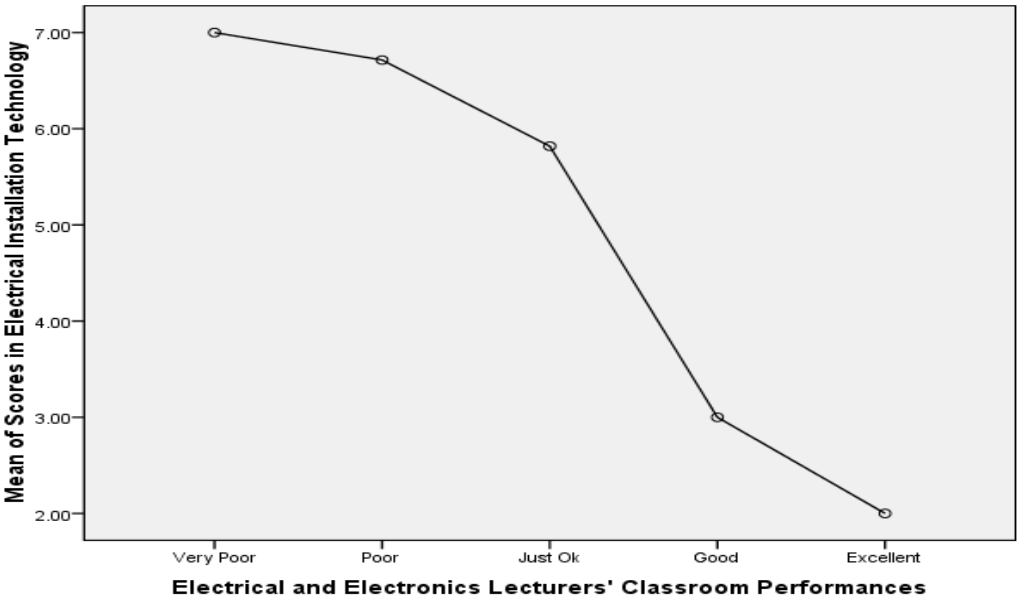

Figure 4.4: Graph of Scores in Electrical Installation Technology verses Lecturers Performances

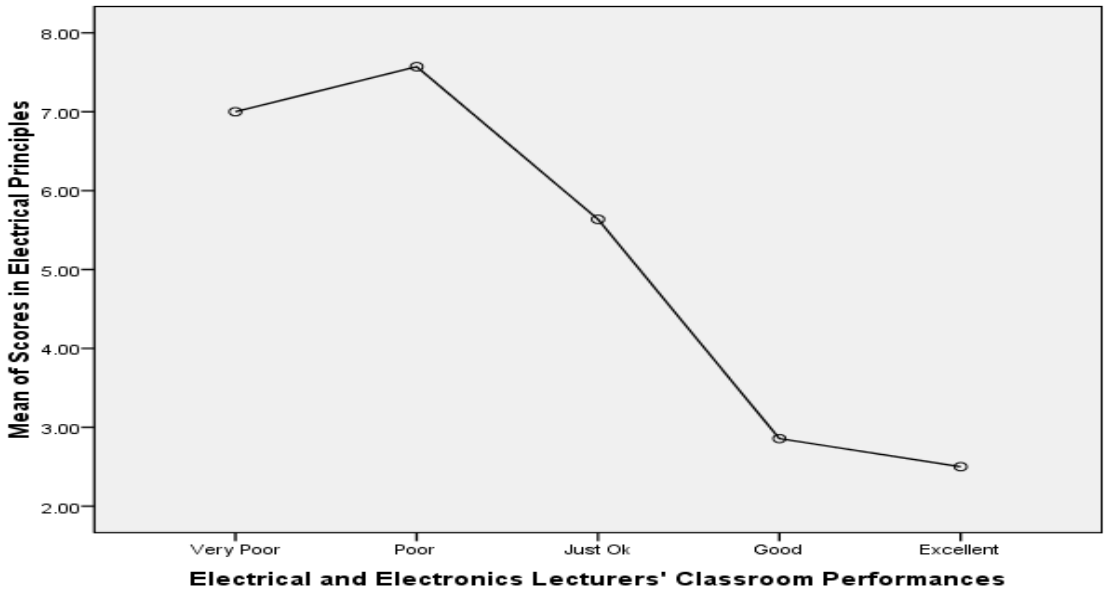

Figure 4.5: Graph of Scores in Electrical Principles verses Lecturers Performances

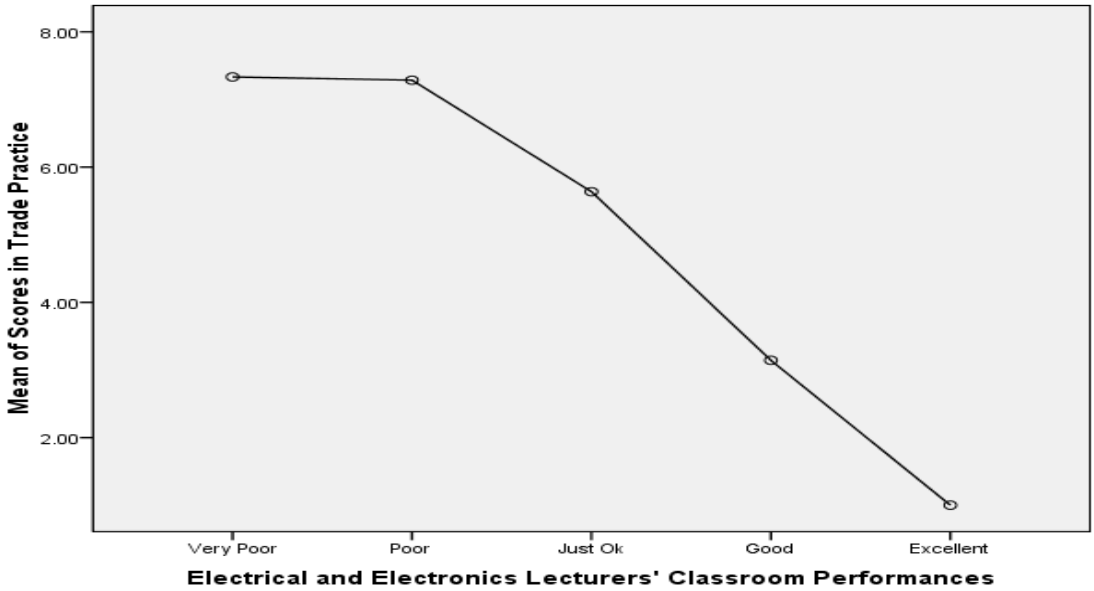

Figure 4.6: Graph of Scores in Trade Practice verses Lecturers' Classroom Performances

4.11 Interviews to the Principals on how the Lecturers Performances Affects the quality of training

The opinions of principals were also sought on how the lecturers' classroom performances affected the quality of Electrical and Electronics technicians training through interview schedules. Consequently interview schedules were prepared towards the same. The aims of the interviews were to get the perceptions of the school principals on how the lecturers' classroom performances and their classroom deliver affected the quality of technicians training.

4.11.1 Results from Principals of Public TVET Institutions

Amongst the two (2) public TVET institutions visited, one (1) had eight (8) Electrical and Electronics Engineering lecturers employed by the T.S.C and two (2) employed by B.O.G on part time basis totaling to ten (10) lecturers. Amongst the eight (8) T.S.C employees, six (6) were Bachelor's Degree holders while two (2) were Higher National Diploma holders. Amongst the six (6) Bachelor's Degree holders, two (2) were pursuing Master's Degree on part time basis. The two (2) B.O.G lecturers were all Bachelor's Degree holders. In the second institution, Electrical and Electronics

department had a total of eight (8) lecturers with six (6) Teachers Service Commission (T.S.C) lecturers and two (2) Board of Governors (B.O.G) lecturers. All of the eight (8) lecturers were Bachelor's Degree holders.

The two (2) principals were of the opinion that the performances of the lecturers in Electrical and Electronics department were above board basing their reasoning on the previous year's Kenya National Examination Council (KNEC) results. One further added that the Board of Governors (B.O.G) lecturers' classroom performances are slightly higher compared to their Teachers Service Commission (T.S.C) counterparts. That probably could be attributed to the contractual form of employment given to Board of Governors (B.O.G) lecturers renewed entirely on performance basis. However the two (2) principals were of the opinion that research and innovation is very low amongst the lecturers. Apart from the normal daily routine, the lecturers rarely do unique things within their areas of specialization in the colleges that could be quantified as an innovation.

4.11.2 Results from Principals of Private TVET Institutions

A total of four (4) private TVET principals were interviewed concerning the lecturers' classroom performances in private TVET institutions. In all the four (4) private TVET institutions, none had Teaches Service Commission (T.S.C) employees leave alone lecturers. This was however expected as private TVET institutions are entirely private businesses owned by individuals or groups of individuals with an aim of making profit like any other business. Amongst the four (4) private TVET institutions visited three (3) had no Electrical and Electronics Engineering departments while one (1) had very ill equipped department in terms of facilities and lecturers.

In all the (four) 4 institutions, all their employees were part-timers with exception of the receptionist, administrators and the principal who mostly doubled as the owner of the businesses. For that reason the employers in private TVET institutions were the proprietor(s) of the college. In the Electrical and Electronics wing, most of the lecturers were University graduates that have taken between 0–2 years from the year of their graduation. This was attributed to the fact that at that point in time, they had

not been absorbed by the Teachers Service Commission (T.S.C) which was their main employer. A few lecturers were Diploma holders in Electrical and Electronics Engineering with no pedagogical or teaching skills.

On classroom delivery, the Degree graduates were always above board while their Diploma counterparts without instructional skills were always below average. Nevertheless at the end of the day, other factors such as facilities, motivation/ incentives would always negatively impact on the performances at Private TVET institutions. According to three (3) respondents, the mastery of content, classroom delivery and competence of lecturers with Diploma in Electrical and Electronics Engineering were always wanting.

4.12 Conclusion from the Third Research Question

Having organized and evaluated the results from the questionnaires, results from the interview schedules with the TVET principals and the null hypothesis which was developed from the research question, the researcher consequently concluded that the Electrical and Electronics lecturers' classroom performances slightly affected the quality of Electrical and Electronics technicians training in TVET institutions. In private TVET institutions, the lecturers' classroom performances ranged from Poor to Just Ok while in public TVET institutions, it ranged from Just Ok to Good. This could have slightly affected their scores in Electrical Installation Technology, Electrical Principles and Trade Practice as pointed out by the ANOVA results. It is evident that the better the lecturers' classroom performances, the better the performances of TVET graduates.

From the principals' interview results there were very high chances that the Poor performances in private TVET institutions might have been caused by other factors other than the lecturers' classroom performances. Nevertheless, it was therefore concluded that public TVET institution lecturers generally perform slightly better than their private TVET institutions counterparts.

4.13 Effects of Motivation of Lecturers on the Quality of Technicians Training

The research question was "does the availability of motivation/incentives of the lecturers affects the quality of Electrical and Electronics technicians training?" The opinions of the lectures towards their incentives, motivations, reliefs, payments and allowances, working conditions, further studies and job satisfaction were sought through questionnaires and classified in two (2) ways.

The first classifications of questions were in the following manner:

i. Very Poor (labeled as VP)
ii. Poor (labeled as P)
iii. Just Ok (labeled as JO)
iv. Good (labeled as G)
v. Excellent (labeled as E)

Very Poor responses mirrored undesirable attitudes while affirmative attitudes were regarded as Excellent. These were in regard to whether the availabilities of incentives/motivation affected the quality of training of technicians graduates. Other intermediate responses were Poor, Just Ok and Good.

The results were as follows:

Table 4.14: Showing Statistics of Motivation of Lecturers in Public Institutions

	Very Poor	**Poor**	**Just Ok**	**Good**	**Excellent**
Valid	5	5	5	5	5
Missing	0	0	0	0	0
Mean	.60000	2.4000	5.4000	2.6000	1.0000
Median	1.00000	2.0000	5.0000	2.0000	1.0000
Mode	1.000	2.00	5.00	2.00[a]	1.00
Std. Deviation	.547723	1.14018	1.14018	1.34164	.70711
Minimum	.000	1.00	4.00	1.00	.00
Maximum	1.000	4.00	7.00	4.00	2.00
Sum	**3.000**	**12.00**	**27.00**	**13.00**	**5.00**

In this section, a total of twelve (12) lecturers were interviewed with a set of five (5) questions in each questionnaire. From table 4.14 above, most of the respondents said that the incentives/motivation of lecturers in public TVET institutions were Just Ok with twenty seven (27) responses. This was followed by Good responses with thirteen (13) responses. The least responses were that the incentives/motivations were Very Poor with three (3) responses.

Accordingly the incentives/Motivation in public TVET institutions ranged from Just Ok to Good**.** Since their incentives/motivations were above average, their performances in classroom were also expected to be high hence producing highly qualified graduates. This was because a well-motivated lecturer produces better results compared to a less motivated lecturer. However we could not authentically conclude at this stage that incentives/motivation affected the performances until $H_0 4$ was analyzed.

Table 4.15: Showing the Statistics of Motivation of Lecturers in Private Institutions

	Very Poor	**Poor**	**Just Ok**	**Good**	**Excellent**
Valid	5	5	5	5	5
Missing	0	0	0	0	0
Mean	12.6000	15.6000	3.8000	2.6000	1.4000
Median	12.0000	18.0000	3.0000	2.0000	1.0000
Mode	12.00	18.00	3.00[a]	2.00	1.00
Std. Deviation	6.84105	4.92950	2.16795	1.51658	.89443
Range	18.00	12.00	5.00	4.00	2.00
Minimum	6.00	9.00	1.00	1.00	1.00
Maximum	24.00	21.00	6.00	5.00	3.00
Sum	**63.00**	**78.00**	**19.00**	**13.00**	**7.00**

In this phase, a total of thirty six (36) lecturers were interviewed with a set of five (5) questions in the questionnaires. From table 4.15 above, most of the respondents alleged that the incentives/motivation of lecturers in private TVET institutions is poor with seventy eight (78) responses. This was followed by Very Poor responses with sixty three (63) responses. The least responses were that the incentives/motivations were Excellent with seven (7) responses.

Thus, the incentives/motivation in private TVET institutions ranged from Very Poor to Poor**.** Since their motivations were below average, their performances in classwork were also expected to be below average hence producing half-baked graduates or students with low morale in their trade. This was because a well-motivated lecturer produces better results compared to a less motivated lecturer. Nonetheless, this could not be accurately ascertained until $H_0 4$ was analyzed. The second classifications of questions were in the following manner:

i. Strongly Disagree
ii. Disagree
iii. Neutral
iv. Agree
v. Strongly Agree

Strongly disagree responses reflected a negative attitudes while positive attitudes were regarded as Excellent. These were in regard to whether the availabilities of incentives/motivations of the lecturers affected the quality of training of technicians graduates. Other intermediate responses were Disagree, Neutral and Agree. The results were as follows:

Table 4.16: Showing the Statistics of Motivation of Lecturers in Public Institutions

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
N	Valid	15	15	15	15	15
	Missing	0	0	0	0	0
Mean		.6000	1.8667	3.6667	4.5333	1.3333
Median		.0000	2.0000	4.0000	4.0000	1.0000
Mode		.00	1.00	4.00	2.00	1.00
Std. Deviation		.73679	1.45733	1.04654	2.35635	.81650
Range		2.00	4.00	4.00	7.00	3.00
Minimum		.00	.00	2.00	1.00	.00
Maximum		2.00	4.00	6.00	8.00	3.00
Sum		**9.00**	**28.00**	**55.00**	**68.00**	**20.00**

Here a total of twelve (12) lecturers were interviewed with a set of fifteen (15) questions in each questionnaire. From table 4.16 above, most of the respondents that is sixty eight (68) responses agreed that there were incentives/motivation of lecturers in public TVET institutions. These were followed by those who were neutral with fifty five (55) responses. The least responses were those who strongly disagreed that there were incentives/motivations with nine (9) responses in public TVET institutions. Thus, from the responses, incentives/motivation ranged from Agree to Neutral. Since their motivations were above average, these were expected to be replicated on their classroom performances hence producing high quality technicians' graduates. This could not however be ascertained at this stage.

Table 4.17: Showing the Statistics of Motivation of Lecturers in Private Institutions

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
N	Valid	15	15	15	15	15
	Missing	0	0	0	0	0
Mean		13.8000	15.0667	3.9333	1.8667	1.3333
Median		15.0000	16.0000	2.0000	2.0000	1.0000
Mode		11.00[a]	17.00	1.00	2.00	.00
Std. Deviation		5.04551	3.19523	3.76955	1.30201	1.17514
Range		19.00	9.00	10.00	5.00	3.00
Minimum		5.00	10.00	.00	.00	.00
Maximum		24.00	19.00	10.00	5.00	3.00
Sum		**207.00**	**226.00**	**59.00**	**28.00**	**20.00**

In this section, a total of thirty six (36) lecturers filled the questionnaires with a set of fifteen (15) questions in each. From table 4.17 above, most of the respondents that is two hundred and twenty six (226) responses disagreed that there were incentives/motivation of lecturers in private TVET institutions. These were followed by those who strongly disagreed with two hundred and seven (207) responses. The least responses were those who strongly agreed that there were incentives/motivation with twenty (20) responses in private TVET institutions.

Thus, from the responses, the lecturers' reactions on incentives/motivations ranged from strongly disagreed to disagree. Since their incentives/motivation was below average, these were expected to be replicated on their classroom performances hence producing low quality technicians' graduates. However such conclusions could not be made on the raw data before analyzing $H_0$4.

4.14 Analysis of $H_0$4

The null hypothesis was "there is no relationship between the availability of motivation/incentives to the lecturers and the performance of graduate technicians". In order to analyze this null hypothesis, One-way Analysis of Variance (ANOVA) was used. This was because there were more than 2 mean scores to be compared at once. The results were as shown below:

Table 4.18: Showing the Statistics for Scores against the Motivation of Lecturers

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Scores in Electrical Installation Technology	Strongly Disagree	2	7.5000	.70711	.50000	1.1469	13.8531	7.00	8.00
	Disagree	13	6.6154	1.04391	.28953	5.9846	7.2462	5.00	8.00
	Neutral	6	4.3333	2.16025	.88192	2.0663	6.6004	1.00	7.00
	Agree	7	3.7143	1.79947	.68014	2.0501	5.3785	2.00	6.00
	Strongly Agree	2	2.0000	.00000	.00000	2.0000	2.0000	2.00	2.00
	Total	30	5.2333	2.14449	.39153	4.4326	6.0341	1.00	8.00
Scores in Electrical Principles	Strongly Disagree	2	7.0000	.00000	.00000	7.0000	7.0000	7.00	7.00
	Disagree	13	7.0769	1.18754	.32936	6.3593	7.7945	4.00	8.00
	Neutral	6	4.6667	1.50555	.61464	3.0867	6.2466	2.00	6.00
	Agree	7	3.5714	1.81265	.68512	1.8950	5.2479	1.00	6.00
	Strongly Agree	2	1.0000	.00000	.00000	1.0000	1.0000	1.00	1.00
	Total	30	5.3667	2.31164	.42205	4.5035	6.2298	1.00	8.00
Scores in Trade Practice	Strongly Disagree	2	6.5000	.70711	.50000	.1469	12.8531	6.00	7.00
	Disagree	13	7.1538	.98710	.27377	6.5573	7.7503	5.00	8.00
	Neutral	6	4.8333	2.22860	.90982	2.4946	7.1721	1.00	7.00
	Agree	7	3.0000	1.73205	.65465	1.3981	4.6019	1.00	5.00
	Strongly Agree	2	1.5000	.70711	.50000	-4.8531	7.8531	1.00	2.00
	Total	30	5.3000	2.42331	.44243	4.3951	6.2049	1.00	8.00

From table 4.18 above, there were two (2) lecturers who Strongly Disagreed with the availabilities of incentives/motivation, thirteen (13) who Disagreed, six (6) who were

Neutral, seven (7) who Agreed and two (2) who Strongly Agreed with the availabilities of incentives/motivation. The table also gave the mean scores and standard deviations for each group with the given availabilities of incentives/motivation.

In Electrical Installation Technology, the highest score (2.0000) occurred when the lecturers strongly agreed about the availability of incentives/motivation. This denoted a distinction. In Electrical Principles, the highest score (1.0000) occurred when the lecturers strongly agreed about the availability of incentives/motivation. Again this denoted a distinction. In Trade Practice, the highest score (1.5000) occurred when the lecturers' opinions were strongly agreed about the availability of incentives/ motivation denoting a distinction.

The researcher therefore concluded that the highest performances of students occurred when the availabilities of incentives/motivation of Electrical and Electronics lecturers were highest (Strongly Agreed). Table 4.18 also lists the standard error, 95% Confidence Interval for the mean for each group and the range of scores for each group.

Table 4.19: Showing the Test of Homogeneity of Variances

	Levene Statistic	**df1**	**df2**	**Sig.**
Scores in Electrical Installation Technology	2.960	4	25	.039
Scores in Electrical Principles	2.509	4	25	.067
Scores in Trade Practice	1.647	4	25	.194

From table 4.19, in Electrical Installation Technology, p=0.039, in Electrical Principles, p=0.067 and in Trade Practice, p=0.194. In all the 3 scores, the p-value exceed alpha (either 0.05 or 0.01). The researcher therefore moved on to the next step of analysis process.

Table 4.20: Showing the Results of ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
Scores in Electrical Installation Technology	Between Groups	77.028	4	19.257	8.545	.000
	Within Groups	56.339	25	2.254		
	Total	**133.367**	**29**			
Scores in Electrical Principles	Between Groups	106.996	4	26.749	13.940	.000
	Within Groups	47.971	25	1.919		
	Total	**154.967**	**29**			
Scores in Trade Practice	Between Groups	114.774	4	28.694	12.919	.000
	Within Groups	55.526	25	2.221		
	Total	**170.300**	**29**			

From table 4.20, in the Sig. box, in Electrical Installation Technology, the p-value was <0.001. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis. In Electrical Principles, the p-value was <0.001. Thus at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis. Finally, in Trade Practice, the p-value is <0.001. Thus again at either alpha (0.05 or 0.01) the researcher rejected the null hypothesis.

Consequently the researcher therefore concluded that there were relationships between the availabilities of motivation/incentives to the lecturers and the performances of technicians. It was clearly evident that the higher the availability of incentives/motivation the higher the performances.

The write ups were as shown below:

a. Score in Electrical Installation Technology- $F(4,25)=8.545, p<0.001$
b. Scores in Electrical Principles- $F(4,25)=13.940, p<0.001$
c. Scores in Trade Practice- $F(4,25)=12.919, p<0.001$

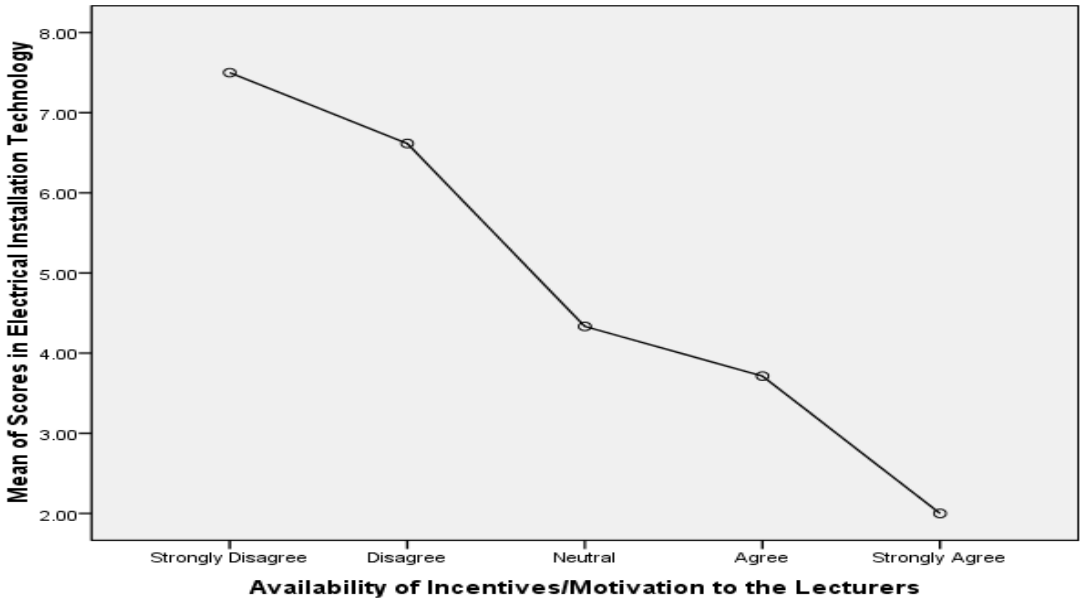

Figure 4.7: Graph of Scores in Electrical Installation Technology verses Motivation

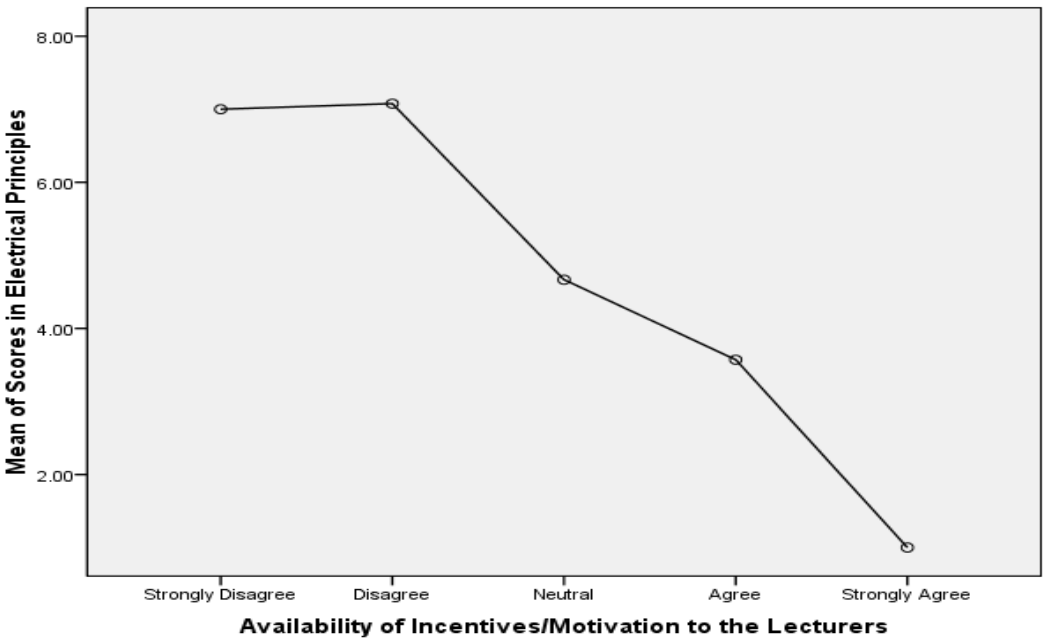

Figure 4.8: Graph of Scores in Electrical Principles verses Motivation

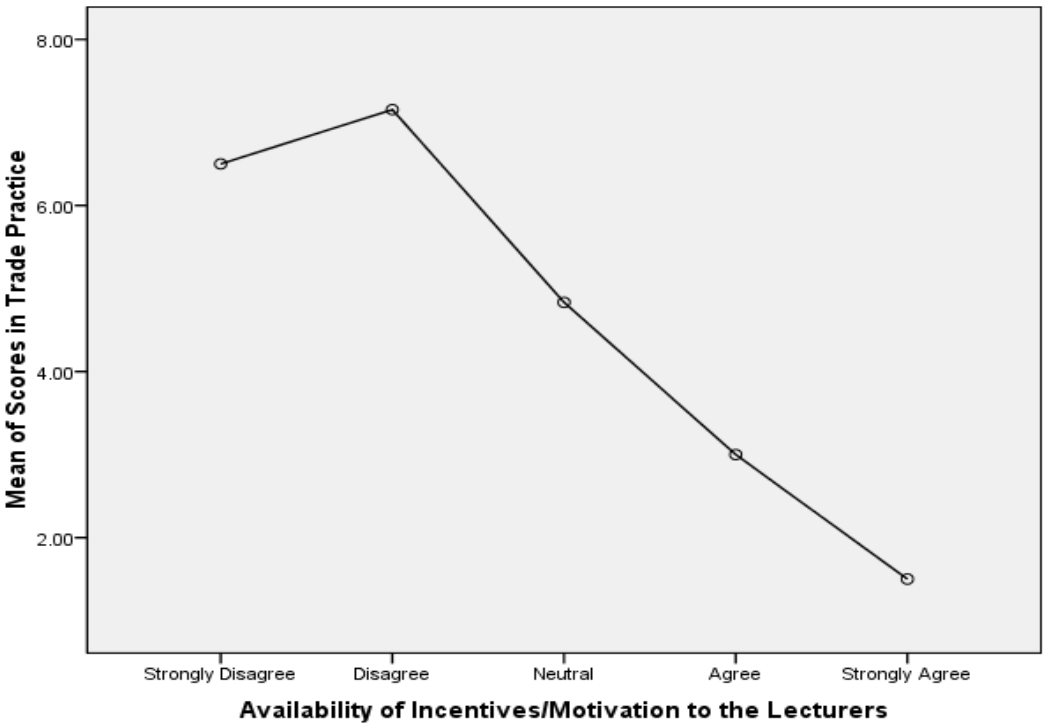

Figure 4.9: Graph of Scores in Trade Practice verses Motivation

4.15 Interview Results of the Principals on how Motivation affects the Quality of Technicians Training

The principals' opinions on how the availabilities of incentives/motivation affected the quality of education were also sought. Therefore the interview schedule questions centered on issues relating to incentives such as housing, promotions, allowances, dismissals and study leaves. The following were their responses.

4.15.1 Responses from Public TVET Institutions Principals

The two (2) public TVET institutions principals were in agreement that incentives/motivation played a very pivotal role in any educational process. They further attributed that it was actually supposed to be compulsory in the educational sector rather than optional.

In the two (2) public TVET institutions, averagely the working hours for the Teachers Service Commission (T.S.C) lecturers were 18-24 hours per week as set by the T.S.C regulations. However, for the Board of Governors (B.O.G) lecturers the working

hours were as low as twelve (12) hours or as high as thirty six (36) hours depending on the number of pending units. All the B.O.G lecturers were enumerated per the number of hours taught. The class sizes ranged from 22-57 depending on the intakes. The number of hours a lecturer teaches is very important as it determines the remaining hours a lecturer has for research work and innovations in his/her area.

Apart from teaching, the lecturers also engaged in Extra Curricula activities such as sports, drama and TVET exhibitions in the two (2) public TVET institutions. These extra curricula activities are usually good motivators as they normally attract monetary rewards as already discussed in the literature review. Apart from the Board of Governors (B.O.G) lecturers who hopped from one College to another in search of greener pastures, none of the lecturers were dismissed, resigned or transferred for the last 5 years on the time the data were collected. In fact it was a Teaches Service Commission (T.S.C) regulation for lecturers to work in a station for a minimum of 5 years from the time of their employment before any transfer can be initiated.

On housing, none of the lecturers were housed within the premises of the two (2) colleges and they commuted every morning to their working stations. One (1) of the institution had staff quotas though with few houses. Priorities were thus given to administrators and that was why none of the Electrical and Electronics Engineering lecturers was housed within the college premises. However future plans were underway to have all their staff housed within the institution. In the other institution, none of the lecturers were housed within the institutions. Nevertheless the two (2) principals pointed out that the T.S.C lecturers normally received house allowances in addition to their salaries to cater for housing. This in effect was a good motivator to these Teaches Service Commission (T.S.C) lecturers. The Teaches Service Commission (T.S.C) lecturers also received medical allowances, transport allowances, family reliefs and maternity allowances amongst other benefits in addition to their salaries. The Board of Governors (B.O.G) lecturers were neither housed within the institution nor paid any allowances.

On promotion, the two (2) principals pointed out that it was a very important motivator to the lecturers. It was however supposed to come when there were new

positions to be filled. This entirely comes from the employer which was the T.S.C. Consequently over the last 5 years none of the lecturers in Electrical and Electronics Engineering Department had been promoted to new positions. It's however worth noting that there were movements of lecturers from on job group to the other.

The study leave were strictly given to lecturers who advanced their studies on educational courses only. No lecturers were to be given study leaves if they were to pursue further studies in other fields apart from Education according to T.S.C regulations. This was a little bit demotivating as other lecturers would have wanted to advance in other fields such as Engineering or even business courses.

In conclusion the two (2) principals were of the agreement that incentives/motivation of lecturers was essential in performance and they do it as often as possible. However they further pointed out that some motivational aspects were beyond their scope. All things considered, they agreed that it should be taken a notch higher.

4.15.2 Responses from Private TVET Institutions Principals

A total of six (6) private TVET institutions principals were interviewed on the subject matter relating to incentives/motivation. They were all in agreement that it was very important in the educational sector. However, due to financial constraints and their urge to make more profit and expand their businesses territories, they rarely practice it though they appreciated its importance.

Amongst the six (6) private institutions researched on, none housed their lecturers within the college premises. They neither had plans to build staff quotas nor did they pay their lecturers house allowances. The Electrical and Electronics lecturers were purely part-timers who were only seen in the College premises when they had classes. Their terms of engagement were purely on the number of contact hours and therefore did not engage in any other Extra-Curricular Activities. Most of these Electrical and Electronics lecturers were freelancers who taught in more than one college with an aim on increasing their income bases. One (1) principal further added that the turn-over rate of their lecturers was so high to an extent that housing them within the

institution was almost impossible. According to one (1) of the respondents, their turn-over rate was very high with some getting dismissed just after a month.

All the six (6) private TVET institutions did not give their Electrical and Electronics lecturers study leave. Moreover they neither promoted their lecturers nor increased their lecturers' salaries. This was however expected within the private TVET institutions. The incentives/motivational aspects in private TVET institutions were therefore none existent despite its importance. Apart from their trivial salaries pegged per hour, they neither got any allowances nor relief. This could be one of the greatest contributing factors to the low performances of private TVET institutions' trainees.

4.16 Conclusion from the Fourth Research Question

Having systematized and appraised the results from the questionnaires, results from the interview schedules with the TVET principals and the null hypothesis which was developed from the research question, the researcher concluded that the incentives/motivation of lecturers was a very important aspect in their classroom delivery which in turn affects the quality/performances of students. For instance, the highest performances in the three (3) subjects occurred when there was neutral availability of incentives/motivations while the lowest performances occurred when the lecturers strongly disagreed on the availabilities of incentives/motivation as pointed out by the ANOVA analysis results. Therefore the higher the availabilitity of incentive/motivation, the higher the performances of graduate technicians and the better the quality of their study.

From the interview results, it was clearly evident that there was totally no incentives/motivation in private TVET institutions. This was one of the greatest factors contributing to their dismal performances and low quality of their graduates. The researcher therefore authoritatively concluded that the availability of incentives/motivation in TVET institutions greatly affected the performances/quality of graduate technicians and the higher the availability of incentive/motivation, the higher the performances of graduate technicians and the better the quality of their study.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter covers the summary of the study, the discussion of the results, conclusion suggestion and recommendation for further research. The conclusions in this study were used to answer the research questions that sparked the collection and analysis of data.

5.1 Discussion

The discussions in this chapter are in the order of the research questions that were being studied and the null hypotheses that were being tested. The succeeding sub-topics as a result discuss the results of the four (4) research questions and the null hypotheses that were developed from the research questions.

5.1.1 Mean Scores of Public and Private TVET Institutions

In a bid to further help in measuring the quality of training Electrical and Electronics technicians in TVET institutions, the scores of Electrical Installation Technology, Electrical Principles and Trade Practice of the November 2012 results were chosen. This was because the scores in a subject normally have a high positive correlation with the quality of training. The scores can therefore be used as a pointer to the quality of training the graduates underwent. The three subjects were chosen since they are the core subjects in Electrical and Electronics Engineering.

Going by the mean scores in the three subjects as shown in table 4.2 of chapter four (4) , the researcher easily concluded that the means scores were higher in private TVET institution denoting a low pass and lower in public TVET institutions denoting a higher pass. Consequently from the p-value in all the three (3) scores as shown in table 4.3 of chapter four (4) the researcher rejected the null hypothesis. The researcher therefore adopted the alternative hypothesis hence the decision taken was that there was a significant difference in the mean scores in Electrical Installation Technology,

Electrical Principles and Trade Practice in Public and Private TIVET Institutions. The mean scores in public TVET institution were higher than the private TVET institutions in all the three (3) subjects.

Having investigated and established that there was a significant difference in the mean scores in private and public TVET institutions, the next obligations were accordingly to investigate the factors that might have caused the changes in the mean scores with higher mean in public TVET institutions. From the data in table 4.1 of chapter four (4), each and every research questions and null hypotheses were therefore analyzed in details in the subsequent sub- topics.

5.1.2 Does the Availability of Facilities Affect the Quality of Technicians Training?

To help answer this research question, the null hypothesis developed was "there is no relationship between in the availability of Electrical and Electronics facilities/ infrastructure in TVET institutions and the performances of graduate technicians". The data here were collected using both observations and interviews. The observations involved checking the presence of Electrical and Electronics facilities/infrastructure in the two (2) categories of institutions independently. Amongst the facilities given preference were adequate lecture halls, Electrical workshops, Electronic equipment, well stocked libraries, Electronics Laboratories, Electrical machines, drilling machines, lathe machines and Control Laboratories.

Using interview schedules, the opinions of employers, principals and employed technicians were also sought on how the availability of Electrical and Electronics facilities/infrastructure affected the training of technicians. Employers and employed technicians were specifically very important in this research since their responses were used to measure the quality of performances in the job market which were a pointer to the quality of training.

The Descriptive Statistics set in table 4.2 of Chapter Four (4) showed that the Electrical and Electronics facilities/infrastructure in Public TVET institutions ranged from average (Just OK) to Good while the Descriptive Statistics in table 4.3 of

Chapter Four (4) showed that the Electrical and Electronics facilities/infrastructure ranged from Poor to Very Poor in private TVET institution. The results from table 4.2 of Chapter Four (4) and table 4.3 of Chapter Four (4) were got from the analysis of observation checklists from public and private TVET institutions respectively. Clearly from the analysis, there were better Electrical and Electronics facilities/infrastructure in public TVET institutions than in private TVET institutions. The observation checklists had several Electrical and Electronics facilities which were observed in every institution during the data collection process comprising of lecture halls, laboratories, workshops, drawing rooms, equipment, machines, materials, tools amongst others.

To test the claim that there were no relationships between the availabilities of Electrical and Electronics facilities/infrastructure in TVET institutions and the performances of graduate technicians, the data in table 4.1 of Chapter Four (4) were analyzed. One way Analysis of Variance (ANOVA) was used to analyze the availabilities of Electrical and Electronics facilities/infrastructures and the scores in Electrical installation Technology, Electrical Principles and Trade Practice.

From the ANOVA analysis results, the researcher rejected the null hypothesis and hence concluded that there were relationships between the availabilities of Electrical and Electronics facilities/infrastructure in TVET institutions and performances of technician graduates. The relationships were that the more the availabilities of facilities/infrastructure, the higher the performances as were pointed out in public TVET institutions.

The interviews with the principals pointed out that in any Engineering Course; facilities/infrastructures were a very important aspect of training process Electrical and Electronics Engineering notwithstanding. All the employers interviewed alluded that the performances of graduate technicians from public TVET institutions far outsmarted their private TVET institutions counterparts due to the availabilities of Electrical and Electronics facilities in public TVET institutions. These were in regard to their practical performances in the specific tasks assigned to them in the job market.

The interview of technicians also revealed that there were discriminations of private TVET institutions graduates in the job market as earlier pointed out in the literature review. The technicians who trained in private TVET institutions further pointed out that their inabilities to adequately handle practical during their work were as a result of lack of the necessary Electrical and Electronics facilities/infrastructures in their respective institutions they were trained in.

On this research question, it was therefore concluded that there the quality of Electrical and Electronics technicians training was better in public TVET institutions than private TVET institutions due to better availabilities Electrical and Electronics facilities/infrastructure in public TVET institutions.

The results were in agreement with the findings of MSETTP project in the year 2000. The project found out that the majority of the producers lacked professional training on high levels. It was noted in the project that the Kenyan youths are seeking training opportunities where they receive inadequate training as a result of unavailability of trainers, no training facilities, no training programs and little time available for training (Republic of Kenya, 2000). This sector therefore requires proper facilities and infrastructure to improve on the training and production. The findings concurred with Ray (1985) who showed that designers who have been in the field for a long period appreciate design than novice designers. Cave et.al (1989) novice designers require the basic skills in design and may not appreciate design process in their production of products and services. Therefore, this calls for incorporating design in the school curriculum so that producers are prepared before they join the manufacturing sector.

5.1.3 Does the Lecturers Performances affect the Quality of Technicians Training in TVET Institutions?

This research question was studied using questionnaires administered to the trainees (students) and interviews with the TVET institutions' principals. To help analyze this research question, the null hypothesis developed was "there is no relationship between the lecturers' classroom performances in TVET institutions and the performances of graduate technicians". The questionnaires principally entailed seeking to find the performances of the lecturers in the classroom as gauged by their students.

The use of student questionnaires is one of the most controversial issues in relation to quality teaching. Those who advocate the use of such questionnaires point out that the method is relevant because it collects the opinion of the students, i.e. of those who have the most exposure to the teaching of the lecturers and hence the most accurate idea of its level (Kaplan 1996). Students are also those individuals who are mostly directly concerned and influenced by the teaching level of their Lecturers. Their future careers are at stake (Kwan 1999).

Kwan's survey (1999) indicates that student questionnaires give a relatively accurate report of the teaching quality: Kwan found that some seventy percent (70%) of the variance observed in student questionnaires is directly related to teaching quality, the remaining roughly 30% being biased by factors such as class size, subject and course material. Mc Keachie and Kaplan (1996) set light upon another advantage of the use of student questionnaires that is Students' ratings of teaching may encourage students to reflect on their educational experiences, to develop a clearer conception of teaching that will in turn contribute to their learning.

The interviews were fundamentally concerned with finding out the level of training of the lecturers and also the principal's estimations on their performances in relation to their level of training. The levels of training of lecturers were Master's Degree, Bachelor's Degree, Higher National Diploma and Diploma.

The Descriptive Statistics set in table 4.9 of Chapter four (4) showed that the lecturers' classroom performances in public TVET institution oscillated from Average (Just Ok) to Good while the one set in table 4.10 of Chapter four (4) showed that the lecturers' classroom performances in private TVET institutions ranged from Poor to Average. Comparatively, the two (2) performances were almost at par with Average performances appearing in either case though the performances in public TVET institutions were slightly higher.

To test the claim that there were no relationships between the classroom lecturers' performances in TVET institutions and the performances of graduate technicians, the data in table 4.1 of Chapter four (4) were analyzed. One way Analysis of Variance

(ANOVA) was used to analyze the Electrical and Electronics lecturers' classroom performances and the scores in Electrical Installation Technology, Electrical Principles and Trade Practice.

From the ANOVA analysis results, the researcher rejected the null hypothesis and hence concluded that there were relationships between the classroom lecturers' performances in TVET institutions and the performances of graduate technicians. The better the lecturer's classroom performances the better the results as pointed out by the public TVET institutions.

From the interview schedule with the public TVET institutions' principals, most of the lecturers were employed by T.S.C while just a few lecturers were B.O.G employees with majority of them being Bachelor's degree holders. The principals were of the opinion that the performances of Bachelor's Degree holders and Higher National Diploma (H.N.D) holders were at par and were above average. These were in relation to their students KNEC performances of their respective classes in the years 2010, 2011 and 2012.

None of the private TVET institutions had T.S.C lecturers. Most of the private TVET institutions visited had no Electrical and Electronics Engineering department while just one (1) had very ill equipped department in terms of facilities and lecturers. All their employees were part-timers with exception of the subordinate staff. Normally the employer in private TVET institutions is the proprietor(s) of the college. In the Electrical and Electronics wing, most of the lecturers were University graduates that had taken between 0–2 years from the year of their graduation. A few lecturers were Diploma holders in Electrical and Electronics Engineering with no pedagogical or teaching skills.

On classroom delivery, the Degree graduates were always above board while their Diploma counterparts without instructional skills were always below average. According to most respondents from private TVET institutions, the mastery of content, classroom delivery and competence of lecturers with Diploma in Electrical and Electronics Engineering were always wanting.

On this research question, it was therefore concluded that there the quality of Electrical and Electronics technicians training was better in public TVET institutions than private TIVET institutions due to the better lecturers' classroom performances in public TVET institutions. However, since the lecturers in both public and private TVET institutions generally tend to have the same qualifications, other factors (not researched on) must have contributed to the poor classroom performance of lecturers in private TVET institutions.

The study findings were in agreement with Lundvall and Battese (1999). The mentioned scholars indicated that low level of formal education has a negative impact on the qualities of the products and services produced by the companies.

5.1.4 Does Motivation of Lecturers affect the Quality of Technicians Training in TVET institutions?

This research question was studied using questionnaires administered to the lecturers of Electrical and Electronics Engineering and interviews with the principals of the various TVET institutions. To help analyze this research question, the null hypothesis developed was "there is no relationship between the availability of incentives/motivation of Electrical and Electronics lecturers and the performances of graduate technicians".

The questionnaires principally entailed seeking to find issues pertaining to incentives/motivation such as pay, working conditions, opportunities of upgrading professional qualifications, job satisfaction, housing, allowances, relief and living standards. The interviews were essentially used to get an insight on to the further information from the principals on the subject matter.

The Descriptive Statistics set in table 4.16 of Chapter four (4) showed that the availabilities of incentives/motivation of lecturers in public TVET institution equivocated from Average (Neutral) to Agree while the one set in table 4.17 of Chapter four (4) showed that the lecturers' incentives/motivation in private TVET institutions ranged from Strongly disagree to Disagree. Comparatively, the

availabilities of incentives/motivation in public TVET institutions were much higher than in private TVET institutions.

To test the claim that there were no relationships between the availabilities of incentives/motivation of Electrical and Electronics lecturers and the performances of graduate technicians in TVET institutions, the data in table 4.1 were analyzed. One way Analysis of Variance (ANOVA) was used to analyze the availabilities of incentives/motivation to Electrical and Electronics lecturers and the scores in Electrical Installation Technology, Electrical Principles and Trade Practice.

From the ANOVA analysis results, the researcher rejected the null hypothesis and hence concluded that there were relationships between the availabilities of incentives/motivation of Electrical and Electronics lecturers and the performances of graduate technicians in TVET institutions. The higher the availabilities, the better the performances and showed by public TVET institutions.

On analysis of the interview results, all the principals were in agreement that incentives/motivation plays a very pivotal role in any educational process. They further added that it's actually supposed to be compulsory in the education sector rather than optional. However, due to financial constraints and their urge to make more profit and expand their businesses territories, the private TVET principals rarely practiced it though they appreciated its importance.

In public TVET institutions, averagely the working hours for the T.S.C lecturers were 18-24 hours per week as set by the T.S.C regulations. However, for the B.O.G lecturers the number of working hours depended on the number of pending units after T.S.C lecturers had been allocated. All the B.O.G lecturers were enumerated per the number of hours taught.

Lecturers in public TVET institutions also engaged in Extra Curricula activities while their private counterparts were purely part-timers who were only seen on the college premises only when they had classes. Their terms of engagement were purely on the

number of contact hours and therefore did not engage on any other Extra-Curricular activities.

On housing, none of the lecturers were housed within the premises of the TVET institutions visited though public TVET institutions had future plans for housing. Nevertheless the T.S.C lecturers received house allowances in addition to their salaries to cater for housing. The T.S.C lecturers also received medical allowances, transport allowances, family reliefs and maternity allowances amongst other benefits in addition to their salaries. The B.O.G lecturers were neither housed within the institution nor paid any allowances.

On promotion, none of the lecturers in all the institution had been promoted for the last five (5) from the time of data collection. It's however worth noting that there were movements of lecturers from one job group to the other of T.S.C lecturers. The study leave were strictly given to lecturers who advanced their studies on educational courses only for the T.S.C lecturers while lecturers in private TVET institutions did not get any study leaves.

In public TVET institutions, the T.S.C lecturers were more motivated than their B.O.G counterparts. The motivational aspects in private TVET institutions were none existent at all at all despite their importance. Apart from their trivial salaries pegged per hour, they neither got any allowances nor reliefs. This could be one of the greatest contributing factors to the low performances of private TVET institutions' trainees.

On this research question, it was therefore concluded that there the quality of Electrical and Electronics technicians training was better in public TVET institutions than private TVET institutions due to the availability of better incentives/motivation in public TVET institutions.

Well trained teachers are likely to be better motivated than poorly trained teachers. However, there are widespread concerns that pre-service teacher education in Kenya is too academic and theoretical with the bulk of lecturers having little or no direct experience of the day to day challenges of classroom teaching (Battese 1999). If

teachers are not adequately prepared, this makes much more difficult for them to cope, especially during the early stages of their career, which in turn could have a negative impact on motivation (Battese (1999).

The results were in agreement with the Chalmers' finding of 2007. The results stated that teachers' satisfaction is a good predictor of the quality of their teaching. The measurement of staff experience and satisfaction has received extensive support from the literature as a highly useful indicator but to date has not been widely employed in higher education institutions. A teacher survey to collect information from the personal perspective of teachers, on their working conditions and their working hours and teaching did however take place in Sweden in 2002.

5.2 Observations

The observations in this study stand for factors which were not covered by the research instruments but affect the quality of technician training indirectly. These observations included leadership, poor perception, weak monitoring and evaluation, weak coordination, regulation and fragmented TVET delivery system.

5.2.1 Leadership

Leadership is necessary to sustain improvement in any given organization (Zairi 1994, Taffinder 1995). This is particularly true of improvement in higher education institutions (Kanji and Tambi, 2002). In this case, "effective leadership is about adopting a deliberate approach to decide the strategic direction of the institution" (Osseo-Asare, Longbottom and Murphy, 2005). For instance, university leaders must be actively involved in deciding of what the "teaching-research mix" should be. They must seek new ways to employ the full potential of academic and non-academic staff at all levels of the institution (Osseo-Asare, Longbottom and Murphy, 2005). Leadership has greatly hampered some Public and Private institutions.

5.2.2 Poor Perception of Public and Private TVET Programmes

For many years, TVET in Kenya has been perceived as a career path for those with low academic qualifications and limited prospects for further education and professional development in formal education. To some extent, this impression is created by the public that the primary objective of TVET is to absorb those who either drop out of basic education, do not qualify for secondary education, do not qualify for University admission and in some cases the marginalized youth who want some basic skills for survival. This problem is worsened by the fact that there are limited and/or no entrepreneurial motivation campaigns, and the status of most TVET institutions is relatively low. This has greatly affected the Electrical and Electronics technicians training especially in private TVET institutions.

5.2.3 Weak Monitoring and Evaluation

Non-targeted skills development is one of the major weaknesses of TVET in Kenya. The programmes are mainly supply-driven and are not designed to meet the projected and observed demand of the labour market. There is also no framework for training institutions both public and private to track their graduates in the labour market. This leads to lack of opportunity for trainees to give their feedback on quality of training attained and relevance to labour market, which would otherwise be utilized to review the curriculum and training packages. Tracer studies as a tool to improve the market responsiveness of training programmes is rarely used by TVET institutions.

5.2.4 Weak Coordination, Regulation and Fragmented TVET Delivery System

As indicated earlier, TVET programmes in Kenya are spread over a range of Government Ministries and Organizations. In addition, there is multiplicity of testing and certification standards. This situation has led to weak standardization of training programmes, low cost effectiveness, lack of quality assurance, limited mechanisms for skills needs identification prior to training and limited framework for mutual recognition of TVET qualifications. The diverse nature of TVET management structures and segmentation of training constrains effective coordination within the system. This has not only affected the training of Electrical and Electronics technicians but also other technicians, Technologists and Engineers.

5.3 Conclusions

The conclusions in this study research were based on observations, empirical evidence and results of the research hypotheses.

5.3.1 Conclusions based on Observations

The following were conclusions based on observations made during the research:

1. The availability of Electrical and Electronics facilities in private TVET institutions are very poor.
2. Most of Electrical and Electronics facilities in public TVET institutions are outdated in terms of technology and are not in tandem with the current technology.
3. Most employers of Electrical and Electronics technicians prefer technicians who train in public TVET institutions to their private TVET institutions counterparts.
4. Lecturing as a profession has seriously been abused in private TVET institutions with most lecturers lacking the prerequisite pedagogical skills or the methodology of teaching.
5. Housing in TVET institutions remains a mirage that has never been accomplished in both public and private TVET institutions.

5.3.2 Conclusions based on Empirical Evidences

There were empirical evidences to conclude that public TVET institutions' training of Electrical and Electronics technicians were better than private TVET institutions training. This was in regard to the availability of facilities/infrastructure, lecturers' performance, availability of motivation and the technicians' job performances in public TVET institutions.

5.3.3 Conclusions based on Research Hypotheses

The following conclusions were drawn from the research hypotheses with respect to the comparative study of the quality of technicians training in public and private TVET institutions:

i. The performances of public TVET institutions' graduates were higher that private TVET institutions' graduates on Electrical and Electronics Engineering subjects and also at the industries.
ii. There were better availability of Electrical and Electronics facilities in public TVET institutions than in private TVET institutions which in turn improved the performances in public TVET institutions.
iii. The Electrical and Electronics lecturers' classroom performances were better in public TVET institutions than private TVET institutions thus contributing to high performances in public TVET institutions
iv. There was better availability of incentives/motivation of lecturers in public TVET institutions than in private TVET institutions thus contributing to higher performances in public TVET institutions.

From these evidences and analysis of results it was therefore apparent that the Electrical and Electronics technicians' training was better in public TVET institutions than in private TVET institutions.

5.4 Recommendations

The recommendations in this study were based on the research findings and were geared towards improving the quality of Electrical and Electronics technicians training in the TVET institutions. The recommendations were categorized into three parts; recommendation for the TVET institutions, recommendations for the Ministry of Education and recommendations for further studies related to the present study.

5.4.1TVET Institutions

From the findings of the Research, it was recommended that:

i. TVET institutions should be oriented towards sustainable development. The Electrical and Eletronics technicians training should be geared towards producing not only self- relient graduates but also self employed graduates.
ii. The TVET institutions need to promote public-private partnership amongst themselves. This would facilitate the sharing of the little Electrical and Electronics facilities/intrastructure available within those institutions.

iii. TVET institutions should promote broad access to learning and training and make TVET an instrument of social inclusiveness and cohesion. This will inturn aim to ellaviate the notion of a business perspective in the TVET institutions especially in the private TVET institutions.

iv. TVET institutions should avoid mismatch of resource planning, utilization and processes. This has greatly affected the private TVET institutions where year in year out little or no resources are allocated to the purchasing Electrical and Electronics facilities/infrastructures which are very critical in the technicians training

5.4.2 Ministry of Education

From the findings, quality training of Electrical and Electronics technicians is very crucial in the TVET institutions. In this regard the ministry of Education should do the following to improve the training at the TVET institutions:

i. The Ministry of Education needs to periodically review the Electrical and Electronics Engineering Syllabi with a view of addressing the mismatch in education/training and labor market. This is because it was found out that some practical aspects taught at the TVET institutions are no longer used at the industries while what is needed at the industries currently lacks in the syllabi.

ii. The Ministry should facilitate periodic (regular) upgrade of Electrical and Electronics facilities/infrastructure in the public TVET institutions and also carry out comprehensive quality assurance on the same in all the TVET institutions. The will ensure that the facilities/infrastructures in these institutions are up to date.

iii. Before accrediting any private TVET institutions to offer Certificate in Electrical and Electronics Engineering, the Ministry of Education should comprehensively carry out an evaluation exercise on the availabilities of Electrical and Electronics facilities/equipment and the availability of well qualified lecturers.

5.4.3 Related Further Studies

The present study has revealed that the quality of technicians training is better in public TVET institutions than in private TVET institutions. It has further revealed that the availability of Electrical and Electronics facilities/infrastructure and the availability of incentives/motivation remain low in the TVET institutions even though it's better in public TVET institutions. Hence the study views the following as pertinent to enhance the success in the Electrical and Electronics technicians training in the TVET Institutions:

i. Since the research area covered only one County in Rift Valley Province, there is need to carry out similar research in other regions of the country especially Nairobi County with many TVET institutions for a comparative of research findings.
ii. There should be a study on research and innovation in TVET institutions in Kenya specifically tackling the Electrical and Electronics wing.
iii. There should be a research on the factors contributing to the poor classroom performances of lecturers in private TVET institutions.

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APPENDICES

APPENDIX I

LETTER OF INTRODUCTION

I am a student at University of Eldoret pursuing Masters of Education (Electrical and Electronics Option). Am carrying out a research study entitled ‘A Comparative Study of Public and Private TVET Institution’s Provision of Electrical and Electronics Technicians Training in Kenya. The purpose of this study is purely for academic pursuit. Your help in filing in the questionnaire will be highly appreciated. All information will be treated with strict confidentiality.

Yours faithfully,

Calvins Were Miseda

APPENDIX II

RESEARCH AUTHORIZATION LETTER

APPENDIX III

QUESTIONNAIRE FOR THE LECTURERS

PURPOSE OF THE RESEARCH: Partial fulfillment for the award of degree of Masters of Education (Electrical and Electronics Option) in the School of Education, Technology Education Department of University of Eldoret.

Matters to Note

i. The information given in this questionnaire will be held in strict confidence and will be used only for the purpose of the study

ii. If any of the questions may not be appropriate to your circumstances, you are under no obligation to answer them.

SECTION A: RESPONDENT'S DEMOGRAPHIC INFORMATION

1) Indicate the type of your college by appropriately ticking the box

Public ☐ Private ☐

2) Indicate your gender by appropriately ticking the box

Male ☐ Female ☐

3) Select your age bracket from the choice given (Tick the appropriate box)

Below 18 years ☐ 18 – 25 years ☐

26 – 30 years ☐ 30 – 34 years ☐

Over 35 years ☐

4) How long have you been a lecturer in this college?

Last three months (3) ☐ Last six (6) months ☐

Last one year (1) ☐ Last two (2) years ☐

Last three years (3) ☐

Others, specify……

5) What is your highest level of training?

Craft ☐ Diploma ☐

Higher National Diploma ☐ Undergraduate Degree ☐

Masters ☐ Doctorate ☐

Other, Specify

……

B. SPECIFIC INFORMATION

In this section the study is interested in your view of how the availability of incentives/motivation of the Electrical and Electronics lecturers affect the provision of Electrical and Electronics technicians training. Answer by indicating how the college normally motivates by marking in the appropriate category that best fits your opinion.

The categories are:

1-Very Poor, 2-Poor, 3-Just Ok, 4-Good, 5-Excellent

S/No	Question	1	2	3	4	5
1	My pay as a lecturer is					
2	The working conditions in this college are					
3	The opportunities for upgrading professional qualifications are					
4	Other in-service training opportunities are					
5	My level of job satisfaction over the last five years has been					

For questions 6 and 7, the categories are:

1-Declined significantly, 2-Declined, 3-Remained the same, 4-Increased, 5-Increased Significantly

S/No	Question	1	2	3	4	5
6	My level of job satisfaction over the last five years has					
7	My standard of living over the last five years has					

For question 8 to 22, the categories are:

1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

S/No	Question	1	2	3	4	5
8	Lecturers in Electrical and Electronics department are well-motivated					
9	Lecturers in Electrical and Electronics department have the knowledge and skills to do their jobs well					
10	The working environment at this department is adequate					
11	Lecturers absenteeism is not a problem at this department					
12	Lecturers in this department report to work on time					
13	Lecturers in this department are well-managed					
14	The head of department of Electrical and Electronics Engineering leads by example					
15	Lecturers in this department work well together (as a team)					
16	Lecturers' salaries are usually paid on time					
17	School inspectors regularly visit this department					
18	Lecturers it this department are increasingly motivated					
19	Lecturers transfers are managed well and fairly					
20	Lecturers sometimes come to school hungry					
21	Qualified lecturers are better motivated than unqualified teachers					
22	Female lecturers are better motivated than male teachers					

APPENDIX IV

QUESTIONNAIRES FOR THE TRAINEES

PURPOSE OF THE RESEARCH: Partial fulfillment for the award of degree of Masters of Education (Electrical and Electronics Option) in the School of Education, Technology Education Department of University of Eldoret.

Matters to Note

i. The information given in this questionnaire will be held in strict confidence and will be used only for the purpose of the study

ii. If any of the questions may not be appropriate to your circumstances, you are under no obligation to answer.

SECTION A: RESPONDENT'S DEMOGRAPHIC INFORMATION

1) Indicate the type of your college by appropriately ticking the box

Public institution ☐ Private institution ☐

2) Indicate your gender by appropriately ticking the box

Male ☐ Female ☐

3) Select your age bracket from the choice given (Tick the appropriate box)

Below 18 years ☐ 18 – 25 years ☐

26 – 30 years ☐ 30 – 34 years ☐

Over 35 years ☐

4) How long have you been Student in this College?

Last three (3) months ☐ Last six months (6) ☐

Last one (1) year ☐ Last two years (2) ☐

Last three (3) years ☐

Others, specify……

5) What level are you training at?

Craft ☐ Diploma ☐

Others, specify ……

B. SPECIFIC INFORMATION

In this section the study is interested in your view of how the lecturers' classroom performances affects the performances of Electrical and Electronics technicians training by looking at their class teaching skills, commitment to their work and other engagement with the students. Mark the appropriate category that best fits your opinion.

The categories are:

1-Very Poor, 2-Poor, 3-Just Ok, 4-Good, 5-Excellent

S/No	Question	1	2	3	4	5
1	The lecturer's preparation for class is					
2	How would you rate your lecturer's punctuality to class					
3	How do you assess the lecturer's ability to explain the learning materials					
4	How would you rate the lecturer's syllabus coverage					
5	How would you rate the lecturer's competence					
6	How appropriate are the teaching methods used by the lecturer					
7	How is the lecturer's distribution of course materials					
8	How would you rate the availability of reading materials/ equipment in this course					
9	How do you rate the skills acquired in this course					
10	How would you assess the homework and other continuous assessment techniques used by the lecturer in this course					
11	How appropriate is the amount of work given compared to the grade expected?					
12	Overall, how would you rate your lecturer?					

For questions 13 to 18, the categories are:

1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree

S/No	Question	1	2	3	4	5
13	Does the lecturer appear to be genuinely concerned for student's learning					
14	How do you assess the lecturers willingness to help you outside the classroom					
15	Is the lecturer temperamental in class?					
16	Does the lecturer stimulate your thinking?					
17	Does principal regularly visit this department to solve your grievances					
18	Does the principal regularly observes classes attendance of your lecturers					

APPENDIX V

PERSONAL OBSERVATION CHECK LISTS OF AVAILABILITY OF FACILITIES

In this section the study is interested in your view of how the availability of Electrical and Electronics facilities/infrastructure affects the provision of Electrical and Electronics technicians training in private and public TVET institutions.

The categories are:

1-Very Poor, 2-Poor, 3-Just Ok, 4-Good, 5-Excellent

S/NO	OBSERVATIONS	1	2	3	4	5
01	Adequate lecture halls with enough furniture					
02	Library with well stocked Electrical and Electronics textbooks					
03	Basic Electronics Laboratory					
04	Control System Laboratory					
05	Electrical installation workshop with mounting boards					
06	Drawing room with drawing boards/tables and stools					
07	Electronic Equipment i.e. Cathode Ray Oscilloscope, Soldering iron or Soldering gun					
08	Electrical machines i.e. motors and generators					
09	Drilling machines					
10	Lathe machine					
11	Oxyacetylene gas welding or Arc welding equipment					
12	Consumer Intake Point with Pre-mounted Meters, Cut-outs and Circuit breakers					
13	Well-designed workshops with water points, instructors room and sanitary facilities					
14	Fire-fighting equipment, safety instructions and other aspects of safety					
15	Two functional doors of the workshop, artificial and natural light, air quality of the workshop and temperature					

APPENDIX VI

INTERVIEW SCHEDULE FOR THE EMPLOYERS OF TECHNICIANS GRADUATES

Topic: A Comparative Study of Public and Private Institution's Provision of Electrical and Electronics Technicians Training in Uasin Gishu County.

In this section the study is interested in your view in the differences in performance of Electrical and Electronics technicians from public and private TVET institutions in the job market.

This interview question therefore is to help me collect information from you for purely academic purpose.

1) Average how many Electrical and Electronics technicians are employed in your company?
2) Amongst them and on average how many of them are from:
    a) Public TVET institutions
    b) Private TVET institutions
3) As an employer of Electrical and Electronics technicians, do you have any links with
    a) Public TVET institutions offering Electrical and Electronics Engineering?
    b) Private TVET institutions offering Electrical and Electronics Engineering?
4) Are there any significant differences between public and private Electrical and Electronics technician's graduates in terms of performance?
5) Can you compare the performance of the technicians from private and public TVET institutions in terms of:
    a) Personal characteristics: (Sex, Age, Education/Training, Others)
    b) Single Phase installation
    c) Rewinding, lamination and repairs of motors and transformers

d) Three Phase installation
e) Operation of lathe and shaping machines
f) Operation of welding and grinding machines
g) Installation and repairs of Electrical and Electronics appliances and accessories
h) Ability to work with little or no supervision?
i) Vocational commitment (practical's)
j) Technicians' status
k) Physical and emotional well-being of technicians that is overall health and nutrition

APPENDIX VII

INTERVIEW SCHEDULE FOR THE SCHOOL PRINCIPALS

Topic: A Comparative Study of Public and Private Institution's Provision of Electrical and Electronics Technicians Training in Uasin Gishu County.

In this section, the researcher intends to get further information on how the availability of facilities/infrastructure, the availability of incentives/motivation and the lecturers' classroom performances affects the provision of Electrical and Electronics technicians training in private and public TVET institutions.

This interview question therefore is to help me collect information from you for purely academic purpose.

1) How many members of staff do you have in the department of Electrical and Electronics Engineering?
2) Amongst them, how many are:
    a) T.S.C employees
    b) B.O.G employees
3) Averagely what are the numbers of working hours of each lecturer per week in the department?
4) Averagely what is the class size of each Electrical and Electronics class?
5) Do the lecturers prepare adequately before going to class?
6) How does the department do their marking (external examiners)?
7) Does the department have qualified technicians to handle practical?
8) Do the lecturers in the Electrical and Electronics department hold other extra duties?
9) Are the lecturers in the Electrical and Electronics Department housed within the institution? If not what distance/time do they take to work?
10) What are the student behaviors inside and outside classroom?
11) Does the institution have a modern Electrical workshop?
12) Does the institution have a drawing room with drawing boards?

13) How many Electrical and Electronics student do you currently have?
14)
    a) Has this number increased or decreased over the last three years?
    b) If Yes/No in question 14a above, what are the reasons for this?
15) Do the lecturers have competence/capacity to teach effectively?
16) How adequate is the lecturers training based on their performances?
17) As the head of the institution, how often do you have to closely supervise/manage the Electrical and Electronics lecturers?
18) How effective are the parental involvement/community participation in the Electrical and Electronics department?
19) How do current level of job satisfaction and motivation influences lecturers' behaviors and performances?
20) What is the staffing situation in Electrical and Electronics department (adequate or not adequate)?
21) What is the vacancy rates-level, pattern and turnover rates-level and patterns in Electrical and Electronics department?
22) What are the transfers' rates in Electrical and Electronics department?
23) What are the promotion rates in Electrical and Electronics department?
24) How often do Electrical and Electronics lecturers go for study leave?
25) How frequent are the resignations in Electrical and Electronics department?
26) How frequent are the dismissal in Electrical and Electronics department?
27) Any other vital information?

APPENDIX VIII

INTERVIEW SCHEDULE FOR EMPLOYED ELECTRICAL AND ELECTRONICS TECHNICIANS

Topic: A Comparative Study of Public and Private Institution's Provision of Electrical and Electronics Technicians Training in Uasin Gishu County.

This interview question therefore is to help me collect information from you for purely academic purpose.

1) Which TVET institution did you train in?
    a) Public TVET institution
    b) Private TVET institution
2) Is there any link between your former institution and this company?
3) Are you satisfied with the job?
4) What do you think can be done to increase your job satisfaction?
5) In your own opinion, do you think there are any significant differences between public and private TVET institutions' training of Electrical and Electronics technicians?
6) Did you attend an industrial attachment during your training?
7) Did your institution have well equipped workshop?
8) Were the practical's enough during the training?
9) In your own judgment, were the lecturers effective in the discharge of their work?
10) Would you recommend your friend or relative to do the same course in the same institution you undertrained?
11) Are the skills learned in the college relevant to your job assignments?
12) What challenges do you face while discharging your duties?
13) What policy do you suggest should be adopted for effective operation of TVET institutions?
14) In your own opinion do you feel the training was adequate?

APPENDIX IX

BUDGET

ITEM	UNITS REQUIRED	COST PER UNIT IN KSHS	TOTAL COST IN KSHS
Photocopies of the interview schedules, questionnaires and observation forms	400 pages	10	4,000
Printing costs for the proposal (6 copies). Each proposal is 76 pages times' 6 copies. Binding	456 Pages	10	4,560 500
Stationery (pens, pencils, note books and files) for use during data collection.			5,000
Costs of actual data collection (transport during research)			5,000
Research assistants	2		10,000
Thesis production 150 pages (*10copies)	1,500 pages	10	15,000
Data analysis and consulting a statistical expert to assist analyze the data			15,000
SUB – TOTAL 10% Contingency Other Miscellaneous Costs			**57,060** 5,706 5,000
GRAND TOTAL			**67,766**

APPENDIX X

RESEARCH TIME SCHEDULE

The following research time table highlights a work plan that guided the research process.

ACTIVITY	**August - October 2012**	**November 2012**	**December 2012**	**January 2013**	**February 2013**
Developing Proposal					
Developing the Proposal					
Incorporating corrections after defending the proposal					
Data collection					
Data analysis and interpretation					
Developing research report					
Submission of research report					