

**IMPACT OF PUBLIC TECHNICAL, VOCATIONAL EDUCATION
AND TRAINING INSTITUTIONS' ON ECONOMIC DEVELOPMENT
IN WESTERN KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other institution.



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DEDICATION

I dedicate this work to my late Father Richard Cheroigin, my Mother Albina Cheroigin and The Franciscan Sisters of St. Joseph, Asumbi.

ABSTRACT

Quality Technical, Vocational Education and Training (TVET) has been identified to have played a critical role in enhancing development of various countries. It is on this basis that Kenya earmarked TVET as a vehicle to drive her economic development agenda under envisaged Kenya Vision 2030 of development Blue print. The government embarked on a program of reforming TVET institutions to make them responsive in addressing human resource development needs. However, despite the promised reforms, Training and Development (T&D) processes in Kenya continue being criticized for being rigid and irrelevant to industrial needs, creating a mismatch of skills produced by the training institutions and those demanded by the industry. It is upon this continued criticism that this research was built. The focus of this thesis was to analyze the impact of Public Technical, Vocational Education and Training Institutions on skill formation for Economic Development in Western Kenya. The study focused on courses offered; entry qualification of trainees; infrastructures; teaching-learning resources and qualification of trainers at TVET institutions and how they impact on skill formation for the achievement of economic development in western Kenya. Education Production Function Theory (EPFT) is the theoretical foundation upon which this study was anchored. Correlation research design was utilized in the study. Data was collected from 10 Public TVET institutions and 2 major companies in western Kenya which employ TVET graduates and where Trainees from TVET institutions undertake their practicum. Probability and non-probability sampling techniques were used. Data were collected through questionnaires, interviews, document analysis, and observation schedule. The study yielded quantitative and qualitative data. Descriptive statistics were used for analysis of quantitative data with results presented in tables using frequencies and percentages. Statistical Package for Social Sciences (SPSS) version 23 was used for data analysis. Qualitative data were organized under various themes and analyzed using inferential statistics. This involved running of Correlation and Regression in order to test the relationship between and among variables. The study established that: there was no significant difference between the Courses offered; entry qualification of Trainees; adequacy of infrastructure; teaching and learning resources and qualification of Trainers at Public TVET institutions and achievement of economic development of Western Kenya. The study recommends for; increased enrollment in MINT subjects that are critical for industrialization; hiking of entry grade of students to make TVET institutions attractive to more qualified students; improvement of TVET infrastructures to enhance skill and competence development; provision of adequate resources to support the teaching learning process and enhancement of in-service training of the TVET Trainers to promote development of relevant skills of Trainees. Since the study focused on Western Kenya, similar study of TVET in other regions/countries should be carried out.

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ABBREVIATIONS AND ACRONYMS

EFA	:	Education for All
EPFT	:	Education Production Function Theory
GDP	:	Gross Domestic Product
GoK	:	Government of Kenya
HRD	:	Human Resource development.
ICT	:	Information Communication Technology
KICD	:	Kenya Institute of Curriculum Development
MDG	:	Millennium Development Goal
MINT	:	Mathematics, Information Technology, Natural science, And Technology
PWDs	:	People with Disabilities
RD	:	Research and Development
SD	:	Sustainable Development
SDG	:	Sustainable Development goals
TVET	:	Technical, Vocational, Education & Training
UN	:	United Nations
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
WEF	:	World Education Forum
WRI	:	World Resource Institute

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Quality of human life and protection of the environment have remained at the center of any development agenda including Sustainable Development (SD). However, various countries continue to struggle with challenges of poverty, documented increases in climatic variability, raw material shortages and increase in food prices, global decline in health of the eco system among other issues (United Nations Industrial Development Organization (UNIDO), 2011). The above challenges have drawn global attention aimed at impressing Economic Development agenda in order to address the issues of quality and dignified human life, summed under 17 key areas termed as Sustainable Development Goals (SDGs) (UN, 2015).

The World Commission on Environment and Development (WCED) referred to as the Brundtland Commission, defines Sustainable Development as the process of empowering man with appropriate skills that enable exploitation of natural resources in his endeavors to meet his daily needs without compromising ability of the future generation to meet their own needs (UN, 1987). On the other hand, Food and Agriculture Organization (FAO) of the United Nations (2015), report titled “FAO and the 17 Sustainable Development Goals”, view Sustainable Development (SD) as a triangular interplay of three critical elements; social stability, economic performance and environmental stability. The issue of SD has captured the Worlds’ attention in

the recent past. This has come on realization that the rate at which the earth's natural resources are being depleted and the Environmental degradation associated with man's activities in his endeavor to meet daily needs pose a great threat to the environment. The threats not only present a challenge to the survival of the future generations but also the current one. This implies that for SD to be achieved man's exploitation of natural resources should promote economic development and social development without destabilizing environmental set up.

At the Centre of SD, the level of Country's skill inventory becomes critical. According to the report World Bank youth Summit of 2018 whose theme was "Unleashing the Power of Human Capital", the level country's human resource inventory as reflected by the level of competency, skills and knowledge possessed by her citizens was identified to be critical element in driving development agenda of any country. As such, recommendations at the conference called for prudent exploitation of human resource potential of the youth in order to tap their productivity during their lifespan (World Bank, 2018).

Evidence of Countries that have registered marked level of development trajectories by embracing Technical and Vocation Education and Training point to the fact that quality TVET has ability to enhance transformation of individuals and communities productivity through skill empowerment. Similarly, both the McKinsey report titled "the World *at Work*" of 2012 and the Organization for Economic Co-operation and Development's (OECD)

Better Skills Report (OECD, 2012) affirm that education is critical in enhancement of national development due to its ability to promote functional and analytical ability of individuals. As such, quality education is important in advancement of individuals' skills that are crucial in determination of ability of an individual to penetrate and compete favorably on the labor market.

Contributing on skill formation and productivity, Murgor (2013) observes that skill formation is perilous in development due to its contribution in enrichment of individuals' competitiveness on labor market as well as its ability to lay ground for productivity and innovations. However innovations and productivity come about if there is effective education and training that lays critical foundation for innovative abilities. This implies that innovations accrue from qualitative education endeavors. The importance of education in individual empowerment and survival has made education to be declared as Human Right such that denying one education is same as denial for the opportunity to develop basic life skills that are critical to a more satisfying life (UN, 1948).

Affirming the critical role of TVET in development, World Bank (2017) links the success story of the South Eastern Asian countries' economic development to advancement and support of knowledge-based economies. For instance, Singapore came a head in development compared to industrial tigers such as China, Korea, and India due to her prowess in encouragement and support of knowledge-based economies and promotion of industrial-related skills (Agrawal(2011), Kerre (2011), Yan (2011). At the heart of this industrial

development are revolutionary products of education such as; technological innovations; business incubators; Research and Development (RD) and science and technology parks (UNESCO, 2004).

The International Labor Organization (2017) skill deficiency the main contributor to the youth unemployment more so among the youth of 15-24 age bracket. Skill deficiency has made it difficult for the youth in this age bracket to make movement from schooling to the labor market with the challenge being more pronounced in countries with weak economic growth where overall unemployment tends to be relatively higher. The main victims of slow economic growth and creation of job opportunities are mainly young people and women (ibid). It is on this grounding that emphasis all over the world is now placed on opportunities that tend to promote the access of youth to education opportunities as a way of ensuring their preparation for entry to the labor market.

Buoyed by strides of social economic development achieved by Tiger countries by embracing TVET, skill development has been made a priority area for education policy development and practice more so in less developed countries. For instance, political leaders from different countries Worldwide converged to discuss on how to arrest poverty escalation and to advance eight critical development programs popularly referred to as 'The Millennium Development Goals' (MDGs). In this Conference, TVET was earmarked to play a key role in development of relevant skills to enable these countries achieve the desired social economic development agenda (UN, 2000). The

United Nations Millennium Development Goals identify employability as a key weapon in poverty eradication due to its ability to harness the capacity of people and the firm, which are key ingredients of economic development (MDG1, UN, 2010).

Following recommendations of International and Regional Conventions on Poverty reductions, various African countries nowadays attach a lot of importance to TVET as demonstrated by various Poverty Reduction Strategy Papers (AU, 2007). For instance, Sierra Leone developed a program called “Second Poverty Reduction Strategy 2008-2012” which aimed at empowering youth with employable skills developed through TVET institutions in a program called ‘Youth Action Plan’. As such, TVET reform programs were initiated to promote its relevance (King’ombe, 2011). Similarly, recognizing the importance of TVET on national development, Tanzania established Vocational Educational Training Authority (VETA) whose responsibility was to promote development of skills in line with demands of labor markets (Malle, 2016).

Embracing TVET as a tool for SD, Kenya has identified TVET as a major avenue for skill development as evidenced in her various development plans and government policy documents. When Kenya attained independence in 1963 and the Post-colonial, Kenya saw it appropriate to embark on appropriate TVET programs to equip learners with important skills, as well as transforming the poor image attached to the vocational courses. This was on realization that during colonialism, TVET courses were seen as a reserve for

Africans meant to prepare them into servant hood. This position made many people to associate Vocational Education to academically weak students and failures in the society (Indosh, Wagah & Ogak, 2010).

The first Sustainable Development Goal advocates for eradication of extreme poverty. Kenya as a signatory to International Convention on Sustainable Development Goals embarked on reforming Technical, Vocational Training Institutions (TVET) aimed at ensuring that her citizens are empowered with necessary productive skills that are to drive her poverty eradication agenda. This is in line with SD goal No 4 which recognized quality of Education to be critical in skill development of individuals. When people are empowered with quality skills through Education and Training, then attainment of SD goal No 8 that calls for decent work will be achieved. Through eradication of poverty, Kenya desires to achieve high economic status and high quality life for her citizens by attaining industrialized middle income status by the year 2030 (RoK, 2007). This status was expected to be achieved by ensuring that TVET produces critical human resource for key sectors of the economy that have been earmarked to be critical for realization of envisaged economic development. As a way of demonstrating commitment to TVET, the Government of Kenya has come up with a number of critical policy documents spanning over a period of a decade. For instance, Poverty Reduction Strategy Plan (PRSP) (RoK, 2002), Economic Recovery Strategy Programme (ERS) (RoK, 2003) and Kenya Vision 2030 (RoK, 2007) which put emphasis on the importance of TVET on development. Kamunge report

(RoK, 1988) advocated for Vocational Education which laid the foundation for the components of Kenya Vision 2030.

Kenya's Vision 2030 economic pillar (RoK, 2007), envisages Kenya to have achieved industrial status by the year 2030. Under this state, citizens are supposed to enjoy high quality life. To achieve this dream, the annual economic growth rate of 10 percent was anticipated by 2012 and expected to be maintained or exceeded thereafter. Seven key areas have been earmarked as drivers to this dream. These are: tourism; Wholesale and retail trade; Agriculture and livestock; manufacturing; financial services; oil and mineral resources as well as business process outsourcing/IT enabled services (ITES) (RoK, 2013a).

Kenya's development agenda has the 2018-2022 development program that aims at attainment of decent housing for citizens, affordable health care, food and nutritional security and employment creation through manufacturing (KIPPRA, 2018). Similarly, another development agenda, Kenya Vision 2030 emphasizes on the relevance of education and Training through creation of entrepreneurial competencies. The government aims at using TVET in the provision, coordination and promotion of life-long learning opportunities, training and research for advancement of SD (RoK, 2003). Therefore, Kenya's increased demand for TVET is linked to beside demographic reasons and increased access from free primary and secondary education, government support through measures such as reduction of fees charged and offering of loans to Trainees at TVET institutions.

The Totally Integrated Quality Education and Training (TIQUET) (RoK, 1999) advanced for further responsibility:

a set of generic skills to improve communication, team work with low supervision, embracing use of ICT, promote entrepreneur learning opportunities for graduates...and the power to promote innovation ,creativity, beside as an internal drive to handle problems” problem-solving” (Pg.146-7).

However, various studies have shown that skill development is affected by other key variables among them being the nature of courses offered, initial qualification of students being trained; the state of teaching and learning resources at the training institutions; qualification of trainers as well as the state of infrastructure.

The type of education as determined by the extent to which courses offered influence the degree to which knowledge and technologies can be developed and absorbed (Fizer, 2013). Development of individuals' employability entails equipping them with skills that are in tandem with dictates of the labor industry. The author called for relevant curriculum that puts in view emerging industrial and technological demands of the emerging economy to be offered as a way of addressing skill mismatch.

The key objective of TVET therefore is to ensure that the workforce is empowered with skills that are in line with demands of the labor industry. For instance, when the first industrial board was formed in Singapore with objective of centralizing, coordinating and intensifying industrial training, it recommended for introduction of courses such as, electronics, mechanical

engineering, electrical engineering, metal work, motor mechanics and heavy duty Diesel that were considered to be relevant at that time to Singapore's first Phase of labor intensive economy of 1960's and 1970's (Seng, 2013).

Writing on relevance of courses in economic development, Herbling (2012), established that underinvestment in critical courses that enhance industrialization such electronics and engineering was a major hindrance to Kenya's economic development. The study recommended for investment in technical and engineering courses if Kenya is to attain meaningful economic development. Sang, Muthaa and Mbugua (2011) in their study titled "*Challenges Facing Technical Training in Kenya*" sought to establish the relevance of TVET courses in view of the demands of the labor market. From the study, over 75 percent of the respondents indicated that the courses offered at TVET institutions were irrelevant to the needs of the industry. The study recommended for investment in technical and engineering courses if Kenya is to attain industrial status as envisaged in Kenya vision 2030.

Countries that have registered marked development by embracing TVET have ensured that courses offered are able to address the needs of the industry. For instance according to OECD (2006), countries such as China, Germany, Korea and Mauritius have advocated for adequate linkage between the training institutions and the industry as a way of promoting relevance of TVET. This is normally done by undertaking projection of industrial manpower needs and keeping of comprehensive skills inventory to ensure that training undertaken is always demand driven, a situation that is meant to address the challenge of

graduate unemployment which mainly occurs when supply driven training takes place.

Besides relevance of courses in economic development, the entry behavior of trainees is also a key determinant in the quality of skills developed. Kerre (2010) observe that the ability of TVET institutions to produce quality and standards skills required by the industry is further affected by entry behavior of Trainees who enroll at TVET institutions. Studies done in Egypt, Nigeria, Zimbabwe and Tanzania attest that reduced internal efficiency in these countries is affected by students' challenges among them being poor performance in examinations, a situation attributed to pre-requisite skills and low motivation among students who pursue studies. This is reinforced by low entry requirements for one to pursue various courses at TVET institutions. This could be the reason such countries lag behind in economic development in relation to developed nations such as Korea as they face a challenge of producing competent human resource to meet industrial demands of the economy (Muthaa, 2009).

Ghazlan (2012) in his study titled "Mainstreaming Skills Training: Malaysia's Skills and the Future in Skills Development Pathways in Asia-Organization for Economic Cooperation and Development" observes that, human resource of economically advanced countries such as Singapore have certain key qualities, critical among them being higher education qualifications of trainees. This promotes knowledge development, creativity and innovation, higher skill levels in professional and technical fields, and high productivity.

The study concluded that desired economic development can only be achieved if TVET institutions are able attract highly qualified students and stop being seen as institutions for the academically weak.

According to Singapore Cooperation Programme (2018) Philippine is among countries with the best TVET system in the world since TVET institution attracts Trainees with varied qualifications. The catchments of TVET are primarily Trainees who join the institutions after being shed off at different levels of education system such as undergraduates and primary school dropout who want to enhance their skills in different fields and occupations, unemployed people and the displaced workers who lost their jobs from other institutions through actions such as retrenchment. This has made TVET institutions not to be regarded as institutions meant specifically for academic failures. This situation has made TVET institutions to produce quality and motivated human resource in line with demands of the economy.

The United Nations Millennium Project Task Force (2005) underscored the importance of adequacy of infrastructure in development of skills particularly in application of Science, Technological advancement and Innovation. Technical and Vocational Education and Training is a neglected sector in most developing countries as evidenced by limited budgetary allocations, a situation that results in poor infrastructural development at educational institutions. This situation ends up compromising quality of skill development (Bowen, Moraa & Muriithi, 2000; Nyerere; 2009). They therefore called for adequate budgetary provisions for infrastructures development.

Barret, Travez, Shmis, Ambasz and Ustinova (2019), identify school infrastructure as reflected by classrooms, laboratories, workshops among others to be critical element in Human resource development. Supporting this position, Evoh (2007) observes that though infrastructures such as electricity are key for effective undertaking of programs such as the NEPAD e-school learning, their availability were limited making it difficult to set up e-school project in Africa .This situation was attributed to high cost of infrastructural provision. The author called on African countries to set aside reasonable budgetary allocations for rural electrification and other intervention measures such as solar energy to enable rural communities and schools benefit. However ensuring adequate budgetary allocation to infrastructure in Africa can only be achieved if African Countries seal loopholes that promote wastage of financial resources such as runaway corruption that is prevalent in most African countries, a situation that can only be realized if there is political goodwill.

Teaching and learning resources are critical in creating conducive Learning environment for quality human resource development. However, the quality of learning is determined by how learners interact with such resources. There is need therefore for adequate provision of these resources as failure to do so is likely to hamper effective learning due to poor interaction of students with the environment (Akande, 1985). Technical Education College established in 1992 in Singapore has been known to produce quality graduates due to its approach in training-“Hands on; Minds on and Hearts on” which is attributed to adequate provision of instructional resources (Seng, 2012).

Dasmani (2011) in a study titled “Challenges Facing Technical Institute Graduates in Practical Skills Acquisition in Upper East Region of Ghana” established that deficiency in skill development among TVET graduates was associated to shortage in teaching and learning resources at TVET institutions. This led to large class sizes that compromised teacher- student interactions, hindering the development of desired skills. The study recommended for adequate provision of these resources in order to enhance development of relevant abilities among Trainees.

The government of Kenya (RoK, 2005) acknowledges the role of facilities in skill development. It identified lack of adequate facilities at TVET institutions to be a major barrier to productivity of quality and quantity human resource to Mann various sectors of the economy. In the absence of adequate resources, TVET institutions resort to theoretical teaching even for lessons that have practical component, a situation that leads to development of poor quality skills (Lumuli, 2009). This position is further supported by Afeti (2009) who identifies inadequacy in training resources, outdated training facilities, and shortage of instructional resources and infrastructures as some of the factors that interact to hinder ability of the training institutions to produce adequate and quality human resource to meet country’s development aspirations.

Sang, Muthaa and Mbugua (2011), concur that lack of or obsolete training equipment has compromised the relevance of skills developed at TVET in view of demand of the labor industry. Similarly, Afeti (2009) advocated for

adequate for provision of modern resources at educational institutions as a way of promoting development of relevant skills among learners.

Inadequacy of infrastructure and equipment has been identified as major barriers to effective curriculum implementation in TVET institutions. This is attributed to high cost of their provision (Changilwa, Akala, & Wambua, 2016). They observed that lack of adequate infrastructure deny students adequate opportunities to practice with relevant tools and machines. The study called for engagement with stakeholders to develop strong networks and collaborations as a way of finding solution to these challenges.

However, collaboration of Stakeholders in support of Public TVET programs can only be achieved by building confidence in management of TVET institutions. This is only possible if there is accountability in resources provided such as funding from donors. In a situation where accountability in management of resources lacks, stakeholders' confidence end up being eroded, leading to lack of support for TVET programs.

Trainers are also central in influencing learners' skill development. For instance, the World Bank (2004) study on Regional Skills in Africa attributes the level of qualification of the Trainer to be very important in enhancement of skill development. A well-qualified Trainer was identified to promote quality skills among trainees on the basis of demands of the economy. Supporting importance of the teacher in learning process, an evaluation of teacher training policies in 25 countries, done by Organization of Economic Cooperation and Development (OECD) (2005) in a report titled '*Teachers Matter*' established

that the quality of the teacher is critical in any education system. Qualified teachers are able to impart appropriate skills to learners as they are able to foresee the skills needed in future in an attempt to remain relevant in the ever-changing skills demands. The report called for adequate staffing of education institutions with qualified Trainers as a way of developing quality skills among learners.

A report of UNESCO (1997) titled “*Training of Teachers/Trainers Technical and Vocational Education*”, states that despite geographical, demographic and economic variations among Asia-Pacific countries, many member countries share a number of common problems critical for enhancement of development. Among the problems is quality and relevance of TVET in line with demands of the modern economy. Though the growth projections of Asia are impressive, Poverty has remained one of the main challenges among the member states of the region due to disparity in economic growth. As such, measures undertaken targeted harmonizing the growth levels in different member nations by arresting the prevailing state of poverty. Central to reforms is enhancement of quality of the Trainers and promotion of general relevance of education and training (UNESCO, 1997).

Robertson (2008) identifies qualities that TVET trainers are expected to possess; firstly they are expected to be experts in their professions and disciplines. As such, they are required to have engaged in practice for a reasonable numbers of years as a way of gaining industrial expertise prior to engagement as Trainers. This is aimed at ensuring that trainers have developed

wide experience to facilitate promotion of relevant skills to trainees. Development of Trainer's skill demands for a multi-dimensional approach. These will include: pre-service and continuous engagement of trainers education programs as a way of updating their skills in view of emerging technologies through formal and open learning avenues; flexible trainers training curriculum programs in view of skill-specific needs; linkage of Training with industry ; promotion of continuous and less rigid learning opportunities to enable the trainers to be at par with the needs of higher and wider expectation of the teaching profession; enhancement of Trainers abilities and skills through exposure to evolving technological advancement such as computers; embracing of multi-lingual and communication skills with more emphasis placed on work ethics, importance of team player, the role of values beside other non-technical skills like environmental awareness .

Labour market demands that skills passed to learners are not static, implying that trainers should also upgrade their skills on continuous basis to ensure that they remain relevant. Sandholtz, Ringtaff and Dwyer (1997) contend that learning and teaching during this period of digital growth, climatic variation and knowledge based society has triggered paradigm change in teacher education and practices. They observe that there is accelerated development of technologies that is presenting short life span of technologies that keep being invented. The continuous improvement and development contribute to technological discoveries on a continuous basis, making it hard for retention of skills so far invented. These situation exerts pressure to education systems to be in position of visualizing the type of work that is about to evolve as a well

of preparing learners in advance for skills that will soon be demanded. This is aimed at helping them to remain relevant in a fast ever evolving economic and technological environment. However, Majumdar (2013) observes that this is only possible if trainers are able to impart Higher Order Thinking skills (HOTs) and propagate learning to learn skills aimed at promoting learners adaptability to any work environment that might emerge in addition to present day to day knowledge as part of coping mechanism.

A trainer is a critical element in school environment due to ability to influence quality of the learning outcomes (UNESCO, 2015). Quality of trainers is evaluated on the basis of academic qualification, and continuous profession development. However, despite critical role of Trainers in skill development, the report points to limited academic qualification and lack of continuous professional development among trainers at TVET institutions as a major hindrance to skill development. The report therefore called for opening up pathways for continuous professional development of TVET Trainers as a way of enhancing their relevancy.

Embracing TVET in skill development, Kenya has embarked on reforming TVET institutions as key agents in development of required human resource base to meet country's development aspirations. A Rapid Appraisal (RA) was undertaken on TVET institutions in Kenya in 2003 as the first initiative towards the TVET reform process in order to promote relevance of training process. The objective was to appraise the whole TVET sector to be in tandem with recommendation of 1995 Cabinet decision of grafting a comprehensive a

national training strategy charged with responsibility of development of adequate and competent human resource to promote economic development (Nyerere, 2009). The initiative of RA was aimed at providing ground for data provision for use in grafting of a comprehensive national manpower training program. The study provided data for reforms which include; increasing number of TVET institutions, improvement of infrastructure, provision of electricity, reforming of curriculum to enhance relevance, promotion of Information Communication Technology (ICT), increased capitalization and provision of adequate staffing among other measures (RoK, 2013b). All these measures are aimed at ensuring promotion of access and quality training at TVET institutions.

However, the refurbishing and rebranding of TVET institutions is not enough. Technical, Vocational Education and Training reform is not just on the way things are done. It also entails restructuring of the mindset about the TVET sector considering the negativity that had been associated with it in the past years. If the sector is to be in tandem with emerging labor demands on of global economy, it has to be geared towards flexibility, inclusivity, efficiency and collaboration with the industry in order to enhance its relevance. Similarly, skill development alone may become irrelevant in the drive of development agenda of any country if the economic environment do not absorb the graduates of the training institutions in order to tap on the skills acquired through training. Such graduates may be forced to leave for other countries or remain jobless, a situation that will besides discouraging other potential trainees from undertaking training, turn up to a wastage of resources

pumped in the training. This implies that the relevancy of the training is also pegged on the economy in which the trainees are to work.

1.2 Statement of the Problem

The government of Kenya acknowledges the role of skill development in driving her ambitious development agenda dubbed Kenya vision 2030 (RoK, 2007). Kenya had targeted growth in economy of 10 percent by 2012 and the growth rate to be exceeded or maintained thereafter. The country had also targeted to address the problem of unemployment by opening employment opportunities as part of poverty mitigation measures. To drive the economic development agenda and on the basis of evidence from other developed Countries, Kenya earmarked TVET institutions for development of workforce for sectors that had been identified to be critical for economic development. The sectors were, Agriculture, Construction, mining, Manufacturing and Service sectors. However, there was realization that the TVET institutions in their then state were incapable of producing the human resource with desired skills. It was noted that TVET institutions lacked adequate teaching and learning resources, relevant infrastructure, operated on outdated curriculum and lacked adequate and competent Trainers. As such reforms were initiated aimed at revamping their state. Reforms entailed improvement of infrastructure, provision of electricity, revision of curriculum to enhance relevance, promotion of Information Communication Technology (ICT), provision of adequate quality Trainers as well as teaching and learning resources through increased budgetary provision (RoK, 2013b).

However, despite promised reforms, Kenya's economy growth rate is still struggling at a rate currently below 6 percent against the targeted 10 percent 7 years outside the set deadline. Various studies and government policy documents indicate that un-employment levels continue to rise against shortage of human resource. For instance, Kenya County Facts Sheets (GoK, 2013b) gave poverty Index for Bungoma, Vihiga, Kakamega and Busia counties as; 52.9 percent; 41.8 percent; 53.0 percent and 66.7 percent respectively compared to national index of 47.6 percent. This was occurring at a time when Kenya National Strategy Paper 2014-2018 observes that there was a shortage of 90,000 Technicians 30,000 Engineers, and 400,000 Artisans. Continuous rise in un-employment in the face of scarcity of qualified labor could be a pointer to the existence of deep rooted and seemingly insurmountable barriers in process of human resource development in TVET institutions, an indicator of mismatch in skill development in view of industrial demands. The main objective of the study was to evaluate the state of reforms at TVET institutions and how they were impacting on skill formation for economic development in Western Kenya. The study aimed at making recommendations on areas that needed further strengthening in order to enable the country meet her ambitious development agenda. The study targeted Western Kenya since it was making significant contribution to National poverty index which on average fell above the national poverty levels.

1.3 Purpose of the Study

The study aimed at establishing impact of Public TVET institution's on skill formation for economic development in Western Kenya.

1.4 Objectives of the Study

The objectives of this study include to:

- i) Examine how courses offered in Public TVET institutions impact on trainees' skill formation for economic development in Western Kenya.
- ii) Determine how entry qualifications of Trainees admitted at Public TVET institutions influence trainees' skills formation for economic development in Western Kenya.
- iii) Establish the extent to which adequacy of infrastructure at Public TVET institutions affect trainees' skill formation for economic development in Western Kenya.
- iv) Establish how teaching-learning resources at Public TVET institutions influence trainees' skill formation for economic development in Western Kenya.
- v) Determine the extent to which qualification of trainers at Public TVET institutions impact on trainees' skill formation for economic development in Western Kenya.

1.5 Hypothesis

To realize the objectives set, the following Hypothesis were tested:

Ho₁: There is no significant relationship between courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya

Ho₂: There is no significant relationship between the entry qualifications of the Trainees admitted in Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Ho₃: There is no significant relationship between adequacy of infrastructure at Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Ho₄: There is no significant relationship between the teaching and learning resources at Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Ho₅: There is no significant relationship between the qualification of Trainers at Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

1.6 Significance of the Study

A number of stakeholders stand to benefit from study findings. They include education planners in the ministry of education charged with the responsibility of Policy formulation and implementation; TVET Trainers, Trainees, Principals, HoDs and employers of TVET graduates.

For planners at Ministry of Education study findings on Courses offered and levels of enrollment may enable evaluation of the relevancy of curriculum in

view of the labor market demands. This may provide grounds for reforms at TVET institutions in order to promote employability of TVET graduates. Secondly, information on entry Qualification of TVET trainees and how it was impacting on skill development may enable policy makers to set guidelines on basic minimum entry qualification. Thirdly information on qualification of Trainers may enable the setting of minimum qualification of TVET Trainers to be hired as well as strategies that may be put up to ensure Trainers hired are always equipped with relevant skills.

Trainers stand to benefit from programs that may be initiated to enhance up scaling of their skills as a way of promoting their relevancy. On the other hand trainees stand to gain on quality of skill development through measures that may be put in place on basis of study findings to improve quality of Trainers, infrastructure and teaching and learning resources as this will improve their employability.

Principals, HoDs and employers also stand to gain from the study findings if adopted. First, principals and HoDs stand to gain if on the basis of recommendations; adequate resources are mobilized to ensure provision of infrastructure and teaching and learning resources. This is likely to see their institutions improve in their reputation on basis of provision of quality training. Human resource managers as employers stand to benefit also from the study. Addressing of quality training measures as recommended under various study objectives is likely to see quality graduates produced cutting down on costs that are normally incurred in retraining of TVET graduates

upon employment. Lastly, the study findings may contribute to the enrichment of existing knowledge on TVET and skill development.

1.7 Limitations of the Study

The limitations of this study could have arisen from the fact that various respondents could not promptly respond to the questionnaires and non-availability for interview even on appointment citing busy schedules and too much work loads. This was however overcome by the researchers extending time for them to respond and rescheduling of interviews, a situation that increased response rate to acceptable levels. Secondly some respondents had feared responding to Questionnaire due to the fear of victimization. This was overcome when the researcher assured them of confidentiality of their responses and by advising them not to write any form of identification on the questionnaire. This assurance made them to freely respond on the items on the questionnaire, an aspect that saw the researcher record high response rate.

1.8 Delimitations of the Study

The study was undertaken in Public TVET institutions in the four counties of the western region of Kenya: Vihiga, Bungoma Kakamega and Busia. The institutions that participated in the study were those that had been operational for a period of more than 5 years at the time the study. The study concentrated on key tenets of skill development namely: courses offered; entry behavior of trainees and qualifications of trainers. Respondents were the trainees, heads of departments, principals of TVET institutions in the four counties and human

resource managers of two major companies where most trainees take their practicum.

1.9 Assumption of the Study

The assumptions made for this research were:

- a) The public TVET institutions operate within the framework governed by the same mandate and mission.
- b) Physical and material resources, nature of trainees, nature of trainers and nature of curriculum are major determinants of skill development for economic development
- c) The respondents were honest when filling the questionnaires and when being interviewed.
- d) Public TVET institutions have similar benchmarks on quality, pertaining to training.
- e) The economy of Western Kenya has capacity to absorb all TVET graduates with right skills.
- f) Mean score in National examination is true measure of skills acquired.

1.10 Definitions of Significant Terms

Access is the power for all students to have balanced opportunity in education, without being denied opportunity on basis of their social, economic background or any other basis.

Adequacy of Trainers - refers to the number of Tutors available in a particular institution that enable effective curriculum implementation

Adequacy of Infrastructure: refers to sufficiency of facilities such classrooms, laboratories, libraries among others that provide conducive environment for learning.

Courses - refers to Curriculum which Trainees are exposed to during training process.

Economic development - refers to the way a nation improves the political, economic, and social welfare of its people as reflected by quality of life of her citizens

Entry qualifications of Trainees - refers to prior grade or marks that trainees possess at the time of enrollment in TVET institutions.

Infrastructure - refers to capital structures of the college such as classrooms, laboratories, workshops and Libraries that enhance teaching and learning process

Impact - refers to changes brought about in economic development as a result of skills acquired by Graduates through training at TVET institutions.

Qualification of Trainer - refers to competency/skills held by a trainers which is normally pegged on level of education, training and experience that makes them more effective in discharge of his/her duties.

Skill development - refers to the way through which trainees are imparted with competencies which are deemed appropriate in view of the demands of labor market

Teaching and Learning Resources - refers to textbooks, Software, and other materials that teachers use to assist students meet expectation of learning process based on approved curricula of the Country or region

Trainers - refers to Teachers/Instructors/Lecturers that guide Trainees in the learning process

TVET - refers to those tenets of educational process which besides general education, advance the development of practical skills and attitudes that are relevant to the world of work.

1.11 Organization of the Study

The first chapter deals with introduction of the study presented under; background to the study, statement of the problem, purpose, objectives and hypothesis, significance of the study, delimitation, limitations, basic assumptions of the study and definition of significant terms. Chapter two deals with review of related literature. Literature was reviewed under; Introduction, the concept of TVET, role of skills on economic development and under various topics on the basis of objectives of the study. It also presents theoretical and conceptual framework. Chapter three covers research design; target population; sample and sampling procedure; research instruments and their validity and reliability. It also deals with data collection and analysis techniques and ethical considerations. Chapter four presents data analysis, interpretations and findings followed by chapter five which reflects a summary, conclusions, recommendations of the study and suggestions for further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The aim of this study was to establish the Impact of Public Technical, Vocational Education and Training Institutions' on Economic Development in Western Kenya. This chapter contains review of related literature examined under; Introduction; the concept of TVET, the role of TVET in Economic Development of a Country and on the various topics based on study objectives. Theoretical and conceptual framework underpinning the study have also been provided.

2.2 The Concept of Technical, Vocational Education and Training (TVET) and Skill Development

Technical and Vocation Education and Training (TVET) is a form of education that aims at equipping individuals with productive skills to make them adaptable to ever emerging technological developments. The skills acquired through TVET are critical for enhancement of workers' productivity, occupation integration and competitiveness due to their ability to enhance individuals' income levels and promote individuals' employability (ADB, 2018).

Technical and Vocation Education and Training aims at promotion of skills acquisition and attitudes that ensures the success of individuals at the workplace (Munro, 2007). It mainly focuses on enhancement of equity and access to skill development opportunities and social accountability through

promotion of entrepreneurial spirit. Sonobe, Akoten and Otsuka (2011) observe that TVET comes as a supplement to formal education, by ensuring that individuals are equipped with new methodology in production. This is aimed at improvement in quality of the products or services offered so that an organization or individuals may have competitive advantage over rivals.

Atchoarena and Delluc (2001) define TVET as

.education that majorly entails development of practical oriented competencies, knowledge and attitudes that are essential for performance in a certain field of occupation, business or group of industries.

Affirming the critical role of education in development, World Bank (2017) observes that TVET has been critical in the promotion of social economic advancement of South Eastern Asian countries. This was achieved through advancement and support of knowledge-based economies. For instance, Singapore emerged in development a head of industrial tigers such China, Korea, and India due to her prowess in encouragement and support of knowledge-based economies, promotion of industrial-related skills advancement that correlate with modern and emerging technological advancement (Agrawal (2011), Kerre (2011), Yan(2011)). At the heart of this industrial development are revolutionary products of education such as; technological innovations; business incubators; Research and Development (RD) and science and technology parks (UNESCO, 2004).

Buoyed by strides of social economic development achieved by Tiger countries, skill development has been made a priority area for education policy development and practice in less developed countries. For instance, political

leaders from different countries worldwide converged to discuss measures on how to arrest poverty escalation and to advance eight critical development programs popularly referred to as ‘The Millennium Development Goals’ (MDGs). In this Conference, TVET was earmarked to play a key role in development of relevant skills to enable these countries advance desired social economic development agenda (UN, 2000). The United Nations Millennium Development Goals identify self-employment as a key weapon in poverty eradication due to its ability to tap the resources of people and enterprises which are key ingredients of economic development (MDG1, UN, 2010).

Masson and Fretwell (2009) identify TVET to be critical in enhancement of fairness and access to training opportunities due to its ability to stimulate positive entrepreneurial spirit that enhances lifelong learning. The African Union (AU) had earmarked TVET as an avenue of promotion of individuals’ productivity in order to promote the culture of self-reliance (AU, 2007). As such; it recommended for the fusion of TVET to be part of the general system of education. It was further noted that a large pool of the youth was out of the formal education undertaking, and therefore called for the making of education literacy methodologies and programs that are not formal to be part of national TVET programs. Among the major goals of the Education for All (EFA) program of Action is meeting the education demands of adults and the youth by promoting relevant skill development opportunities through propagation of relevant education (UNESCO, 2000).

The TVET courses are mainly undertaken at Technical Training Institutions (TTI), Youth Polytechnics (YPs), Micro and Small Enterprise (MSE) Trainings National Youth Service Skills Development Centers, National Polytechnics(NP), Institutes of Technology (ITs), Technical universities and other training institutes of various government ministries and private institutions that have been approved by the government (Nyerere, 2009). On completion of the Training, certificates or diplomas or degrees are normally awarded to the graduates depending on the level of Training.

2.3 The Role of TVET in Economic Development

Roodt (2005) undertook a study that aimed at establishing factors that influence growth, job creation, and Entrepreneurship spirit in any nation. The study revealed that determination, technical know-how, communication power, leadership, information-seeking and fiscal abilities of individuals are critical in promotion of self-employment. Since skills development takes place at Training institutions such as TVET and the work place (Wachira, *et al* 2008), TVET as training institutions need to do the training that promotes the acquisition of the above skills among trainees in order to promote their employability upon graduation.

Proper implementation of TVET has been known to enhance individuals' skill development in ways that exceed benefits that accrue to the families as well as individuals through contribution in form of economic growth and reduction of poverty. Nations that have not embraced TVET have been known to experience low levels of skill development and have continued to remain in

bondage of technological retardation, low economic progression, and generally experience limited demand for education (World Bank, 2011).

According to Rogers and Boyer (2006), TVET entails acquisition of practical skills for promotion of self-employment of TVET graduates. The training is undertaken through, Vocational Education (VE), apprenticeship; TVET, careers and technological education. According Palmer (2007), skill enhancement encompasses the promotion of practical competencies, knowledge and attitudes that are key for performance in the labor industry.

The World Bank (2010) points out needed abilities for individuals and economies as ‘competencies that are critical for improvement individuals’ employable prospects and enhancement of countries’ economic growth prospects’. Todaro (2000) traces limitation of any country’s growth prospect to inability to tap skills tied to demographic dividend as a result of failure to promote education and training opportunities. This is what informed the return of TVET back to global educational development agenda after being phased out in the early 1980s when emphasis was geared towards investment in primary schooling. There is now increased number of countries calling for support for advancement of TVET as a way of promoting human resource capacity (UNESCO, 2011).

Alam (2007) observes that an analysis of the influence of skills on economic development reveals that education is not just for individuals’ benefit but also benefits the society. This is attributed to the benefits that accrue from education provision in form of competencies which are demanded for

economic development and generally global competitiveness of any society. For individuals, benefits accrue from investment in education in form of enhanced career path, improved earnings and general quality life. This position is also advanced by Colin (1999) who held that not only does TVET prepare skilled labor of personnel but also provides general education.

Similarly, the report of Asian Development Bank (2008) titled "*Education and Skills: Strategies for Accelerated Development in Asia and the Pacific*" advances the economic and social importance of investment in TVET. The report states that TVET is critical for skills development; increased productivity, poverty alleviation, supports 'physical investment' and promotes initiation of structural and technological changes that promote attraction of foreign investment.

The Republic of Korea on realizing the role of skills possessed by citizens in development began to invest in TVET. This was at the time when manpower supply was unable to meet the needs of labor industry in 1980. This was meant to enhance her labor force to make "a big push" into manufacturing, export, service and construction sector of the economy (UNESCO, 2005). This move came at the time when there was growing appetite for higher education with anticipation for white collar jobs. Therefore expanding TVET was aimed at addressing skilled labor force demands in line with the dictates of the economy while at the same time reducing pressure to universities to enroll more students for studies.

King and Palmer (2006) undertook a study that was aimed at establishing correlation between poverty reduction and skill development. The study established that a skill development can enhance poverty reduction if skills acquired through education and training is capable of promoting social economic well-being of the poor. This is achieved by improving the chances of access to decent work and enhanced earnings. Njonjo (2009) while writing on critical role of skill development on production observes that relevant skills are those skills that promote young people's skills to access work and life learning opportunities, relevant to their needs.

However, the World Bank policy paper on TVET of 1991, states that a country can derive maximum benefit from investment in TVET if the following factors are observed;

- (i) Nature of courses offered should be well timed, modern and in tandem with local and global demand
- (ii) TVET Courses offered must be relevant and in tandem with the needs of the industry
- (iii) Wide curriculum need to be offered in TVET institutions in view of cost demands and labor market forces

A complete developed TVET graduate should be able to have competencies in four critical areas namely: cognitive, social and interaction competencies, physical as well as learning competencies. Cognitive competencies include reading, writing, the use of ICTs and mathematics and while social and interaction competencies are in areas that enhance individuals' social working

relations. Learning competencies enhance relevancy in the area of individual's specialization. However, skill development of TVET has to be tandem with demands of labor industry in order to enhance social inclusion, stability, poverty reduction and SD economic progression.

However, Bennell (1996) warns against offering TVET indiscriminately due to negative implications on national development tied to such move. Benefits from TVET can only be achieved if there is sound labor market information (LMI) and analysis that may lead to promotion of a demand-driven TVET as opposed to supply driven initiative. Labor Market Information and evaluation is important in establishment of needed skills as a way of ensuring the relevance of TVET training. Data needed for planning of training programs need to be current in order to enhance sound development of TVET policy evaluation and programs.

Despite the critical role that TVET plays in promotion of development, skill development itself though necessary is not sufficient for promotion of industrialization and poverty elimination. There is need for establishment of environment that is favorable for stimulation of economic development such as enterprises that are critical in economic growth. Emergence and growth of business enterprises triggers more demand for additional labor which is a market for TVET graduates. However, the development trajectory path taken by the Southeast Asian Tigers give some lessons on best possible alternative strategies necessary for stimulating decent and productive employment opportunities. The central lessons that can be learned from the Tigers is the

need to have an industrial policy that aims at promotion of growth in all sectors of the economy that have employment potential. If an industrial policy is in existence, it is easier for governments to ensure that the supply of skills is in tandem with demand for the same.

Kenya Vision 2030 and Kenya Education Sector Support Programme (KESSP) recognize the importance of addressing discrepancy between skills supplied by the training institutions and the skills demanded by the industry. Mismatch in skill supply and demand has been a challenge in Kenya's endeavor to the realization of improved productivity (Kitaingi, 2003; United Nations Development Programme [UNDP], 2010; Wachira, et al, 2008). Given the huge resources invested in TVET institutions against competing demands from other sectors of the economy, it is critical that TVET institutions produce quality manpower to meet the country's expectation as envisaged in Kenya Vision 2030 (Fretwell, 2003). It is with this mind that Kamunge report (RoK, 1998) advocated for development of education system that promotes relevance of education training as reflected not only by quantity but also qualitative aspects. The TVET training was to ensure promotion of access and quality through social development and equity promotion. A number of authors such as Brown (2002), Stone (2010) and Wagonhurs (2002) are in agreement that undertaking training without establishment of skill needs leads to development of irrelevant training programs which either have negative impact or no impact at all to economic development. As Bennell (2000) and Ziderman (2003) observe TVET training programs are expensive undertaking calling for huge capital investment in view of cost of plants and

equipment needed for effective training. They therefore called for partnership of various states for innovative resource deployment mechanisms, which are essential for the achievement and realization of development of critical manpower for skill development. Therefore failure to develop required skills from training represent a major loss in terms of resources incurred in the training programs.

Ali (2016) observes that establishment of national skills inventory is critical in enhancement of a successful training. Such inventory should reflect available skills and areas of skills shortage which form a basis of projection for the anticipated skill needs, current and future labor demands considering the state of economic and technological development as well as the internal and external pressure that may create competition on available manpower. Ngunjiri (2013) and Tikly et al (2003) identify the country's level of skill development to be very critical in the era of knowledge society. They argue that the level of skill development of a country is evaluated on the basis of skills interlink with elements of training and overall objectives of development.

2.4 Influence of Courses offered in Public TVET Institutions on Trainees Skills Formation for Economic Development

The objectives of any Training should be a product of Training and Needs Analysis (TNA) .This should form a bank of skills inventory which provides guidelines for implementation of effective the training programs (Stone, 2010). A relevant training program should be on the basis of the needs of the

trainees' learning techniques, learning philosophies and the evaluation models to be used (Dresser, 2013).

Any effective training should enhance performance transfer. Transfer performances is defined as measurable behavioral changes in job performance that accrue from training evaluated on basis of performance appraisal systems or job behavior revaluation (Manon, 2017). It entails application of knowledge in circumstances that are unique from one that is not construed (Kitaiinge, 2009). The training may not be regarded as effective if it fails to promote transferability of skills and enhance educational development of an individual (Armstrong, 2009).

Objectives formulation is a critical stage in curriculum design, implementation and evaluation since they are used to define performance standards, training opportunities and standards. Objectives should be on the basis of comprehensive TNA, so that important areas are not left out. However these objectives need regular revisions and updating to ensure that global, regional and national changes are taken care of.

The World Bank (2010), report titled *“Stepping up skills for more jobs and higher productivity”* observe that matching skills demand and supply is one of the current global issues. The issue that has emerged point to the state of prevailing unemployment particularly among the youth, which interestingly co-exist alongside labor shortages. This state is linked to irrelevancy in the training programs.

Amsden(1992) argues that the type of education as determined by the courses offered influence the degree to which knowledge and technologies can be developed and absorbed; hence the capacity of state to put up modern industries to compete in World markets with their goods and services. According to African Union (AU, 2007), most African countries have a large pool of unemployed graduates amidst existence of opportunities for skilled labor, a situation linked to discrepancy between skills supplied and skills demanded.

Several other surveys have revealed situations where prevailing job vacancies where skilled workers are needed. According to the report of Asian Development Bank (ADB) (2014), Viet Nam has continued to experience shortage of skilled workers. A study was undertaken in 2006 by Japanese manufacturing companies in Viet Nam to establish the state of labor market. The study established that most firms were finding it difficult to recruit engineers and middle- management staff. For instance, the period lying between 2003 and 2006, there was an increase of between 37 to 63 percent of firms that found challenges in recruitment of engineers. On the other hand, general workers in manufacturing remained low at 14–20 percent. This state was more pronounced in Viet Nam compared to other Asian countries. This is a reflection of mismatch between available skills and demanded skills. Another study undertaken by Ministry of Labor–Invalids and Social Affairs (MOLISA) in 2007 in Viet Nam found that local firms experienced similar staff skills gaps, particularly for craftsmen. An evaluation of job vacancies on occupational and economic sector, on sample basis of formal business firms

revealed that about two-thirds of the job positions for the economy in general were for craftsmen, where 81 percent in exploitation industries, 58 percent in construction, 85 percent in processing industries, 37 percent in utilities, and 25 percent in services. It witnessed that fields such as, electronics, machinery chemicals, furniture, and as well as textiles experienced marked skill shortages (World Bank, 2008).

A number of reports examining the effectiveness of TVET programs have come to general consensus about the level of effectiveness and efficiency of TVET programs. They have observed that most TVET programs are unviable considering the prevailing demands of the economy as they are outdated, lack adequate funding and are designed exclusive of the input of employers and industry, translating to outdated curriculum that produces unemployable graduates (World Bank, 2008; 2014).

Mismatches between TVET skills development and labor market demands is occasioned by (i) types of courses offered, (ii) skills developed in view of industrial needs, and (iii) practical exposure for trainees. The training programs developed if not anchored on regular and systematic assessment of labor market needs leads to enhancement of skills mismatch (ADB, 2008). Relevance of TVET can only be felt if TVET supply is linked to economic demands. This can only be achieved, if TVET is linked to economic development strategies, a situation that can be attained by matching skills supply with demand.

According to the Asian Development Bank (2014), training programs offered in collaboration with the industry are the most effective in addressing the challenges of graduate unemployment. Bangladesh and Sri Lanka have managed to address the challenge of skill mismatch by having closer collaboration with the industry. This entails recognizing employer limitations, putting up employer involvement in management, and using enterprise linkages to establish Public-Private Partnerships. The report further advances for a flexible training supply, a situation that can be achieved through TVET offering modular content, short-term programs, continuous and lifelong training.

According to Ali (2016), an achievement of an effective training program is possible if there is a skills bank that links the national skills deficits and the anticipated skill shortages in consideration of technological development, economic factors and the internal and external pressures. Ngure (2013b), King and McGrath (2003) opine that skill development is a very important component of ensuring effectiveness of performance in any organization. The performance of any organization is hinged on the extent to which skills development is aligned to labor industry.

A number of nations have embarked on strategies aimed at mitigating challenges linked with skill development. For instance, to ensure relevance of training, countries such as China, Germany, South Korea, Mauritius, and USA undertake projection of future skills demand by undertaking continuous Training and Development Needs Analysis (Kingombe, 2006). Similarly,

China carries out a similar exercise and keeps comprehensive skills inventory which is used to gauge training needs to ensure that the training is demand driven. For South Korea, relevance of curriculum is enhanced through regular surveys of firms and assisted by links with the industry to ensure that the trainings undertaken are in tandem with the demands of labor market.

A study undertaken by the Directorate of Secondary Education titled ‘OECD Review of Vocation Education and Training: Learning for Jobs’ states that global economic competition is hinged on Country’s ability to produce goods and services which is in itself a product of labor force. This is further pegged on multi varied abilities that encompass mid-level trade, technical professionals’ abilities alongside high order performance skills that come with University Education. The study emphasized the need for TVET institutions to put up measures to bridge the gap between students’ preferences and demands of the labor industry through measures such as career guidance to ensure students take courses that balance their interest and needs of the economy.

The Nation Manpower base line Survey Report of 2011 in Kenya opened up high rate of skill shortage in TVET related areas to affirm the position that TVET training was not in tandem with the demands of the labor market. However, the skill gap was wider in the rural and marginalized areas (ROK, 2013). This was evident considering the fact that although there existed large pool of unemployed youths, a constantly growing labor supply and many enterprises in the rural areas were finding it tough to attract qualified workers.

According to Herbling (2012) under investment in courses such as Mathematics, Information Technology, Natural Sciences and Technology (MINT) was viewed as a major hindrance to Kenya's economic development. The courses, which demand for huge capital outlays, have been left to government yet they are most critical for production of skills required to drive the country's desire to industrial status. Trainees who are trained in a demand driven occupations not only acquire the skills which are not only attractive and demanded by employers, but such Trainees also have a chance of being employed for a longer time and be in occupations that will be around for a longer period. This situation has triggered attention on the relevance of trainings undertaken at the training institutions.

Skills deficiencies have been marked to be a more serious challenge compared to deficit for the same (UK Commission for Employment and Skills of 2009 (UKCES, 2009). It has been argued that lack of involvement from potential employers in curriculum development and implementation are partly traced to the mismatch, a pointer to the irrelevancy of curriculum at the training institutions. Another factor that has been frequently mentioned for the situation of high unemployment among the graduates is lack of entrepreneurial training opportunities in the training curriculum. For instance, on realization of skills required during her phase of labor intensive economy of 1960's and 1970's, Singapore introduced several courses in various fields such as mechanical engineering, electronics, electrical engineering; metal works, motor mechanics and heavy duty diesel. These courses equipped the

workforce with necessary vocational skills that promoted labor intensive economy (Seng, 2013).

Courses such use of ICT knowledge promote effective learning and self-development (Brew, 2012). Rapid Technological and economic development in the world have resulted in emergence of knowledge, making it critical that citizens gain the ability to utilize their potential of ICTs in order to enhance their performance. Mansell (2012) notes that the quest for increasing innovations in ICT can be tapped to promote SD and specifically environmental SD goals. As the issue of environmental SD continues to draw international attention, so too is the desire that digital technologies, globally linked networks, and inclusive Internet applications is going to tap ICT innovation through policy programs aimed at reducing the impact on environmental issues.

Obama (2013) identifies introduction of technology in education to be a critical step in promotion of the ideal digital learning. He observed that:

“in a regime when access to information in the world’s is only on press of a button , it calls for the need to bring libraries and education institutions into the 21st century as it is unimaginable to stay in the 19th century while living in a 21st century economy”.

This position is supported by other authors such as Celano and Neuman (2010) and Ottenbriet-Leftwich et al. (2010) who asserted that implementing technology in the classroom ensures that learners are equipped with skills for future survival. This implies that introduction of technology in schools is a critical step in preparing students to develop essential skills to enable them fit

in an emerging technological and economically dependent society. Brew (2012) further observes that fusion of ICT in learning is aimed at familiarizing learners with the use of ICT given the pace at which technology is advancing. In the previous decade, teachers have encountered critical challenges triggered by ICT which has steadily been brought into the classroom. Given the increasing popularity of computers and the Internet, technology is greatly going to alter learning opportunities and teaching approaches, improving human abilities in line with enhanced development dictates. It is in this light that Ghana embarked on a program of her modernizing educational learning programs through introduction of ICTs as a way of enhancing and expanding access to educational opportunities and improvement of general quality of training.

The challenge of having curriculum that was not in line with demand of the labor market could be linked to lack of national skills inventory. This could have assisted curriculum designer to develop a more informed curriculum in tandem with dictates of labor market. The information is also critical in allocating resources to training institutions in order to match demands of labor market and tailor training openings to fill prevailing gaps. These could be achieved through establishment of national skills database through tracer studies in TVET. According to the report of ILO (2015), effectiveness of TVET programs is charged on the basis of its ability to meet lifelong education and training opportunities that enables one to adjust to emerging demands of technological economy.

However, Mansell (2012) observes that studies on development in ICTs depict that there is no straight forward linearity or pre-identified association between advancement in the field of digital technologies and the repercussions for the community. In reality, advancements are determined by the actions and the values of the people as well as communities with divergent stakes. Some ICT discoveries are dropped sideways, while others, for instance the unexpected booming of online social media, promote the development of unforeseen negative changes in organization. Therefore it is critical that the use of ICT should properly be monitored to contain negative consequences associated to it.

Wallenborn (2010) advocated for TVET training undertaking in line with demands of the labor market that are flexible and practically inclined. This is aimed at improving production and promoting labor market perceptions in order to promote skills transfer from training institution to industry. However, there is need for continuous review of curriculum since skill demand on labor market keep on changing. These can be achieved through close partnership with industry to ensure attainment of mutual needs and benefits for parties concerned. Ensuring the employability of trainees originates from guidance and counseling of potential Trainees in selection of courses as a way of ensuring they make informed choices in line with the needs of labor market and their academic abilities. Tracer undertakings which can be used to establish the skill demands of graduates in the industry can prove to be critical for provision of useful guidance information for reforming training programs. These can be achieved through continued development and analysis of market

information with view of projecting the trend that can be used for development of training programs. With such information, the institutions must be ready to act on the basis of the information and plan for enrollments in various courses on the basis of available capacities in term of skills in various sectors of the economy.

However manpower planning based on projection may be a challenge. Manpower planners may not accurately forecast future occupational requirements due to high level of substitutability occasioned by a number of variables such as fast moving technologies and un- predictable fluctuations in social economic productions.

Globalization has led to build up of a tension between advancement of skills for poverty reduction and abilities for global economic advancement in Africa. Although the key purpose of TVET in Africa is geared towards poverty reduction, the promotion of such skills cannot afford to sideline the enhancement of employability and global competitiveness. In a globalizing world economy, the advancement of “industrial” skills is also critical if a country is to favorably compete in global economy. However, deficiency in stock of skills of all categories in Africa and the quest for poverty reduction demands that African nations have to undertake other trend avenues that enhance skill development at different levels of the education pursuance (basic, secondary, tertiary levels), with emphasis being on both poverty eradication and global competitiveness (AU, 2007).

Another aspect of the influence of globalization for TVET in Africa is the infiltration of Africa's markets with cheap inferior technological goods from developed countries with Africa markets being taken as dumping grounds. Due to competition faced by domestic goods against these imports, countries' policies should therefore put into consideration these and other globalization-driven influences in developing TVET programs and courses. Similarly TVET training may not achieve much of intended objectives if it concentrates majorly on supply side without due consideration of demand side. This means that courses and training offered should be in line with labor market demands.

The World Bank(2014) on poverty reduction and Management titled “ Arab Republic Egypt, More Better Jobs: A priority for Egypt “ attributes graduate unemployment to use of outdated curriculum , a situation that is linked to inability of the governments to come up with programs which may have relevance in education training. Johanson and Adams, (2004) observes that failure for trainees to find employment upon graduation does only not represent a waste of time for graduates but it also represent a massive loss of scarce resources employed in the training process. Kamau (2013) links rigid and unresponsive curriculum of TVET in Kenya to inadequate needs assessment (T & DNA), inadequate stakeholder involvement in curriculum design, and deficiency in numbers of qualified staffs at the Kenya Institute of Curriculum Development (KICD). Ngure (2013) advances that proper curriculum planning enhances employability and advocates for the development of skills that correlates with demands of the industry. This means that the curriculum that promotes trainees' assurance of employability is vital.

Similarly, authors such Dalton and Smith (2004) and Kitainge (2003) state that, the appreciation of the role of the training institutions can only be realized after evaluation of how the graduates of these education institutions fit on the labor market. This can only be achieved with proper linkage and development of programs aimed at creating a relationship that enhances their information on the generic skills needed at the industry and incorporating such skills in development and implementation of the Training.

There are key reasons for analyzing any a training undertaking: to determine the relevance of the training, to find out how to improve the training, and to justify why such program should be rolled out (Kirkpatrick & Kirkpatrick, 2005). An effective analysis of the system demands for the feasibility study to assess its overall impact. Manon (2017) observes that the findings of the evaluation exercise are critical for decision-making, arousing discussion, informing employer directions on the program, informing the stakeholders on alternatives and enhancing the relevance of the training programs. The author argues that analysis of the training program such as the nature of courses offered as undertaken in this study helps to avoid the chances of wastage of resources on irrelevant programs.

According to Budría and Pereira (2009), the post-training feedback as provided in this study should form a crucial activity of positively transforming countries training institutions. This is the basis on which this study was grounded.

Winzier (2013), in her address titled ‘advancing the Greening TVET (GTvet) agenda: Issues and challenges’ in UNESCO-UNEVOC Regional Forum on Advancing TVET for Youth Employability and Sustainable Development held Abuja, Nigeria, 17-18 September 2013 observed that; despite Decade of Education for Sustainability Development (DESD), education responsiveness lacks behind the qualification of needs of labor market. She therefore called for promotion of green skills and knowledge by integrating it into existing occupation or replacement of outdated qualification in line with job requirements and emerging green economies-oriented towards economic sustainability, profitability and social inclusion.

2.5 Effect of Entry Qualification of Trainees at Public TVET Institutions on Economic Development

Ghazlan (2012) observes that, the Human Resource (HR) of developed countries such as South Korea have a certain of key qualities, key among them being higher academic qualifications that promote knowledge development, creativity and innovation, high skill levels in technical and professional fields, and high production. The study concluded that desired economic development of any country can only be achieved if TVET institutions are able attract qualified students.

Writing on entry qualification of trainees, Akhomonkan and Raimi (2013) observe TVET institutions have been profiled in most developing countries to be for low academic achievers. This situation that has led to majority of high academic achievers to shun such institutions, hampering development of

quality skills. Affirming the same position, Agrawal (2012) and Ladipo (2013) observe that students who tend to enroll in TVET institutions are generally low academic achievers, a popular consensus that mirror TVET participation in both developing and developed countries. The authors opine that this is a logical inference considering relatively low eligibility requirements and status accorded to TVET options. This is what makes TVET programs in both developed and developing Nations to be seen as a “second class option” for education and training.

However, there exists limited empirical evidence linking academic achievement or ability on influence of TVET participation in economic development. A study undertaken by Agodini, Uhl and Novak (2004) on factors that influence participation in secondary school vocational education in United States established that students with low academic achievement and lower aspirations were more likely to enroll in TVET as compared to otherwise identical students. Tilak (2002) observe that TVET is linked to low status manual and low paying jobs in India. As such TVET has recorded low participation rates due such negative perception. A study undertaken by Aggrawal, Kapur and Tognatta (2011) in India established that irrespective of their academic attainments, students aspire to join careers in fields such as medicine, education and finance as they are viewed to be of high status as opposed to occupations traditionally earmarked by TVET programs.

However low academic achievements in TVET institutions compromise skill development. Nkirina (2010), did a study titled “The *challenges of integrating*

entrepreneurship education in the system of vocational training: An insight from Tanzania's Vocational Education Training”. The study established that trainees’ academic qualifications are critical in promotion of acquisition of skills. A strong grounding in basic skills to do with arithmetic, competency in the language of curriculum delivery influences the effectiveness of any training program. Where such firm foundation is wanting, there is likelihood of problems arising. The study established that TVET students in Tanzania had difficulty in understanding the education materials used in teaching and learning since they had only basic level of education.

Other studies (Bowen et al., 2009; Wallenborn, 2010) have also established that the level of education has an influence on occupational success and upward movement of an individual within the industry, because even if in itself education make one automatic successful worker, workers with literacy and numeracy abilities perform better on comparison. Afeti (2006) and Williams (1980) concur that in West Africa, some training institutions mainly prefer to take on trainees who have attained secondary school level education because of their ability to perform certain tasks. However, ability of TVET institutions to attract more qualified trainees may be a challenge due public perception that TVET institutions are meant for academic failures, a situation that is confirmed whenever results for national examinations such as Kenya Certificate of Secondary Education (KCSE) and Kenya Certificate of Primary Education (KCPE) are announced. The cabinet secretary of Education normally announces that those students who may not have done well should consider joining TVET institutions.

Changilwa et al (2016) in their study titled “Challenges *Facing the Effective Implementation of Artisan and Craft Courses in Catholic Sponsored Community Colleges in Nairobi, Kenya*” found out that low entry behavior of Trainees posed a challenge on effective implementation of the curriculum. However, the situation is contrary in Philippine that are among countries with the best TVET system, where the catchments of TVET are primarily graduates, secondary school leavers and college graduates who wish to advance their competencies in different fields and occupations. According to Augusto (2005), unemployed people and the displaced workers who lost their jobs from other through actions such as retrenchment are also potential clients of TVET institutions.

Kerre (2010) and Muthaa (2009) observe that the ability of TVET institutions to produce quality and standards skills required by the industry is affected by entry qualifications of candidates who enroll at TVET institutions. Studies done in Egypt, Nigeria, Zimbabwe and Tanzania indicate that reduced internal efficiency in these countries is affected by students’ challenges among them being poor performance in examination, a situation attributed lack of pre-requisite skills and low morale of students to study due to the belief that TVET is meant for academically weak students .This could be an indicator why such countries lag behind in economic development as compared to developed countries such as Singapore and Korea as they face a challenge of producing competent human resource. Therefore Meaningful use of TVET in acceleration of economic development in Kenya will only be achieved if TVET institutions will not be regarded as institutions for academic failures.

Ly(2018) states that the ability of TVET institutions to achieve the desired results of development of quality manpower may not come to fruition as long as the parents and their children continue regarding TVET institutions as Training Institutions of last resort.

2.6 Influence of Infrastructure at Public TVET Institutions on Trainees' Skill Formation for Economic Development

According to the theory of infrastructure (Frishch Man, 2005), Public access to infrastructure would help generate value in skill development. The author found out that lack of workshops hinders institutions ability to promote practical teaching which are critical in skill development. Lack of electricity hinders institutions ability to use ICT in the learning including use of other machines such as welding to expose students to practical lessons. It is on this basis that Glickman et al (2004), a renowned Professor and educational author contends that when learners are interrogated on the challenges they encounter on daily basis in the learning encounter, they are most likely to cite the poor conditions of school buildings as opposed to curriculum standards.

Infrastructural facilities such as computers and laboratories are important in the promotion of Information Communication Technology (ICT). For instance, Prensky (2001) observes that incremental access to technology by learners is related to the difference in the ways they learn. Hicks (2011) and Morgan (2014) call the present generation children as digital natives. These children have been born in a society where ICT has already been grounded. Prensky (2001) observes that students learn more when they use ICT so

extensively as opposed to digital immigrants. Digital migrants are those people who do not qualify to be digital natives. The author further asserts that given Digital immigrants have been brought up differently; they have to learn the language of digital natives. Therefore Neuroplasticity, a continuous restructuring of the brain throughout one's life, and hence ones level of cognitive skill development is influenced by the level of exposure to technological use. Smith (2013) refers to anyone who is unable to embrace modern technology as digital captives a situation that affects many teachers who only see ICT as important in promotion of mastery of certain skills and programs. Therefore teachers become digital renegades with continued use of ICT in ways that can change their interaction with their students in the learning environment. This can only happen with availability of adequate infrastructures such as workshops and electricity at training institutions that support the development of appropriate skills.

Blaigh (1998) while contributing to importance of infrastructure in learning observe in a study carried out by American Society of civil Engineers in 2003 that over 75% of country's school system was inadequate to cope with demand, a report that came out when the nation's student's education attainment had remained stagnantly low over the years. Similarly a report prepared by Nation Priorities Project in America in 2000 titled 'Recess is over' noted that students who were in institutions with deficiency in facilities posted 10-17 scores lower compared to their counterparts who were in institutions that had adequate facilities in standardized examination This is a clear pointer of correlation in learning and the state of infrastructure.

Evoh (2007) states that though primary infrastructural facilities are important for successful undertaking of the NEPAD e-school program, the advancement of primary services and the development of infrastructure are critical obstacles of the e-school project in Africa. Infrastructure requirements are expensive and demands involvement of various parties of interest, especially the governments of African nations. The author called for commitment to rural electrification projects to benefit both rural schools and communities.

Writing on importance of infrastructure, Olutola (1982) noted school infrastructures as critical for promotion of academic achievement. However, Bowen, Morara and Muriithi (2000) and Nyerere (2009) state that in most developing countries TVET is a sub-sector of the education that is neglected as evidenced through budgetary allocation, a situation that results in poor infrastructure . In Kenya, underinvestment in training institutions such as Youth Polytechnics (YPs) have resulted in inadequate and outdated infrastructures, a situation that ends up compromising quality training objective(Nyerere, 2009). Therefore TVET graduates end up facing challenges in the workplace due to lack the skills demanded by industry. The author called for provision of adequate infrastructures at TVET institutions as a way of fostering effective skill development.

Beside availability of infrastructure, the state of the infrastructure has critical influence on quality of skill development. Cash (1993) undertook a study in Virginia which aimed at determining the influence of various factors of school buildings on learners' achievement. The study established that where social

economic background was constant, there was significant correlation between learners' attainment and the conditions of the buildings. Similarly Chan (1996) undertook a study which aimed at establishing the impact of physical environment on learners' attainment. The learners' school environment was categorized into three states, namely; Modern Learning Environment (MLE), Half Modern Learning Environment (HME) and Obsolete Learning Environment (OLE). This is beside the basis of age as the base of classification, lighting and air control. The study concluded that learners' achievement was highest in MLE and lowest in OLE. The study concluded that students' achievement is enhanced by modern technological and adaptabilities of emerging advancements. Therefore students' physical environment has ability to enhance or hinder students learning. This means ignoring students' physical environment is same as disregarding the physical difficulties of learning.

Reinforcing the influence of state of infrastructure on learners attainment are Bowers and Burkett (1989) who carried out a study to establish whether the age of the buildings had any influence on learners achievement. The study involved 2 set of learners some who were in buildings put up in 1939 and the second set involved learners who were in some buildings put up in 1983. With all other factors held constant, the study established that students achievement was significantly higher in Mathematics for learners who were in buildings put up in 1983(modern) than their colleagues in older buildings.

The infrastructures put up at TVET institutions should be capable of enhancing access to training opportunities. Marie (2012) states that the concept of access should be anchored on the premise that each and every person is accorded equal access to the built environment without discrimination pegged on ones level of ability. The author further observes that the concept of access can be summed under ability of infrastructures to enhance Reach, Enter, Circulate and Use (RECU) so that an individual is able to be accorded opportunity at any given location to enjoy and participate in any activity within the built environment. On this premise the study endeavored to establish adequacy of classes and other facilities as well as the ability of such buildings such as workshops, libraries, toilets among other structures to enhance RECU to all individuals including persons with disabilities.

According to the Convention of the Rights of the Persons with Disabilities 2006(UN, 2006), every member state of United Nation who is a signatory to the Convention must identify and overcome obstacles and barriers to accessibility to built environment. As such, various countries as signatories have attempted to come with legislation meant to enhance access to opportunities for physically challenged persons in the society. For instance, United States of America(USA) has come up with disability legislation such as Fair Housing Act which called for putting up infrastructures such as ramps, sliding doors, rap rails among other features in old buildings meant to enhance access to old buildings for people who are physically handicapped (Burns & Gordon, 2010).

People who are physically challenged experience a number of challenges in built environment such as absence of standardized ramps and presence of steep stairs which make it difficult for them to access such buildings (Roof & Oleru, 2008). Contributing to challenges encountered by physically challenged Soyinge, Ogundairo and Adenuga (2009) observed that absence of ramps, steep stairs and slippery floors are major obstacles faced by physically challenged persons in Nigeria. Similarly, Gichuru (2012) identified absence of disability awareness campaign to be among the challenges that was hampering realization of the Rights of Persons with Disabilities to both employment and business facilities. Indeed Ochieng, Onyango and Wangah (2013) identified narrow doors, lack of grip rails and high threshold to be among challenges that were adversely affecting Physically Handicapped Persons to access these buildings.

Kenya being one of the Signatories to UN Convention on the Rights of People with Disabilities has put legislation aimed at ensuring the Rights of the Physically Challenged are safeguarded. The Persons with Disability ACT No 14 of 2003 demands that learning institutions take care of the interests of special needs of Persons with Disabilities. A number adjustments had to be done, among them being removal of barriers to free entry and generally creation of disability free environment to enable their access to facilities such as buildings, roads and other social amenities (RoK, 2003).

According to the United Nations Convention on the Rights of Persons with Disabilities (PWDs), Global Population standing approximately standing at

approximately 650 million people, the composition of PWDs stand at about 10% making them to be the largest minority. With such numbers, PWDs are such a large number that failure to address their need as regards to opportunities such as access to education and training would be regarded as greatest violation of Human Right. This study aimed at establishing whether the Rights of Physically challenged were being enforced as regards to the state of infrastructures at TVET institutions.

However, as MacLean and Wilson (2009) observes, politicians and policy makers point to the heavy expenses required to: develop curricula, put up infrastructures, train the required staff and equip classrooms as a discouragement in pursuing TVET training. It was further observed that TVET does not guarantee jobs despite costly resources needed for its provision. Therefore quality TVET development program has demanding financial implications which may be a challenge to developing nations whose low pace of economic growth may not meet such demands considering competing claims from other sectors of the economy. Given the benefits associated with effective TVET programs, it is worthy that sacrifices are made to offer quality TVET training in these countries as school infrastructure is considered a very critical component in quality training.

According to ILO (2015) quality of education and training is a critical supply side factor which influences the demand for education. This implies that the demand for education and training will drop if those who would have been beneficiaries don not see any benefits that would accrue due to lack of relevant resources such as infrastructure in the training. Though the study was not

specifically linked to TVET as opposed to general education, there is documentary evidence linking the theory of positive relationship between education quality and enrolment as advanced by several authors (Tensel, 2002; Birdsall, 1985).

This implies that failure by the government to provide adequate infrastructures at TVET institutions will greatly impact negatively on the governments' ability to meet the bill of rights that advocates for provision of relevant skills for decent jobs as outlined in TVET Strategic Plan 2018-2022(RoK, 2018). As the nation embarks on the journey of attainment of Vision 2030(RoK, 2007) coupled with empirical evidence linking TVET with economic development, There is need to ensure adequate provision infrastructure at TVET institutions. This should be improved continuously in order to be in tandem with ever changing demands of labor industry. This study endeavored to establish not only availability and adequacy of various infrastructures that are critical for skill development but also their state in the study region.

2.7 Influence of Teaching and Learning Resources at Public Institutions

TVET on Trainees' Skill Formation for Economic Development

The report of Meeting of Bureau Conference of African Union in Addis Ababa (2007) indicated that, in most TVET institutions in Africa, the quality of training is wanting due to placement of emphasis on theoretical undertakings and certification at the expense of skill development and proficiency testing. Several Authors and government policy documents (Maringa, 2014; RoK, 2012) concur that quality training demands for relevant

adequate supply of training materials, workshop equipment and practice by learners. Inadequate, outdated training equipment, and shortage of teaching and learning materials are some of the factors that interact to negatively to compromise quality training. In order to ensure quality training process, there is need to have training institutions equipped with adequate modern training resources (Maringa, 2014).

Various studies attest to the fact that under investment in education compromises quality of education training. A Study done by Simona, Elisa and Ama (2014) attest that though Myanmar was among countries with greatest education standards in Asia at independence in 1948, education standards have continued to deteriorate as a result of underinvestment and civil strife with focus being on quantity of degrees and diplomas offered rather than quality of courses, a situation that has led to misfit between skills offered and skills required by the industry.

Kenya government recognizes the critical role of teaching and learning resources in enhancement of quality training. This is best captured under the following statement;

Effectiveness of training entails correlating supply and demand skills. This is however, challenge at all levels . . . quality skill development at various levels has been hindered by inadequate resources as well as institutions: hence majority of the youth have ended up in the informal sector. This problem negatively compromised skill development in view of market demands and has to be corrected for realization of sound economic development (RoK, 2005).

Johanson and Adams (2004) observe that Labor market dynamics have broadened the objectives of TVET from being simply economic to social

aspect, encompassing that of fight poverty and promotion of youth employability. There is a need therefore to expand TVET to increase productive labor and address the issue of infrastructure and teaching and learning resources in Africa that are a barrier to quality training (UNESCO-UNEVOC, 2008).

Changilwa *et al* (2016) identify inadequacy and high cost of equipment as some of the challenges that hamper effective implementation of TVET curriculum as students would have fewer opportunities to practice with relevant tools and machinery. The study called for stakeholders to develop strong linkage with relevant stakeholders and sourcing of adequate funds from variety of organizations in order to provide facilities and teaching and learning resources to enhance skill development.

A similar study done by Makokha (2006) on effects of selected factors on students' performance in clothing and textile industry in selected secondary schools in Nakuru District established that both students and lecturers lacked adequate textbooks and sewing machines to enhance effective training of students. These situations made students to lack adequate practice, a situation that compromised their attainments in examinations. This situation is a clear pointer that teaching and learning resources are critical in any learning process.

A study done by Lumuli (2009) titled "Internal Efficiency Measures in Promotion of Access and Completion Rates in Public Secondary Schools of Bungoma South District, Kenya" found out that lack of adequate teaching and

learning resources make trainers to compromise training as they resort to adaptive mechanism such teaching practical subjects theoretically, compromising attainment of quality HR to meet desired level of development. The study called for provision of adequate teaching and learning resources to ensure that teachers do not compromise the quality of teaching due to lack of appropriate resources.

Writing on the role of facilities in teaching, Balogun (1982) contended that no Proper Science Education training can take place in absence of equipment for teaching. Such facilities enable the learner to acquire problem-solving skills and scientific attitudes that are key ingredients for enhancement of job performance. However the ability to benefit from resources provided depends on the users of resources provided bringing into sharp focus entry qualification of students in TVET institutions.

The level of access to ICT at the TVET institutions in relation to the industry has a key influence on the skill acquisition. A study done by Kitainge (2003) established that trainees at Australian TVET institutions get better training in comparison with their Kenyan counterparts, a situation that was linked to disparity in quality resources available in the two countries training institutions. Subsequently, the Kenyan graduates required more on the job training due to inadequate exposure during their training while in colleges. There is need to ensure that TVET institutions in Kenya are equipped with necessary resources that leads to development of appropriate skills in order to

cut down on the burden borne by employers who have to retrain the graduates upon employment.

Brew (2012) in the study titled “Enhancement of ICT for Accelerated Development” in Ghana found interlinking departments for faster transfer of information and application software were most important resources that needed urgent attention to assist trainees in order to promote faster development. The study established that provision of ICT resources in learning institutions leads to development of skills that are critical for accelerated development.

Several authors (Ottenbreit-Leftwich, Ertmer and Tondeur (2016); Wighting, 2006; Maninger & Holden, 2009; Passey *et al.*, 2004) attest to the importance of availability of technological resources enhancement for students learning. For instance, they observe that availability of Computers generally enables learners to undertake corrections easily on their work leading enhanced and more creative writing and presentation. Technology has the ability to promote student’s understanding and advanced thinking, promote communal teamwork due to collaboration among students while undertaking projects as well as other learning undertakings. Similarly Trainers may use ICT to develop a constructivist teaching and learning avenues such provision of guidance to students to undertake their own studies as opposed to traditional lecture in front of the classroom (Donovan, Hartley, & Strudler, 2007, Lowther et al., 2003).

Wighting (2006) observe that Students have greater confidence when they take their own control in learning through the use of computer in comparison with their dependence wholly on books .Computers therefore enable teachers to promote development of a constructivist environment to advance favorable individualized learning encounter for students.

However, the level or quality of skill development will be influenced by the level of students' access to internet and computers. This brings into focus the ratio of students to computers. When students are restricted by technological access, their ability to succeed is hindered by resources in their institutions of learning. For instance, exposure to internet creates many learning openings for any learner anywhere by offering more opportunities for students as they are able to undertake personalized learning at un-dictated pace as is in the case of traditional schooling (The White House, 2013).

Mouza (2008) undertook a study that had classes with varied computer sharing ratios in New York. The study was among learners in different social economic status schools. Learners in urban institutions had a 1:1 laptop ratio while learners in the comparison lower social economic status were using two computers for the entire class. The study found that teachers in classes with a higher number of computers mainly utilized computers for more challenging undertakings while the teachers in the other tended to utilize them for low level activities. However, the attitude of both groups of students was positive towards computers. This emphasizes the importance of computers in learning.

Recognizing the importance of access to computers on learning, Maninger and Holden (2009) observed that the 1:1 student to computer ratio is gaining momentum across the United States with motivation being the belief that ability to maximize technology capabilities is highest when every student has not only equal but also consistent access to a technology device. The initiative of 1:1 ratio was being undertaken by United States as an initiative to provide every seventh and eighth grade student and teacher in the state with the laptop (Zheng, Warschauer, & Farkus, 2013). Indeed Papert (1993) observed that full potential of technology in classroom could only be fully exploited once student to computer ratio is 1:1. It is hoped that provision of greater access to technology help bridge differential gap among schools (Cheema & Zhang, 2013; Zheng, Warschauer, & Farkus, 2013).

Various studies attest to the influence of low student to computer ratio on achievement of skills. DeGennaro (2010) revealed how low social economic status in Massachusetts that had historical record of poor quality grades in areas of student achievement, grades, graduation, and parental involvement recorded improved performance upon implementation of 1:1 laptop initiative. The 1:1 initiative was used to offer courses to students and parents, the school leaders as well as teachers, a situation that saw overall improvements in education attainments for disadvantaged students.

Similarly, Dunleavy and Heinecke (2007) researched on an at-risk middle school which had progressively been implementing 1:1 technology for a period of over four years aimed assisting their student's improve test scores

and prepare them for a technological world. The students classified in the study as 60% free and reduced lunch while 87% of students were minorities. With implementation of only one team per grade level 1:1 technology at this school, Dunleavy and Heinecke (2007) compared data of laptop users and non-laptop users. The researchers were able to establish that there is a significant positive difference in achievement of science of students that undertook the 1:1 program compared to their counter parts who did not. However, there was no significant difference in achievement of Mathematics for these same groups.

However, there are a number of studies which discount the fact that introduction of computers enhances students achievement. For instance, a study taken by Malamud and Pop-Eleches (2011) reveal that introduction of computer vouchers in Romania led to decline in students' examination attainment. Similarly, a study undertaken by Leuven, Lindahl, Oosterbeek, and Webbink (2004) in the Netherlands established that offering computer subsidies to disadvantaged schools had negative effects on student achievement with worst hit being girls. Angrist and Lavy (2002) conducted a study in Israeli schools with aim of ascertaining the level of student's achievement after several schools had acquired significant number of computers. The study established that there were no significant differences on learning achievement as measured by test scores of students in standardized exam for students involved in the program.

Warschauer, Knobel, and Stone (2004) did a study with aim of establishing the use of technology by students from different socioeconomic catchments. The

study revealed that no matter the student, many teachers mainly focused technology use on mastering the software or completing the assignment as opposed to promotion of mastering of academic objectives. The study further revealed that Teachers in study institutions struggled in their endeavor to effectively implement technological use into their daily lessons. As such, the study established that negligible evidence linking the influence of use of technology in schools with varied social economic inclination as a basis of bridging inequality gap in performance between schools of high social economic status and low economic status.

It can therefore be interpreted that though the ability to use computers as a technological device of promoting learning among students is not questionable, its ability to achieve the same is determined by its availability as determined by student to teacher ratio and the competency of teachers to effectively use the same. It is a must the teacher has to master the language of digital natives if the teacher has to be relevant, a situation that calls for teachers' continuous professional development. Anything contrary to the above negates benefits which supposed to accrue from the use of technology as a device that enhances learning. By assessing the state of teaching and learning resources at TVET institution this study intended to establish the extent to which the state of teaching and learning resources had impacted on skill development of TVET trainees in view of skills needed to develop the country's development aspiration. This study suggests ways to enhance relevance of TVET training.

2.8 The Impact of Qualification of Trainers at Public TVET Institutions on Trainees' Formation for Economic Development

A trainer is a very important 'agent of change' in a knowledge society (Fien & Wilson, 2005). This position is further supported by many development organizations like UNESCO-UNEVOC, arising from debates on the need for innovations and quality that is key in meeting the challenges of demand by knowledge based society.

The World Bank (2017) misalignment in education system is attributed to inability of an organization to raise adequate resource that is critical in implementation of Organization Programs. When such situation occurs; delivery levels follow below what is possible. In learning, Trainers are critical element that determines ability of any education system to successfully implement its Curriculum. Promotion of learning to a large extent is at the discretion of the Trainer. As such, the quality of the Trainer as reflected by the level of qualification is critical.

Korthagen, Hoekstra, Brekelmana, Beljard and Imantis (2009), stated that the Trainers abilities, expertise and knowledge must be carefully evaluated, stated and communicated so that their role may be more rightly understood and appreciated in the industry. Robertson (2008) identifies qualities that TVET trainers are required to have; firstly they are supposed to be experts in their professions and their discipline and secondly they are expected to have been practitioners in the field of expertise for a reasonable duration as a way of gaining of industrial exposure before gaining status of Trainers. These

measures are meant to ensure that trainers have developed wide to propagate appropriate skills to trainees.

Smith (2006) affirms that Trainers' mode of teaching, interest in their area of specialty and their quest to update their capacities have an impact on the quality of skill development. Every Trainer has a preferred teaching approach which impacts on learners in different ways while Hinton (2004) observes that since Trainers are the foundation of any education institution, they are called upon to have professional development on a continuous basis as a way of empowering themselves not only with existing skills but also to learn new ones based on dynamic labor industry. Contributing on the role of the trainer in skill development, Donovan and Darcy (2011) established that the variable ranked to have greatest impact on quality of skill development. This was on a five scale perception index that consisted; commitment, relating the training content to the job needs enthusiasm, preparation, and feedback.

According to report of UNESCO (1997) titled "*Training of Teachers/Trainers Technical and Vocational Education*", though demographic and economic variations prevail among Asia-Pacific countries, they share a number of similarities in problems and face many common issues which are key to improvement of the quality of TVET geared towards a competitive edge in view of the demands of the 21st century economy.

The Asian Development growth projections 1996/97 by Asian Development Bank (ADB), shows that the developing Asia, during the previous decade recorded marked and impressive economic growth rate of 7.9 percent in 1995

though with wide disparities and variations in economic attainment among recorded the nations. However, level of Poverty was a major issue faced by many of the nations in the region. As such, policy interventions were started with view of converging economic development of the nations and eradicate poverty in the region with Trainers and innovations in education and training being earmarked as key ingredients for driving productivity, an ultimate engine of socio-economic growth (UNESCO, 1997).

Sandholtz, Ringtaff and Dwyer (1997) contend that teaching and learning in the regime of digital development, climatic variability and knowledge society has presented paradigm change in teacher education and practices. They observe that there is rapid movement in technological development is presenting short life cycle of technologies that have already been invented. Increasing improvement and advancement have led to continuous technological inventions, making it hard to retain skills so far invented. Such technological trends points to an increasing pressure for the need for education systems to foresee the type of work that will soon come up and equip trainees with technologies that are yet to be invented and prepare them adequately by imparting them with the abilities that would enable them fit in a fast changing and demanding work environment.

Technological and educational developments have significant impacts on TVET education. Continuous technological improvement and advancements has made it difficult to retain skills applicable in various field of work putting pressure to education system to keep up the pace of skill development

(Majumdar, 2013). This demands for TVET educators and policy makers to develop necessary and most relevant teaching and learning approaches that ensure effective adoption and integration of TVET into classrooms. This can be achieved if Trainers undergo Training in relevant education training institutions and industry.

International Labor Organization (ILO, 2000) identified qualities of good Trainers as those possess a number of professional qualities, tangible and intangible. Trainers should have a high degree of functionality in ICT and technological processes; wider knowledge in one or more subjects; understanding and power to share larger economic and social realities with Trainers and ability to impart generic learning skills to Trainees. They should have capacity to operate as team; research, reflection and shift as necessary in teaching practice; and capacity to be innovative and impart innovation in learning process. These are qualities which can be attained through continuous professional training of Trainers.

According to UNESCO (2002), Evolution of ICT has brought revolution in teaching demanding that trainers to be conversant with technologies that could be applied and expand their experience. Trainers who are constantly embracing ICTs or other form of technology backed by instruction should take the role of educational designers who must clearly understand the full power of technologies parallel to fusion of content critical to the context of learning environment.

Affirming this position, Wan and San (2010), state that the desired changes and innovations demand for high quality Trainers who are able to fit to these variations. They should also advance quality training since the new practices have created impact upon the knowledge and skills in the precarious nature of employment. Increasingly the implication of changes in the world of work points towards the need for life-long learning that can be achieved through recurrent Technical and Vocation Education. Such direction calls for continuous professional development of Trainers and mode of curriculum delivery. These include; having capacity building programs for TVET educators to equip them with knowledge on emerging needs of the world of work aimed at building their mind set in terms of education approaches, Structures ,Technical Systems and innovative teaching and learning methods. This can be achieved through; having regular industrial attachments, coaching and mentoring programs, professional development and innovations.

According to De Grip (2000), technological advancement can make certain jobs to disappear entirely. For example, introduction of robotics and automation in the manufacturing led to the disappearance of manual operation and human interface. When unemployment sets in, a worker's employability becomes key for labor market participation. The emergence of new technologies and their rapid spread have been changing the mix of opportunities and skills required in the workplace (World Bank, 2011). The report further states that the introduction in the United States led to decreased in the demand for skills in routine and manual tasks, while posting increased need for "new economy" abilities such analytical and interpersonal skills for

dealing with non-routine circumstances. The speed at which an economy adjusts to technological changes is determined by a number of variables, evidence which reinforces the view that more learned individuals will adjust faster to change, and by doing so, positively contribute to technological catch-up. There is therefore need for education institutions to adjust faster to changes to enable learners acquire skills that are in tandem with dictates of labor market, a situation that demands frequent upgrading of skills of trainers.

Therefore training institution needs to be at par with the technological development of the county and world at large to ensure that the courses and the contents reflected in the curriculum are relevant and effectively delivered to the Trainees. This is aimed at ensuring that changes brought about by technological changes do not render workers irrelevant when they occur. This is only achieved with relevant curriculum and competent Trainers.

The report of UNESCO (2015), identify a Trainers to be a key in-school variable influencing the quality of trainee learning. In TVET situation this extends to all settings such as schools, workplace learning, training and mentoring. However, the report reveals that Education pathways for TVET Trainers underdeveloped and continuous professional development is not adequately in place to enable Trainers update their qualifications in line with emerging and innovative modes of delivery. Trainers' working and social conditions as well as job openings for building up the right abilities including modern pedagogical approaches and IT tools are among the most ignored avenues in many TVET policies. All studies in the framework point to this as

a key barrier to quality TVET provision. The report called on opening up pathways for continuous professional development of TVET Trainers as a way of enhancing their relevancy.

According to Arrington and Lowe (2008) the current worker may select advanced educational openings on the basis of economic competition, vocational and personal development, professional growth and job enrichment. The shifting focus to life-long learning, calls for TVET training providers to gear themselves to take advantage of a population that requires continuous training outside the normal institutional programs. They observe that this will promote accessibility to training opportunities of trainees who would otherwise not have opportunity to enroll in training programs. In countries which have well developed TVET systems such Singapore and South Korea, VET teachers undergo regular in-service courses which involve even attachments to industries for a period of at least three months to acquaint themselves with new experience which they pass to learners during teaching. Therefore, further education, industrial attachments and workshops and seminars are meant to make the trainers of TVET institutions more relevant.

The World Bank (2004) report on Regional skills studies found that more qualified teachers are able to impart appropriate skills to learners as they able to foresee the skills needed in future so as to remain relevant in the ever-changing skill demands. In Mozambique it was found that lowly qualified instructors with little experience in entrepreneurship were the major cause of chronic failure of most public training institutions. It was found that most

teachers have low qualifications and lack industrial exposure in their area of specialization. For instance, a study done by the United Nations Development Program (UNDP) (2010) established that though most of the trainers in Technical Training Institutes (TTI's) and Technical Institutes (TI's) had acquired professional teacher training positions, their qualifications were of a technical diploma level yet they were expected to teach to the same level, a situation that compromise skill development.

The report of the African Union (AU, 2007) observes that the quality of TVET is pegged on the competence of the Trainer, with competence evaluated on the basis of level of knowledge, technical competencies and pedagogical abilities as well as being in a head in terms with new technologies demanded at the workplace. Trainers with low qualification may not have ability of envisaging technologies that may not have emerged and prepare learners for the same in advance. This ends up rendering such learners irrelevant when such technologies emerge due to inability to cope with new demands (Majumdar; 2013). It is therefore important that trainers have to undergo frequent in-service trainings as initial qualifications become irrelevant with time due to emerging changes brought about by emerging technologies and changes on the labor market.

The UNESCO report titled "Training of Teachers/Trainers in Technical and Vocational Education" of 1997 held in Curitiba Brazil from 7-10 states that the world of work is in a constant state change associated with ever changing industrial skills. The Trainers' pedagogical as well as their professional

competence is critical to the successful implementation of any TVET training strategy.

According to UNESCO (2009), relevant pedagogical approaches transfer the right sets of skills and behavior; promote people's abilities to engage with SD challenges in order to identify their own destiny of live. Therefore the main role of TVET is develop people with employable abilities by coping with the technological advancements, while at the same time transforming individuals change towards SD.

The report of International Labor Organization (ILO) of 2012 states that the quality of TVET training is influenced by many factors among them being what happens in the classrooms. The educational and occupational background and the level of training of Trainers are viewed to be critical in influencing the quality of training. The report further called for re-training and upgrading of skills of Trainers as it is considered to be key in the success of TVET which in turn influences participation of Trainees. Affirming critical role of Trainees, Kamau (2013) observed that inadequately trained instructors who were majority in the public vocational institutions in Kiambu Sub-County impacted negatively on development of quality skills among the trainees. The study revealed that majority of instructors were either inadequately trained or not trained at all in pedagogy and technical trades, a situation that was worsened by lack incentive among instructors due to low wages. The study called for enhancement of professional and technical competency of instructors since it

was considered to be critical component in enhancement of skills among trainee.

A number of researchers, Altickson (2001), Oenga (1995) and Irumbi (1990) attest to influence of Trainers to skill development. The authors attribute variation in academic attainments among students to variation in academic qualifications and experience among Trainers. This situation is a clear pointer that educational resources are critical in any learning process. Mwangi (2008), observes that evaluation of qualities of a good trainer should not be pegged on mastery of subject in ones field of specialization but on academic qualifications attained. Contributing to the debate of qualification of teachers/trainers a report of Kenya Institute of Education (KIE) (1990) attributed the difficulty faced by learners in mastery of content in certain subjects to unprepared and incompetent trainers in subject matter. This position is further affirmed by Kathuri (1990) who observed that there is strong correlation between learners' skill development and qualification of trainers. The author asserts that institutions having trainers with higher qualifications post high quality skills among Trainees as opposed to institutions with less qualified trainers.

As a way of ensuring availability of competent trainers, governments should come with conscious efforts, of training and retaining technical Trainers in the system. Trainers rewarded through attractive salary packages and reward schemes. The delivery of quality TVET is also closely tied to strong management and leadership capacity to empower the entire system including

TVET professionals, system managers, and policy makers. There is need to have them strongly grounded in management by ensuring that their skills are frequently upgraded as a way of empowering them.

Aduda (2003) contends that the Trainer should be of higher academic qualification if they are to effectively undertake their training responsibilities. To achieve the desired competency, instructors need to continuously upgrade their skills if they have to deliver skills that enhance SD (COAG 2009). Up-skilling involves trainers undergoing in new teaching and delivering techniques, in order to acquire some key skills that enhance SD.

Indeed, Smith (2010) observes that declining demand for degree-level requirement for Australian TVET trainers have made them have reduced skill capacity due to a single focus on meeting national VET audit frameworks. The author calls for a pedagogical paradigm change to encompass addition underpinning knowledge, higher thirsty for innovation, and the capacity to evaluate, construct and criticize issues.

Striking balance between supplies of skills against demand in the labor market should be one of the major priorities in skills development policy. Historically, however, since economic and technological development worldwide increased in the 1980s failure for most TVET systems to fully address these challenges should be seen as a major skills mismatch as a result of an insufficient demand focus in TVET. This is even more worrying, since the need for skilled labor has greatly gone up due to pressure of globalization, shift in technology, work orientation, emerging developmental policies, including the movement to a

low carbon economy, the recent international financial challenges and worldwide recession that followed.

The International Conference on Preparing TVET Educators for the Next Generation held in Kuala Lumpur, Malaysia on 12-13 December 2011 appreciated the importance of developing Trainers as propellers of change for the next generation by developing strategic interventions in the development of relevant Trainer training programs (UNESCO-UNEVOC, 2013). The delegates acknowledged the shifting role of TVET educators from being mere transmitters of knowledge to facilitators, mentors and coaches. Green skills, Generic skills and Higher Order Thinking (HOT) skills were identified to be critical components in the development of next generation TVET cohort of graduates. The conference called for; concentration of efforts on Development of TVET Educators capacity in the endeavor to prepare graduates for work industry and ever increasing global economy; Formulation of Trainer Qualifications Framework and Competency Standards for TVET Educators; Enhancement of the professional skills of TVET Trainers through practical skills training, simulation and innovative strategies, and industry attachment programs on a continual basis; Need for development of graduates for Green economy by TVET educators in consideration of the huge potential and employment prospects for green jobs; Active involvement and strong commitment of stakeholders as a critical element for preparation of TVET Trainers for next generation; Attractive performance-based incentive schemes must be worked out to entice promising professionals into the TVET system by introducing attractive pay incentives; Harnessing the potentials of using

ICT as a tool in development of TVET Trainers for future generation; Creation of opportunities for TVET educators to develop Technical and Generic Skills (especially HOT, creativity, innovation skills) through avenues such as continuous professional advancement and learning; formation of Strategic groupings with international TVET stakeholders and coming up with new models in pedagogy to that correlate with emerging learning styles of digital natives.

Therefore TVET educators are called upon to develop more flexible and open learning opportunities in this ICT regime. However, pedagogy should focus on all activities. Technological evolutions impacting on the economies and have pressurized TVET Trainers training on the basis of challenges to update their mandate as a way of promoting their relevancy in the community.

Majumdar (2013), a presenter during Kuala Lumpur, Malaysia conference TVET conference held on 12-13 December, 2011 advocated for a plan of development for TVET Trainers which should encompass: best and most relevant teaching or learning methodology; technology adaptation and appropriate incorporation of into the TVET classrooms, widening the scope of operation of operation of TVET educators' Training; up skilling of existing TVET Human resource to manage new technological advancements Training should put emphasis on lifelong learning as a way of ensuring continuous professional development of TVET educators; and continuous revision of TVET Trainer curricula for advancement of remedial courses to enhance professional advancement (Kerre, 2011; Yan, 2011). The constant

shift in the level of skills required for effective performance in a given occupation, and the demand for regular change in labor industry, makes it important that a person has the capacity for development of further knowledge and skills as first and more effectively at a very faster rate. This demands for adequate knowledge foundation for creating an understanding of other critical and relevant areas of knowledge, that is, “generic knowledge” which encompasses Mathematics, Informational Technology, Natural Sciences and Technology (MINT). This is why the increasing Integration of general education and TVET is critical. Skill Enhancement Programs involves giving TVET Trainers opportunities to advance their skills and knowledge relevant to their areas of specialty such as practical and high technology skills acquisition.

According to the report of Global Dialogue Forum on Vocational Education and Training of International Labor Organization held on 29th-30th September 2010, TVET Trainers’ training in many countries is taken as something that can be learned on the job. However, very often there is no clearly defined career pathway for developing a trainer for TVET. Pre- and upgrading programs for trainers and instructors are normally nonexistent, making it difficult for people in a sector such as TVET, which is highly hinged on discoveries and technological development, to operate effectively minus their drive to undertake training support framework. Close contacts with the industries and other stakeholders, encompassing labor market institutions, employment firms, and other partners, may be critical in enhancement of innovations. For instance, lack of TVET educators’ exposure system in line

with industrial needs has been blamed for increasing production of graduates with low skills in Korea's TVET institutions (Heon, 2011).

The report of Asian Development Bank (2014) on TVET in the Socialist Republic of Viet Nam further found out deficiency in Technical skills linked to lack of industrial exposure among TVET Trainers was a major undoing among of TVET Trainers. The study revealed that Trainers had limited industrial experience in their areas; teacher-training institutions offered irrelevant Programs in view of demands of the labor market; teachers lacked validity in the technical skills and application were unconsidered or undervalued in their advancement process. Many of the Trainers training institutions lacked adequate technical workshops for effective training. It was not mandatory that TVET trainers to have to undergo any industrial exposure prior to teaching at TVET institutions. This has led to the trainers teaching only basic technical concepts that did not empower learners with the quality skills sought by labor market.

Technological development brings up different skills and renders others useless. Redundancy in existing skills leads to rise unemployment amidst shortage of labor. As a way of countering this challenge, there need to have modern training and refresher courses aimed at promoting relevancy of skill development, an endeavor to provision of life-long and TVET. The labor industry demands that its players must be accorded the chance to undertake constant professional development if the challenge of unemployment and

redundancy among workers is to be contained. However this is only possible if TVET institutions have competent trainers.

Singapore has effective TVET instructors because it has a Staff Training Branch whose main objective is to enhance teachers' Professional development through means such as promoting learning circles, exchanging of quality practices, research findings and publications (UNESCO, 2014). A network of Trainers has also been established for planning and organizing Trainer led seminars workshops, conferences and training circles as well as advancing and organizing online programs to further Trainer welfare programs and services (UNESCO, 2014). This could be a pointer to as why Singapore has achieved high industrial status.

Further to formal schooling demands and pre-service Trainer training entry behavior, it should be noted that more requirements are demanded before a TVET trainer is absorbed into the profession. This is critical given that Trainer educational qualifications alone are not adequate for enhancement of improved training, as there is need of attracting the right applicants into teaching profession. Secondly, for TVET trainer, the main competition is the industry offering attractive incentives and movement (horizontal & vertical) tied to provision of quality service in TVET institutions. Thus, another emerging challenge is not only finding the potential Trainers, molding them to be trained and multi-skilled but also ensuring their retention in view of the low comparative wages within the industry.

Sang, *et al* (2011) in their study titled “*Challenges Facing Technical Training in Kenya*” sought to inquire on the adequacy and qualifications of trainers at TVET institutions. According to the findings, it was established that trainers were not adequate to effectively undertake quality training. The study further found that most of the trainers were either diploma holders or first-degree holders with only 13.6% of the trainers being holders of masters’ degree. The study concluded that TVET institutions in Kenya were not only understaffed but they were also were poorly staffed with highly skilled instructors, a situation that compromised the quality of training. There is need therefore to have favorable terms of service in order for TVET sector to attract more competent Trainers. Acknowledging the influence of Trainers on Trainees skill development, Kenya has impacted on her reforms to address the issues of quality and quantity of Trainers at TVET institutions to ensure that Trainees quality attainment is not compromised. This is what informed this study.

2.9 Summary of Literature Review and Gap to be Filled

Literature review has shown that TVET today experiences high demands, obstacles and opportunities. In view of chronic underemployment and unemployment, the youth are demanding more education and training opportunities as well as an improvement in their relevance to the labor market. Self-employment calls for entrepreneurial skills while employers are demanding for a continuous incremental range in the level of skills and competences that combine both hard and soft skills competencies.

Despite strives being made within and beyond the Education for All (EFA), there are limited people at the moment who are able to improve their knowledge, skills, and attitudes demanded in modern work environment (ILO, 2017). Furthermore, much TVET training programs undertaken are poorly articulated in a way that do not match with labor market expectations, making TVET not to make significant contributions towards economic development as anticipated. Lack of correlation between skills supply and demand has been cited by policy makers as the main reason for high youth unemployment.

However, nations experience different challenges in the supply and demand of skills. In a number of nations, despite chronic unemployment, there exist marked deficiency skills supply, and while in others skilled labor find it hard finding relevant work in line with their professional training. The main concern of Policy makers in skills supply and demand is further enhanced by high demand by enterprises for TVET graduates with more key skills in certain areas. This implies that the period between the occurrence of new technologies, their mainstreaming and their replacement by newer technologies, is shortening in length and making older technologies outdated faster than was with previous innovation waves. This wave of technological development calls for the need for the workforces that are not only with possession of hard skills, but with also advanced generic abilities demanded to fit fast enough to ever evolving technological advancement. High change in rate of skills demanded in view of emerging globalization have learned TVET with view of enhancing economic growth and enhance competitiveness,

which in turn can promote the creation job opportunities. As a consequence, more countries today need a labor force equipped and continuously updated with knowledge.

Pressures exerted on natural resources, the climate and the environment necessitate a change from energy and emissions-intensive economies to energy-saving and cleaner patterns in undertaking the production and offer services. The green economy demands the changing skills required given that as the emerging industries and work come up, the demand for differential skills emerge in a number of existing occupations. This causes alteration to training demands and curriculum delivery. In coping with SD issues, TVET has to adjust to emerging social and economic demands by coming with appropriate TVET alternatives for lifelong education, without jeopardizing the chances of future mankind to meet the same.

Various studies have shown how countries that have embraced and developed effective TVET system as a tool of human resource development have addressed the problem of poverty, unemployment and attained remarkable level of social economic development (World Bank, 1993). Other studies have however noted that this is only possible if quality training is offered which is tied to availability of adequate infrastructure, teaching and learning resources, nature of courses offered and entry behavior of learners (Dasmani, 2011; Frishch Man, 2005). Kenya embarked on rebranding her TVET institutions to ensure that they provide relevant training to meet her development needs. However, despite undertaking measures to revamp TVET to promote

employability among her citizens, African Development Bank Group in the Strategy Paper 2014-2018 notes that Kenya is still grappling with high unemployment rates and levels of poverty (RoK, 2013c). This is occurring at a time when Kenya National Strategy Paper 2014-2018 observes that there is a shortage of 30,000 Engineers, 90,000 Technicians and 400,000 Artisans. This may be a pointer that despite intervention measures initiated by government, graduates of TVET find it difficult to fit on labor market casting doubt on the effectiveness intervention measures initiated in TVET institutions as key driver of Human Resource Development (HRD). Due to limited information available to address the above issue, this study proposes to fill the gap by finding out the impact of Public TVET institutions' on economic development of western Kenya.

2.10 Theoretical Framework

Several scholars such as Owen (1991) and Hannaway and Lockheed (1986) underscore the need for sound theoretical paradigm to enhance ones' understanding of observations made in a scientific study. This study focused on the impact of Public TVET institutions' on economic development in Western Kenya.

There are a number of Theories that have been advocated for by a number of authors related to skill development. For instance, Bogdanov (1922), Lazlo (1996), Ng, Maull and Yip (2009 and Meadows (2008) advanced for System Theory. They observed that a system has a boundary which creates two environments, the outer environment and the inner environment. From the

outer environment, the system draws various inputs which interact (processed) in the inner environment before the final product is released to the outer environment as output. Emphasis is placed on organization and interdependence among various components of the system as a way of maintaining system stability which is critical for effective functioning of the system. The quality of output is pegged on quality of input. Where high quality inputs are used and with proper processing, high quality output is attained. When applied in the learning process such as TVET training, it implies that when adequate and high quality inputs are used in the training process, high quality skills are produced. This will be reflected by high productivity and innovation of TVET graduates.

The second theory that would have been relevant for this study is Human Capital Theory. Human Capital Theory (HCT) was propounded by among others; Schultz (1961); Becker (1964) and Weisbrod (1966). The HCT theory advocates for investment in education just as capital is invested in business to generate returns. The theory states that education and training is key in sharpening or increasing productivity of an individual. It further states that a Country's economic development is anchored on skills inventory of her citizens and hence ability to produce goods and services and effectively compete on international market. This theory has been used for justification of wage differential among different cadres of workers on the basis of the nature of courses taken and level of schooling. Becker (1964) observes that education attainment has a causal impact on labor Market. According to Rosen (1976) individuals have a set of skills and abilities whose level of accumulation and

improvement may be pegged on level of schooling. Therefore the theory advocates for adequate investment in resources that can enhance the learning process. Such resources include putting up infrastructure, provision of Teaching and Learning Resources, employment of Trainers among other variables that facilitate learning process.

The third theory that was considered was Education Production Function (EPF) as propounded by Mincer (1970); Hanushek (1979); Psacholopoulos and Patrinos (2004). According to EPFT, education is considered as an industry which receives raw materials (inputs). The inputs are processed to come with the final products (out puts) for consumption by consumers. The quality of outputs in production process depends on the quality of inputs (raw materials) and quality of processing. Processing is influenced by the nature of tools and equipment used in production process. If the raw materials are inferior, poor tools and equipment are used, inferior outputs will be produced, an aspect that limits the competitiveness of the products on the market. On the basis of the above discussion, EPF Theory was found to be the most appropriate and rich in content relevant to this study than what Systems Theory and Human Capital Theory advances.

Production Concept has been introduced in education because education system is also considered as an industry where inputs are combined and transformed into final product. Inputs are taken as goods or services that are used in the production process while outputs are goods or Services that come out of production process. The quality and quantity of output is determined by

the quality and quantity of inputs. However, it may be possible to achieve quantitative objective without qualitative objective or none at all. Education Production Function (EPF) presents Mathematical relationship between quantitative aspects of inputs and outputs in the learning process. This can be represented as follows:

$$Q_x = f(P_{x_1}, P_{x_2}, \dots, P_{x_n})$$

Where Q_x represents education output

f represents the function of input variables

P_{x_1}, \dots, P_{x_n} represent input variables which include school and out of school factors

Education Production function originates from the Theory of Production Propagated by economists which works on the basis that Operation is at a level of Technical efficiency. At the level of Technical efficiency, individuals in charge of production seek to obtain the highest level of returns from any given input involved in production process (Monk, 1981).

Though the measurement of education output has been debatable, there is a general consensus that academic achievement is the dominant definable measurable goal of education as they measure level of proficiency and general mastery of the curriculum and as such they should be the basis of measurement of the output (Mood & Powers, 1967).

Education production theory has been used in some studies. For instance, Moore (2007) used this theory to investigate the determinants of education outcomes in developing countries on the basis of evidence from Botswanan Secondary schools. The study relied on data obtained from trends in internal examination performance. The study established that education output is a function of School inputs(X), family background (W) and students' quality (Z) with varying scales of economies and operations.

However, EPT can be criticized for working on assumption that there is automatic linear relationship between input and output and Technical efficiency is achieved in Education Production Process all the time. Similarly the assumption that production in Education is only reflected through academic performance which is measurable is unrealistic since the assumption is that if a person fails the examination as represented by lowest academic attainment, then teachers did not work and the students did not learn, meaning no production has taken place. However, the student through schooling may have gained un-measurable soft skills such negotiation and public relation that are critical for harmonious society. At the same time achievement in examination may also be influenced by external factors that may hinder achievement of Technical efficiency such as child's upbringing and the nature of food taken by the mother when she was expectant. Gadsden (2003) carried out research that was intended at establishing the consequences of child care, maternal education and family literacy on Childs' academic attainment. The study established that there is high correlation between parental involvements

at early stage in children's learning and Children's academic achievement in school.

Despite this weakness EPF is rich in positive aspects that if well implemented may lead to development of skills in both qualitative and quantitative terms to drive a country's development agenda. As such the theory was found relevant for this study.

In this study the EPFT can be expressed as follows;

$$Q_x = f(Px_1, Px_2, Px_3, Px_4, Px_5)$$

Q_x = Academic achievement as represented by attainment in National Examination

Px_1 = Trainees as represented by their entry qualification

Px_2 = Trainers as represented by numbers, academic qualifications, continuous professional development

Px_3 = Teaching and learning resources as represented by their availability and adequacy

Px_4 = Infrastructures as represented by availability, adequacy and their condition

Px_5 = Curriculum as represented by types of courses and their relevance in view of the demands of the industry

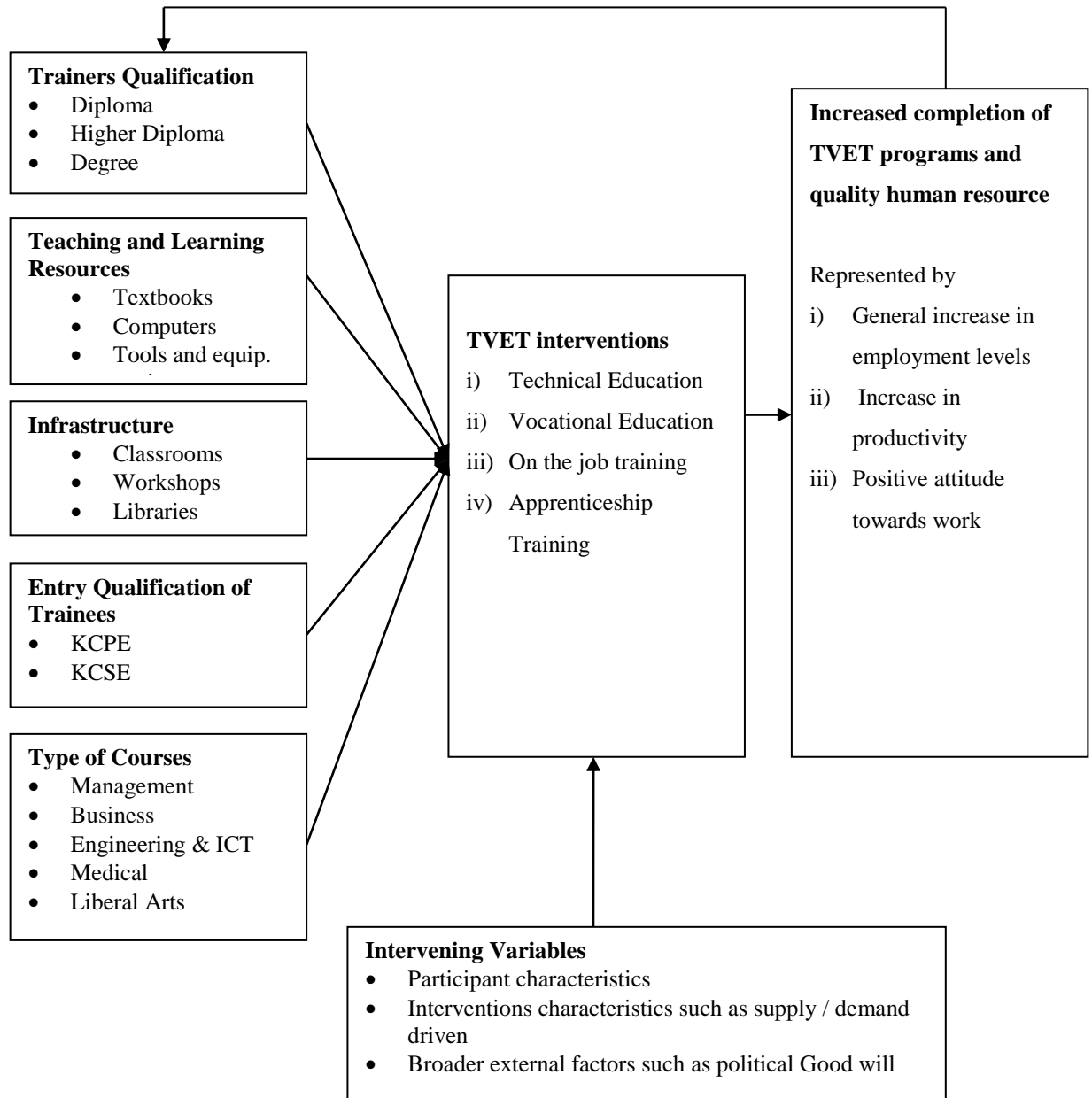
According to EPF, when there is adequate provision of relevant inputs as reflected by numbers (adequacy) and where possible quality and with the right processing, the right output will be achieved. This implies that adequate number of graduates with right skills who can engage in productive activities to drive the desired economic agenda. Failure to provide relevant inputs as defined above compromises skill development and as such the desired level of development (economic) may not be achieved due to mismatch in skills supplied in terms of quantity and quality.

This study assumes that in TVET process; inputs are trainees as determined by numbers and entry qualification, the trainers as reflected by numbers (adequacy), initial academic qualification as well as continuous professional development, teaching and learning resources as represented by availability and adequacy as well as the state of infrastructures such as buildings as represented by availability and adequacy. The processing aspects represent the actual teaching and learning that take place within the Training institutions. It is also represented by the relevance of the curriculum (courses offered) and the level of commitment of Trainers and Trainees in the teaching and learning process. The output represents quantitative and qualitative aspect of the Training process. This is represented by the number of graduates who come out of the training institutions as well as the quality of the graduates that is represented by pass rate in the examinations and their employability.

2.11 Conceptual Framework

The variables in the study were conceptualized as seen in the Figure 2.1

Figure 2.1: Conceptual Framework Shows the Schematic Relationship between Variables



Conceptual framework of the study is hinged on the basis that effectiveness of TVET institutions' skill development is a function of multiple institution factors. These are; Courses offered, Teaching and learning resources, infrastructure, qualification of Trainers, and entry qualification of trainees. The conceptual framework envisages the effect of various variables on the achievement of economic development in Western Kenya. This is reflected in skills acquired and employability of graduates of TVET institutions. For any effective training to take place, the courses offered should be relevant to the needs of the industry. This is only possible if education planners are able to foresee future skills needed and plan for the same in education system.

Courses offered should be backed by adequate teaching and learning resources and infrastructure such textbooks, computers, libraries, workshops among other resources to ensure that students get adequate exposure that does not compromise quality. This should further be supported by adequate competent trainers who are charged with responsibility of guiding the learning process. The nature of Students to be trained is also critical in ensuring success of the training processes. The students should have certain basic qualification and positive attitude towards training if effective skill development has to take place.

However, for TVET training to be effective, there are a number of intervention measures which have to be implemented. These measures include political goodwill which ensures necessary support to TVET institution in form of budgetary allocation that will ensure adequate provision of key resources that

enhances both qualitative and quantitative objective of TVET and necessary legislature that support effective TVET training. Participants' characteristics such as gender, attitude and interests are also critical in determining ability for one to choose and pursue certain TVET courses. Similarly labor market demands as reflected by skill gap may drive trainees to enroll in certain courses where they perceive employment openings may be available. Rush for enrollment in courses with openings creates demand driven enrollment aimed at promoting ones' employability.

Inputs as defined by various variables under study undergo process (actual learning at TVET institutions) with influence of intervening variables to produce output as represented by quality (employability) which go alongside with ones' attitude and quantity (numbers of TVET graduates).As applied in this study, it is envisaged that the desired level of economic development of Western Kenya can only be achieved if TVET institutions offer relevant courses, the institutions have right quality of Trainees in terms of entry behavior and attitude and availability of adequate teaching and learning resources and infrastructure in terms of classes, workshops, libraries among others as well as availability of adequate Trainers as reflected by numbers , qualification and continuous professional development. This is what this study aimed at establishing.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology under: Research design; target population; sampling technique; sample size; research instruments; data collection procedure, data analysis techniques and ethical considerations.

3.2 Research Design

Prediction research design was used for the study. Several researchers Moore, (1983), Cohen and Marion (1983), Creswell (2012) and Saunders; Lewis and Thornhill (2007) state that prediction research design seek to describe outcome of a variable (dependent variable) based of the influence of independent variable(s). This design is suitable where it is not possible to subject independent variable to random assignment of subjects, treatment and manipulative control. Since the researcher was only interested in describing the state as it was at TVET Institutions in Western Kenya, Prediction research design which is a form of correlation research design was found to be the most appropriate. This design made it possible for the researcher establish relationship between stated objectives of the study (criterion variables) and skill formation and trainees academic achievement (predictor variable) as a measure of economic development of Western Kenya.

3.3 Target Population

Target population consisted of 10 public TVET institutions in Western Kenya that had been in existence for a period of at least five years and two major

companies that offer internship opportunities to trainees in study region. Two Human resource Managers of the two major companies, Principals (10) Heads of Department (100) and Trainees (8000) of the 10 TVET institutions formed a total target population of 8112 respondents.

3.4 Sample Size and Sampling Techniques

All the ten (10) targeted Public TVET institutions were used in the study and two sugar factories were purposively sampled out for the study. It was established that two major factories offer almost 100 percent of the internship opportunities to the trainees in the region hence their selection. Two Human Resource Managers in those factories were used in the study. A ten percent of the population of the trainees enrolled in TVET institutions was used in the study. According to Cohen et al (2007) a sample of 10 percent can be used in the study when dealing with a large target population. A total of 800 trainees participated in the study. The Target population and sample of Trainees is given in Table 3.1

Table 3.1: Enrolments of Trainees at TVET institutions in Study Counties and Sample Size

County	No	Total Population	Sample size
Vihiga	1	1221	122
Kakamega	4	3680	368
Busia	1	400	40
Bungoma	4	2700	270
Total	10	8001	800

Source: Ministry of Youth Affairs and Sports at County Headquarters in Counties under study (Jan, 2017)

Sampling Technique involved Census, Proportionate, Simple Random Sampling (SRS) and Purposive Sampling. There were 10 institutions that had presented candidates for national examination for more than 5 years. To get sample size for Trainees, proportionate and Simple Random Sampling were used. Proportionate sampling was used to get the number of Trainees to be drawn from each study institution before picking these Trainees using Simple Random Sampling. Heads of Department, Principals and Human Resource Managers were selected using purposive sampling. Purposive sampling enables the researcher to use cases that may have relevant information to answer research questions in order to enable the researcher meet objectives of the study (Maina, 2012)

3.5 Research Instruments

In this study, four instruments were used for the purpose of data collection: questionnaires, interview schedule, observation checklist guide and document analysis guide. Questionnaires for Students had structured items that required students to fill in the provided blank spaces. It included questions on personal information and the courses taken. Questionnaires for the Heads of Department sought information on; courses, entry qualification of trainees to various courses and qualification of trainers. Interview Schedule was used to collect data from principals of TVET institutions and Human Resource Managers of the two companies in study region. This was meant to corroborate the information gathered from the questionnaires on the courses offered, qualifications and adequacy of trainers and challenges faced by TVET institutions in their day to day undertakings. The Interviews also elucidated

information on the competency of the TVET graduates as reported by the Human Resource managers of the two major companies in study region. The researcher used the Observation Check List Guide to examine the day to day process of teaching and learning. Document Analysis Guide was used to collect information that required documentary evidence. Backer and Foy (2008) advises that because the quality of information is variable, the researcher needs to be guided by rules of evidence. However, document analysis was used with caution such that information was retrieved from the sources that were deemed useful for study.

The use of multiple methods in data collection as in this study is a recommended technique in research. Yin (2004) recommends six types of data collection sources namely; archival records, direct observation, documentation, interviews, and physical artifacts as they bring a contextual understanding and generates more and diverse data and is rated more highly in terms of overall quality than a single source.

3.5.1 Validity of Research Instruments

The instruments were given to the research experts in the department of Educational Administration and planning University of Nairobi to read and evaluate their suitability and representativeness of questions in view of the study objectives. Based on their comments, areas of non-conformity were addressed prior to pilot testing. Piloting was done in two TVET institutions where respondents were advised to make comments and suggestions about appropriateness of the instruments as reflected by their level of clarity. The

institutions used in piloting were not involved in the main study. In view of comments and suggestions made, the instruments' suitability were further enhanced prior to undertaking of actual research.

3.5.2 Reliability of Research Instruments

Silverman (2005) defines reliability as the degree of consistency with which cases are apportioned to the same group by the same witness or different witnesses. Whereas quantitative researchers view reliability in terms of the steadiness in measures, qualitative researchers argue that attention to reliability of research study results should not be ignored (Kirk & Miller, 1989). Reliability in qualitative research emphasizes on the viewpoints of a number of observers and the reality's continuously shifting characteristics.

Godwin and Godwin (1984) argued that reliability in research is a critical issue for two main reasons; it helps to promote replication of findings and is used to give necessary pre-requisite for validity. On the other hand, Mitchell (1996) states that reliability of questionnaires should be determined at design stage. This was achieved through piloting and computation of Correlation. At pilot stage, questionnaires were administered to respondents' in two TVET institutions. The same questionnaires were re-administered after two weeks to the same respondents (Test-retest technique). This gave 2 sets of scores that were used to calculate Pearson's' Product Correlation Co-efficient (r).

This procedure was used because of its ability to measure the internal consistency of the instruments being tested. Test-retest technique was preferred in this study because it takes care of the changes in time and

circumstances. This was further enhanced through instrument triangulation technique. Any correlated reliability that is less than 0.7 makes the instrument unreliable to make accurate predictions (Charles, 1988:167). On basis of data obtained through piloting, Correlation was calculated using SPSS computer software version 23. Correlation values always assumes values range of -1 to 1 where value of 1 indicate perfect correlation while correlation value closer to '0' shows that there is no relationship between variables. Since the value of Correlation coefficient obtained was 0.75 for trainees and 0.85 for HoDs, the instruments were considered reliable for use in this study.

3.6 Data Collection Procedure

The researcher first sought from the University of Nairobi, department of Education Administration and planning a letter of introduction before proceeding to apply online for a permit to undertake research from National Commission for Science, Technology and Innovation (NaCoSTI), an institution charged with the responsibility of granting research permits in Kenya. Upon receipt of the permit, copies of this permit were given to various County Directors of Education in study Counties from whom further permissions were obtained. The researcher and the research assistants who had earlier been recruited and trained to assist in data collection then proceeded for familiarization tour and briefing administration of study institutions of the intended research. This is the time when dates for actual research were set. The training of research assistants entailed taking them through the instruments as a way of familiarization on what was demanded in relation to the main objective of the research. The researcher and the assistants

then shared the study institutions as a way of facilitating faster data collection. During sharing, the researcher was took 4 stations while each of the two assistant researchers was assigned 3 stations. After sharing the research assistant were given introductory letters which were used to administer and collect the questionnaires.

3.7 Data Analysis Techniques

Data analysis entails summarization of the collected data and assembling it together so as to enable the researcher to undertake meaningful organization, categorization and synthetization of information from the data collecting tools. During analysis, the researcher examined each piece of information on each research instrument, organized data as per objectives and coded the data. Analysis of Quantitative data was done using descriptive Statistics with results presented in Tables using frequencies and percentages by help of the computer software (SPSS version 23).

Qualitative data were organized in themes as per the research questions and hypothesis and then the thematic data were analyzed using inferential statistic. This involved running of Correlation and Regression in order to test the relationship between and among variables.

3.8 Ethical Considerations

McNabb (2002) defines Ethics as the application of moral ideologies in planning, undertaking of the research and presentation of research findings, which guide moral principles based on right and the wrong. In qualitative research, ethics aims at guarding the rights of respondents participating in the

study with the sole purpose of minimizing conflicts that may arise from undertaking such exercise (Payne & Payne, 2004). According to Baker and Foy (2008) ethics in research is aimed at guarding against unapproved practices, like intrusion into people's privacy, obtaining information through inducements among other questionable issues. Robson (2002) identifies unethical issues to include coercion of participant participation, un-consenting individuals, withholding research information, violation of self-determination and exposure of participants to stress through invasion on their privacy.

All sources of secondary data have been suitably acknowledged through their words being rephrased, summarized or quoted to shun any instance of plagiarism. The study was undertaken in a clear and responsible fashion; the respondents were assured of secrecy and privacy. All efforts were made to cover the identities of any individual document used in the study. In this research, participants' privacy was ensured by being advised not to write any form of identification anywhere on the questionnaire. Results have been given in the form of group responses as a way of guarding identity of respondents. Similarly the respondents were briefed that decision for participation was voluntary and that there was no wrong or right answers. Lastly copies of research findings were availed to NaCoSTI and other relevant institutions.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis, presentation and discussion of research findings. It gives information on the impact of Public Technical, Vocational Education and Training institutions' on skill formation for Economic Development in Western Kenya under the various study objectives.

4.2 Questionnaire Return Rate

A total of 900 questionnaires were distributed to 800 Trainees and 100 Heads of Department (HoDs), out of which 696 Trainees and 90 HoDs responded. The return rate was as summarized in Table 4.1.

Table 4. 1: Questionnaire Return Rate

Respondent Category	No Dispatched	No Returned	Percentage Response
Trainees	800	696	87.00
HoDs	100	90	90.00
Total	900	786	87.33

Table 4.1 shows that the response return rate was 87 percent for Trainees and 90 percent for HoDs which was good enough to make a comprehensive and in-depth analysis of the survey conducted. Mugenda and Mugenda (2003) recommended a response rate of 70% and above to be excellent.

4.3 Demographic Characteristics of the Respondents

Demographic information was sought of the Trainees and HoDs in terms of their gender and age. This segmentation offered the researcher insights that would have been missed by only looking at the aggregate data.

4.3.1 Gender of Trainees and HoDs Respondents

Gender of the respondents was sought in order to evaluate the attainment of gender parity. The findings are presented in Table 4.2

Table: 4.2: Gender of Respondents

Gender	Principals		HoDs		Trainees	
		Percentage		Percentage		Percentage
Male	8	80	50	55.6	340	48.9
Female	2	20	40	44.4	356	51.1
Total	10	100	90	100	696	100

Table 4.2 reveals majority of Principals and HoDs were male, 80 percent and 55.6 percent respectively. However female Trainees were almost at parity with male Trainees at 51.1 and 48.9 respectively. From the data it was noted that the government policy on gender mainstreaming had been implemented in the study institutions for appointment of HoDs as the gender representation had already met the required basic minimum of 30 percent (RoK, 2010). However, appointment of principals had not met the gender mainstreaming rule. It seems appointment of principals was done based on academic qualifications and experience but not on the basis of gender.

4.3.2 Age of Trainees and HoDs Respondents

The age of the trainee respondents were sought to enable the researcher understand structural composition of trainees' .This was on the basis of understanding that TVET is supposed to be a lifelong learning process. The findings are presented in Table 4.3.

Table: 4.3: Age of Trainees and HoDs Respondents

Age Category	Trainees		HoDs	
	Frequency	Percentage	Frequency	Percentage
Less than 25 yrs	269	38.6	–	–
26-30 yrs	290	41.7	–	–
31-35 yrs	130	18.7	–	–
36-40 yrs	7	1.0	11	12.2
41-45 yrs	–	–	30	40.7
Over 46 yrs	–	–	49	54.4
Total	696	100	90	100

Table 4.3 indicates that the majority of the trainees (61.4 percent) were mature students of 26 years. From the age bracket of the trainees it can be concluded that many of them might be of secondary school level of education. This agrees with findings of Maliranta, Nurmi and Virtanen, (2010) who contend that the possibility of younger Trainees gaining entry into technical institutions is low. This was based on the fact that as many of them would preferred pursuing further education after high school compared to their older counterparts who mainly focused on job opportunities and survival techniques in economy. The mature age of the trainees would have also meant that people

were upgrading their skills as a way of coping up with continuous technological advancements.

On the other hand, all the HoDs were above 36 years of age. This is because for one to be appointed as HoD, one needed to have served for some period of time as a Trainer before qualifying for interviews for the position of HoD, a situation that was worsened by delay in employment by Teachers Service Commission upon graduation by a teacher. This finding implied that the respondents had varied exposures to education management issues and were in a position to respond to the issues of HoDs administrative performance as required by the research tools.

4.4 Data Analysis

This section presents data analysis of the five variables under study that were investigated to establish the Impact of Public TVET institutions on skill formation for economic development of Western Kenya .The presentation is under study objectives namely: nature of courses offered at TVET institutions; entry qualification of trainees, the state of infrastructures, state of Teaching and Learning Resources and qualification of Trainers and their impact on skill formation for economic development of Western Kenya. Data to address these objectives was mainly captured from HoDs and Trainees through use of Questionnaires modeled on Likert scale. Interview schedule, document analysis and observation schedule guide tools were also utilized as a way of triangulation. Items in the questionnaire were scored using (1) for Strongly Agreed running up to (5) for Strongly Disagree; this was aimed at

getting data for computation of Correlation and Regression in order to establish relationship between independent as defined by various study objectives and academic achievement(dependent variable), a measure of skill formation on economic development.

4.4.1 Influence of Courses offered at Public TVET institutions on Trainees' Skill formation on Economic Development in Western Kenya

The first objective sought to find out how courses offered in Public TVET institutions influenced trainees' skill formation for economic development in Western Kenya. The study sought to test the following Null Hypothesis:

Ho₁: : There is no significant relationship between courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Trainees, Heads of Departments and Principals of TVET institutions were asked several questions and scored. Data obtained used to run a Two tailed test Correlations using SPSS version 23 on popular courses against employability of TVET as represented by academic achievement (mean score), an aspect of economic productivity that formed a basis of conclusion drawn. The results are reflected in Tables 4.4 to 4.14.

4.4.1.1 Courses Offered at Public TVET Institutions

The study sought to find out the type of courses offered at TVET institutions in order to evaluate the relevance of such courses towards human resource development in line with achievement of Kenya's envisioned economic development. To address this objective, Trainees and HoDs were asked to list

the various courses offered in TVET institutions. Frequency counts then undertaken presented as reflected in Table 4.4

Table: 4. 4 Courses Offered at Study Institutions

Course	Trainees		HoDS	
	Frequency	Percentage	Frequency	Percentage
Institutional Management	100	14.4	15	16.7
Electrical and Electronics	80	11.5	10	11.1
Medical and Applied Mathematics	90	12.8	10	11.1
Mechanical Engineering	70	10.1	10	11.1
Business and Entrepreneurship	130	18.7	25	27.7
Building and Construction	60	8.6	05	5.6
Liberal Arts	86	12.4	10	11.1
ICT	80	11.5	05	5.6

From Table 4.4, it can be deduced that TVET institutions offer a variety of courses. However, only 43 percent of the courses as reported by the trainees and 35 percent by the HoDs were related to the core mandate of the TVET. The core mandate of TVET is anchored on pursuance of Mathematics, Information Technology, Natural Science and Technology (MINT) related Courses (UNEP, 2011).Such Courses are unlikely to spur desired level of economic development. For instance, there as had been an outcry of declining

interest of the youth in MINT subject in EU states as it was only leading to decline in productivity and competitiveness of EU member states but also had negative effect on transition to green economy (BMZ, 2013)

The researcher further sought to find out the most popular courses among Trainees at study institutions. Data to address this objective was captured through Trainers and Trainees responses. Most of the Trainees (130) (18.7%) and 25 (27.7%) HoDs asserted that business courses were most popular at TVET institutions. This would mean that the trainees had very little interest in engineering related courses as the case should be for TVETs. This observation concurs with that of Herbling, (2012) who found out that there low investment in technical courses such as engineering and electronics in TVETs in Kenya. This was a major setback to Kenya's economy since technical skills are critical in supporting industrial development (ibid).

4.4.1.2 Trainees Enrollment in Various Courses at Study Institutions Based on Gender

It was necessary to get the breakdown in enrolment based on gender. This was aimed establishing whether there was gender parity in enrollment for various courses. The findings are reflected in Table 4.5.

Table: 4.5: Breakdown of Trainees Response on Enrolment per Course Pursued Based on Gender

Course	Male	Percentage	Female	Percentage
Institutional Management	12	10.7	100	89.3
Electrical and Electronic	65	91.5	6	8.5
Medical and Applied Mathematics	20	57.1	15	42.9
Mechanical	65	95.6	3	4.4
Business	63	39.9	95	60.1
Building	45	90.0	5	10.0
Liberal Arts	40	39.2	62	60.8
ICT	30	40.0	45	60.0
Total	340	48.9	356	51.1

Table 4.5 reveals that there was marked gender disparity in enrolment between male and female Trainees in Institutional Management (10.7% against 89.3%), Electrical and Electronics (91.5% against 8.5%), Mechanical (95.6% against 4.4%) and Building (90.0% against 10.0%) respectively. This implied that engineering and other Science related courses in TVET were dominated by male Trainees while institutional, Business, Liberal Arts and ICT were dominated by females. Male domination (or androcentricity) of Science

oriented courses had been noted in other earlier studies and government policy documents in Kenya (RoK, 2005; Ngure, 2013).

4.4.1.3 Trainees Response on what Informed Choices of their Courses at Study Institutions

The researcher sought to establish what informed trainees choices of the courses they were undertaking as well as their interest in the courses they were pursuing. Three positive statements on courses were posed to the Trainees in form of a Likert scale and scored. The three items on 5 perception scale index constituted three sub variables that enabled the researcher to gain insight on why Trainees were pursuing certain courses. The findings formed the basis evaluation of the relevancy of courses pursued in view of labor market expectations and country's development aspirations.

The first positive statement postulating that some Courses are more marketable than others was put to trainee's respondents and scored. This was aimed at seeking their understanding on marketability of courses and whether it was what informed choices of their courses. Their response are given in Table 4.6

Table: 4.6: Trainees Understanding that some Courses are more Marketable than others

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	320	46.6	46.6	46.6
A	292	42.6	42.6	89.2
D	41	6.0	6.0	95.2
SD	33	4.8	4.8	100.0
Total	686	100.0	100.0	

Table 4.6 reveals that the majority of Trainees (over 87%) agreed that some courses are more marketable than others. Based on these findings, it can be argued that Trainees made choices of their courses fully aware of their effect future employment prospects. Ngure (2013a) advances that proper curriculum planning enhances employability and advocates for development of skills that correlates with demands of the industry. This meant that the curriculum that promotes trainees' guarantee of employability is vital.

The study therefore sought to establish whether prospects of formal employment guided Trainees when making choices of the courses they were pursuing. Positive statement that "I chose this course because of high prospects of securing formal employment" was put to Trainees respondents and scored. The findings are presented in Table 4.7

Table: 4. 7: Trainees Responses on Prospects of securing Formal Employment as a basis of Choice for their Courses

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	306	44.2	44.2	44.2
A	293	42.3	42.3	86.6
UD	10	1.4	1.4	88.0
D	40	5.8	5.8	93.8
SD	43	6.2	6.2	100.0
Total	692	100.0	100.0	

Table 4.7 reveals that the majority of respondents (over 85%) agreed that prospects of future formal employment was the main drive in making their choices for their Courses. On this basis, it can be concluded that Trainees sought training mainly to gain skills that could have enhanced formal employability upon graduation. Johanson and Adams (2004) observe that failure of a trainee to find employment upon graduation does not only represent a waste of time but also a massive loss of scarce resources used in the training process.

The third statement sought to establish the minimum entry requirements for various courses. This was aimed establishing the nature of trainees it was likely to attract on basis of entry qualification. A positive statement stating that “the minimum requirement for course is high” was put to Trainees respondents. Their responses are shown in Table 4.8.

Table: 4. 8: Trainees rating on whether Entry Requirements for their Courses were high

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	35	4.6	5.1	5.1
A	34	4.5	4.9	10.0
UD	6	.9	.9	10.9
D	300	39.8	43.2	54.1
SD	320	46.0	46.0	100.0
Total	695	100.0	100.0	

From Table 4.8, less than ten percent of respondents (10%) agreed that entry requirements for their courses were high. Therefore majority of respondents perceived entry requirements for their courses to be low. Low entry requirements was likely to make Trainees with high qualifications not to register for such courses as they may see that they are meant for academic failures, hindering development of appropriate skills in view of economic development demands. RelBudría and Telhado (2009) who observed that the more academically qualified Trainee finds learning activities more beneficial than those with low academic attainments, because vocational training is grounded upon the foundation of formal education.

4.4.1.4 Principals Response on what informed Trainees Choices of their Courses

The researcher sought to establish the main reason why some course(s) could be more popular among Trainees than others. Data to address this objective

was captured through interviews with principals. The results are presented in Table 4.9

Table: 4. 9: Principals Ratings of Factors that Promoted Popularity of Courses among Trainees

Reason	Frequency	Percentage
Interest	2	20
Employment	1	10
Academic Attainments	7	70
Total	10	100

From Table 4.9, the majority of Principals (70%) indicated that Trainees choice of Courses was mainly influenced by their previous academic attainment. It could therefore be concluded that previous academic attainments were key drivers of the type of course pursued by Trainees at TVET institution. This is likely to imply that most Trainees were likely to have achieved low scores in Mathematics and Science subjects in KCSE, a situation that made them to shun MINT courses.

4.4.1.5 Employers' Response on Relevance of Courses at Public TVET Institutions Skill Formation for Economic Development

The researcher sought to find out from Nzoia and Mumias sugar Companies as the key employers of TVET graduates about the relevance of courses offered at their Training institutions on economic development as reflected by employability. First the researcher sought to establish whether trainees at

Public TVET institutions undertook attachments with the industry as part of their training. This was aimed at establishing whether employers had some interactions with trainees during the training sessions as a way of promoting industrial exposure to trainees. All employers confirmed that trainees of TVET institutions undertook industrial attachment with them for a period of three (3) months. This was a positive aspect of TVET training as industrial attachment promotes acquisition of relevant hands on skills in real life work environment. However, the period of attachment was short and such it was unlikely to have equipped Trainees with adequate skills.

There was an item during the interview with the employer on the relevance of courses offered at TVET institutions. Relevance is defined as ability of skills offered to promote employability of the TVET graduate. One employer observed;

the major problem at TVET institutions is not that they are offering irrelevant courses. All courses are relevant but the only challenge is the numbers enrolled in different courses. We normally have problems accommodating trainees for industrial inductions in some departments due to large numbers that turn up yet in some departments the numbers that turn up are so few compared to available capacities.

This position was likely to extend to employability among graduates. This could be a pointer of lack of proper career guidance to Trainees about labor market opportunities or low initial qualification that may have hindered most of TVET Trainees from pursuing certain Courses such MINT that may be more marketable.

4.4.1.6 Principals Response on Employability of Past Graduates at Study Institutions

The study further sought to find out employability of past TVET graduates. This was aimed at establishing if TVET institutions had standby records that could have been used to guide prospective Trainees on future job opportunities. The data were captured through interview with principals. All the principals (100%) stated that they did not have record concerning the employability of their graduates. One principal asked:

‘of what use is such information to us an institution? Our work is to train human resource and employment is the work of a different ministry. In fact if we have produced many graduates who are yet to be employed, then as an institution we have done well. It is the ministry responsible for labor and employment that could have failed.’ pose

This could be an indicator that Public TVET institutions have played a minimal role in providing career guidance in relation to labor market prospects to trainees during initial stages, a situation that was likely to escalate the levels of unemployment among Public TVET graduates. Budría and Pereira (2009), observe that post-training feedback and follow-up of participants should form a crucial link to transformation of countries’ training institutions if a country is to encourage relevance of education.

4.4.1.7 Relationship between Courses offered at Study institutions and trainees' skill formation on economic development in Western Kenya

The study sought to determine the relationship between courses offered at public TVET institutions on trainees' skill formation and economic development in Western Kenya. Positive statements relating to courses and employment were developed and Trainees were asked to tick against their level of agreement using a Likert scale and scored. The scores obtained were used to generate Correlation and results are presented in Table 4.10.

Table: 4. 10: Correlation between Marketability of Courses and Enhancement of Skill Formation and Employability on Economic Development

		X1	X2	X3
Some Courses are more Marketable(X1)	Pearson Correlation(sig-2tailed)	1		
	N	694		
Learning Computer enhance' skills(X2)	Pearson Correlation(sig-2tailed)	.606**	1	
	N	693	694	
Learning Computer Enhances Employability(X3)	Pearson Correlation(sig-2tailed)	.976**	.597**	1
	N	680	674	685

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

The result from Table 4.10 shows high Correlation between the nature of the courses ((X₁) taken alongside computer(X₂) and ones employability as they

had .606** and .976** respectively in a two tailed test. This implied that different courses had different impact on of employment. Such prospects were enhanced when a course was backed with knowledge in computer.

However, before making final conclusion about relationship of courses and one’s employability, a pointer to participation in economic development, it was necessary to establish whether the sample picked was adequate and the variables used were relevant as reflected by their relationship. As such, KMO and Bartlett’s Test of Sphericity were undertaken. The findings are reflected in Table 4.11

Table: 4. 11: KMO and Bartlett's Test of Sampling Adequacy and Correlation among Variables on Courses

Kaiser-Meyer-Olkin of		.639
Measure adequacy of		
Sampling		
Bartlett's Test of sphericity	Approx. Chi-Square	
	Df	3
	Significance	.000

Keiser-Meyer-Olkin measure of sampling adequacy is an index of comparing the magnitudes of the observed correlation coefficients to the partial correlation coefficient. The test provides minimum standard that should be attained before principal component analysis is conducted. The values range from 0-1, and the closer the values are to 1 the better the indication that a

factor analysis of the variable is good. Ford et al, (1986) suggested a value of 0.6 as minimum. As shown in Table 4.11 the KMO for the sample was .639. The test therefore showed that the sample picked was adequate to be used for further analysis of the study.

Bartlett's test of sphericity is used for testing null hypothesis that the variables in the population correlation matrix are uncorrelated. Table 4.11 shows that observed significant level was .000 which was small enough to reject the hypothesis. This shows that the strength of the relationship among the variables is significant.

Table: 4. 12: Communalities for Influence of Courses offered at Study Institutions on Skill Formation for Economic Development in Western Kenya

	Initial	Extraction
1 Some courses are more marketable	1.000	.904
2 Learning of computers increases employability	1.000	.897
3 Course guarantees automatic employment	1.000	.531
4 Learning of computer increases ones effectiveness	1.000	.562

Extraction Method: Principal Component Analysis.

Communality is the proportion of each variable’s variance that can be accounted for by the factors. The principal component analysis works on initial assumption that all variance is common and before extraction all communalities are all 1(Field, 2005).The values of extraction column indicate the proportion of each variable’s variance that can be explained by retained factors. Variables with high values are well represented in factors space, while variables with lower values are not well represented (Field, 2005). Table 4.12 indicates the variables and their values. A commonly used principle is to pick variables with loading whose factors are 0.4 and above (Ford et al, 1986).All variables in Table 4.12 had factors of over 5.5, meaning that they were well represented in the factor space and hence significant.

Table: 4. 13: Total Variance explained for influence of courses offered at Study Institutions on skill formation for economic Development of Western Kenya

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.894	72.356	72.356	2.894	72.356	72.356
2	.619	15.482	87.838			
3	.463	11.573	99.411			
4	.024	.589	100.000			

Extraction Method: Principal Component Analysis.

From Table 4.13, the initial number of factors is the same as the number of variables used in factor analysis. However, not all factors were retained except the first one. Velicer and Jackson (1990) stated that one rule of the thumb is to use eigen values of one (1) as the cut off value. In this study the number of eigen values was used to determine the number of factors to retain. The only factor retained was marketability of courses as it accounted for 72.356 percent of the total value of the variance. This showed that economic development of Western Kenya depended on the relevance of courses offered at TVET Institutions as represented by findings at study institutions.

Therefore on the basis of the findings on Correlation in Table 4.12 and Table 4.13 on Principal Component Analysis of variables and with confirmation by KMO and Bartlett's Test that the Sample was adequate and the variables were correlated, the Null hypothesis which stated that;

Ho₁: There is no significant relationship between Courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya was upheld. This meant that economic development of Western Kenya dependent on the Courses offered at TVET institutions.

These findings are in agreement with earlier research on the influence of Training by the World Bank (2010) which found that there was high level of prevailing unemployment especially among the youth which existed alongside labor shortages, a state that has been linked to irrelevancy in the training programs. These findings were further collaborated with earlier revelations of Amsden (1992), who observed that the type of education as determined by the

courses offered influence the degree to which knowledge and technologies can be developed and absorbed and hence the capacity of state to put up modern industries and to compete in World markets with goods and services. This position is further confirmed by a study undertaken in 2006 by Japanese manufacturing companies in Viet Nam on the state of labor market which found that while most firms were finding it difficult to recruit engineers and middle- management staff, general workers in manufacturing remained low at 14–20 percent.

Having confirmed that: There is no significant relationship between Courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya and that Business Courses were most popular at Public TVET institutions under study, a further null hypothesis stating that:

Ho: There is no significant relationship between the popularity of business courses offered at Public TVET institutions on skill formation and economic development in Western Kenya was formulated.

To help evaluate this hypothesis, a Regression Analysis was done. The results are reflected in Table 4.14.

Table: 4. 14: Regression Analysis of Popularity of Business Courses at study Institutions on skill formation for Economic Development of Western Kenya

	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
	<hr/>				
Constant	3.199	.819		3.904	.000
All courses include industrial attachments	.228	.348	.097	.655	.514
Industrial attachment give adequate exposure	.269	.251	.159	1.071	.287

a. Dependent Variable: Business Courses and Prospects of employment

From Table 4.14, the following regression equation can be derived

$$\text{Therefore } Y = 3.199 + aX_1 + bX_2$$

$$\text{Where } a = .097; b = .159$$

$$\text{Therefore } Y = 3.199 + .097X_1 + .159X_2$$

From the above equation, industrial attachments and adequacy of the same in Business Courses as aspects of skill formation had Correlation of .097 and .159 respectively. This low Correlation indicated that Business courses had no effect on enhancement of skill formation for economic development of Western Kenya since it had negligible effect on promotion of employability of TVET graduates. This is further clarified by in significance column at .05; where all values of the variables were above 0.05, an indicator of no influence. Therefore the null hypothesis stating that,

Ho: There is no significant difference between the popularity of business courses offered at public TVET institutions on skill formation and economic development in Western Kenya was rejected.

This implies that though business Courses were popular at study institutions, they were not in tandem with economic development needs of Western Kenya. This meant that TVET graduates were unlikely to be of significant influence on economic development of the study region. This is in agreement with Herbling, (2012) who asserts that under investment in courses such as Mathematics, Information Technology, Natural Sciences and Technology (MINT) is viewed as a major hindrance to Kenya's economic development. The courses which demand for huge capital outlays, have been left to government yet they are most critical for production of skills required to drive the country's desire for industrial status.

4.4.2 Influence of Entry qualification of Trainees admitted at Public TVET Institutions on Trainees' Skill formation for Economic Development in Western Kenya

The second objective sought to determine how entry qualification of Trainees admitted at Public TVET institutions influences skill formation for economic development in Western Kenya. The study sought data to test the Null hypothesis that stated:

Ho₂: There is no significant relationship between entry qualification of Trainees admitted in Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Several questions were posted to respondents. The responses are reflected in Tables 4.15 to 4.19. On the basis of study findings, a two tailed Correlation at .001 Significance levels and Regression Analysis were done to inform the conclusion made.

4.5.2.1: Minimum Academic Requirements for Various Courses

Before checking on the trainees' entry marks it was necessary to establish the institutions' pre-qualifications requirements for the courses offered at study institutions. To do this the study sought to establish minimum qualification for various courses at TVET institutions as set by the ministry. The findings are presented in Table 4.15

Table: 4. 15: Course Entry Requirements of Trainees

Course	Entry Grade
Artisan	KCSE D- or KCPE
Craft	KCSE D
Ordinary Diploma	KCSE C-
Advanced Diploma	relevant Diploma/Degree

Table 4.15 shows that Artisan and craft courses required least qualifications of KCSE grade D- or a mere KCPE certificate and KCSE grade D for one to be admitted respectively. These qualifications were in line with the government policy on promotion of transition rates from primary schools and among the form four leavers who could not be admitted into other tertiary institutions. It was established that although government set the basic minimum qualifications for those wishing to join TVET institutions, some diploma courses such as

pharmacy had a higher minimum entry requirement set at a mean grade of at least C plain at KCSE and locking out the KCPE leavers. These findings implied that the entry requirement for most TVET courses were generally low. The low entry requirements for various courses were likely to impact negatively on skill development of Trainees especially in technical courses. This fear is supported by Changilwa, Akala and Wambua (2016) who observed in their study that low entry qualification of Trainees is manifested in their poor communication skills which posed a major challenge for effective implementation of Artisan and Craft Curriculum.

4.5.2.2: Trainees Enrollment in Courses Pursued at Study Institutions

It was imperative to establish trainee's enrolments in various courses. The information on this is tabulated in Table 4.16

Table: 4. 16: Trainees Response on Courses they were pursuing at Study Institutions

Variable		Area of Specialization				Total
		Artisan	Craft	Diploma	Higher Diploma	
Gender	Male	75	163	110	2	340
	Female	28	188	140	0	356
	Total	103(14.8%)	351(50.4%)	250(40%)	2(0.3%)	696

Table 4.16 indicates that the majority of the Trainees at public TVET institutions under study pursued Artisan and Craft courses (65.2 %). Even though the Kenya National Strategy Paper 2014-2018 indicated that there was a shortfall of 30,000 Engineers, 90,000 Technicians and 400,000 Artisans, the

TVET institutions were likely to have the capacity to bridge gaps in view of enrollment in various courses.

At this point the researcher wanted to know the actual qualifications of the trainees in the various programs in the institutions. This was aimed at establishing quality of Trainees at TVET institutions as reflected by their entry academic qualifications as it was likely to affect the quality of skills developed. Data on this is presented in Table 4.17

Table: 4. 17: Actual Qualification of Trainees at Study Institutions

Qualification	D	D+	C-	C	C+	B-	B	Total
Frequency	130	315	136	65	20	24	6	696
Percentage	18.67	45.25	19.54	9.33	2.87	3.45	.862	100

The findings in Table 4.17 showed that the majority of the trainees 445 (63.9%) had a qualification of a D plus (D+) and below. This means that a majority of the trainees at TVET institutions were relatively weak. The low grades were likely to compromise ability of the trainees to master necessary skills that had been envisaged to be key ingredient for attainment of economic pillar of the country’s Vision 2030. The numbers alone may not mean much, the government should raise the entry qualifications of the trainees to attract competent people to be equipped with the necessary knowledge and skills. As it is, the TVETs may not supply adequate and competent human resources in near future to meet the demands of various sectors of the economy for the realization of the economic pillar of the Kenya vision 2030 if the trend continues.

4.5.2.3 Trainees Performance in National Examination at Study Institutions

The study further sought to establish the performance of Trainees in National examination. This was aimed at establishing whether there was any relationship between Trainees entry qualifications and academic attainments. Data to answer this objective was captured through document analysis. The study revealed that pass rate in National examinations stood at less than 35 percent in Science related courses with business courses recording the highest pass rate which stood at 52 percent. The worst hit performance was mainly noted among Trainees who had recorded lowest achievement in their pre entry qualifications. In one institution, it was revealed that out of 15 Trainees who did mechanical engineering examination, all of them (100%) failed. Such mass failure is likely to discourage potential Trainees from pursuing such courses, a situation that negatively impact on development of appropriate human resource for several sectors of the economy. These findings concurs with Ngure (2013a) who found out that more than half of the motor vehicle Mechanics candidates had failed the practical tests, posing a serious challenge for graduates employability.

4.5.2.4: Principals' Recommendations of the Appropriate Entry

Qualifications for Trainees at TVET Institutions

The researcher sought to establish the most appropriate entry qualification of TVET Trainees. To generate data to address this objective; an item was included in principals' interview schedule that sought their views on Trainees preferred entry qualification for various courses if Kenya is to achieve her

ambition of using TVET as a vehicle to drive her manpower development agenda. All principals (100%) agreed that there may be no specific entry qualification for Trainees. However, they observed that there should be emphasis on Competency Based Training (CBT) to gather for the needs of Trainees who may not be academically gifted. Competency Based Training is a form of training where trainees are only exposed to skill development through hands on approach as opposed to a situation where such trainees are subjected to thorough academic work which involves formal written examination. One principal remarked:

---we are unnecessarily condemning some Trainees as failures by subjecting them to national examinations. Though such Trainees may fail such examinations, they are very good in practical work when given opportunity.

This implies that the talent of a number of Trainees may be killed through subjection to national examinations when they may not be academically gifted.

4.5.2.5: Correlation between Performance of Trainees at Study

Institutions in the Examinations and Academic Entry Qualification

The study sought to establish the relationship between entry qualification of Trainees and academic performance. Data to answer this objective was captured from Trainees who were given positive statements and asked to tick against their level of agreement using a Likert scale. The data obtained was used to generate correlation and findings presented in Table 4.18

Table: 4. 18: Correlation between Positive Statements on Entry Qualification of Trainees and Academic Performance at Study Institutions

			X1	X2	X3	X4	X
Influence of Initial qualification on pass rate	X1	Pearson Correlation(sig-2tailed)	1				
		N	696				
Entry qualification is low	X2	Pearson Correlation(sig-2tailed)	.823**	1			
		N	694	694			
Low minimum qualification kept off bright Trainees	X3	Pearson Correlation(sig-2tailed)	.785**	.783**	1		
		N	685	683			
Initial qualification influence on choice of the course	X4	Pearson Correlation(sig-2tailed)	.864**	.731**	.798**	1	
		N	689	687	684	689	
Mean score in National exams	X	Pearson Correlation(sig-2tailed)	.798**	.754**	.914**	.856**	1
		N					

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

As Table 4.18 indicates, there was a strong correlation between Trainees initial qualification and academic achievement which is a measure of human resource development. This is shown where there is high correlation of among variables above .750 in a 2 tailed test at 0.01significance level.

Further to Correlation, a Regression Analysis was undertaken. The results are given in Table 4.19

Table: 4. 19: Regression Analysis of Initial Qualification and Academic Performance

Model	Unstandardized		Standardized	T	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
Constant	3.650	.037		97.429	.000
Low entry minimum requirement kept off bright Trainees	705	.012	.914	59.018	.000

Dependent Variable: The means score

Table 4.19 shows that the statement that postulated that low entry minimum requirement had kept off bright trainees had a value 0.000 in significance column. This implied that there was significant agreement among the respondents on the same. Therefore was likely to imply that TVET institutions may have attracted trainees of low academic qualification.

From the Table, the following regression equation was derived;

$$Y=3.65 + aX \text{ where } a=.914$$

$$\text{Therefore } Y=3.65 +.914X$$

From the regression equation, it can be interpreted that an increase in trainees initial qualification by one percent would have led to increase in mean score by .914 percent. In other words, initial qualification of Trainees accounts for 83.5 percent of academic attainment in the national examination. This is further confirmed on examination of Significance column in the Table above

where the variables have .000 in significance column, a value below 0.05 (5% confidence level).

Therefore on basis of Tables 4.18 and 4.19, the Null hypothesis stating that;

H₀₂: There is no significant relationship between the entry qualifications of the Trainees admitted in Public TVET institutions and trainees' skill formation on economic development in Western Kenya was upheld.

These findings affirm the findings of Nkirina (2010), who found that a strong grounding in basic skills to do with arithmetic, competency in the language of curriculum delivery influences the effectiveness of any training program. This position is further affirmed by Changilwa et al (2016) who found out that low entry qualification of Trainees posed a challenge on effective implementation of the curriculum.

Therefore on the basis of the findings in Table 4.17 that the majority of the trainees 445 (63.9%) had a qualification of a D plus (D+) and below, it may be reasonably concluded that TVET institution were not in position manage to produce quality manpower to facilitate economic development of Western Kenya as way of improving quality life of the residents.

4.4.3 Extent to which adequacy of infrastructures at Public TVET institutions affect trainees' Skill formation for Economic Development in Western Kenya

The third objective sought to determine the extent to which adequacy of the infrastructures at Public TVET institutions affect trainees' skill formation for

economic development in Western Kenya. The study sought data to test the following hypothesis;

Ho₃: There is no significant relationship between adequacy of infrastructure at Public TVET institutions and trainees' skill formation on economic development in Western Kenya. In order to obtain the needed data, Questionnaires, document analysis and observation schedules were used to generate data that was used for computation of Pearson's' Correlation Coefficient at 0.01 significance level and Regression Analysis. The results are reflected in Tables 4.20 to 4.32.

4.4.3.1 Adequacy of Infrastructure at Study Institutions

Writing on importance of infrastructure, Olutola (1982) noted that the availability of the school building and other plants enhance good academic performance. The study therefore sought to establish the adequacy of infrastructure at study institutions. Data to address this objective was captured from Trainees, HoDs, Principals and Observation schedules.

Table: 4. 20 Trainees Response on Adequacy of Classes at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	309	44.4	44.4	44.4
A	331	47.6	47.6	92.0
D	20	2.9	2.9	94.8
SD	36	5.2	5.2	100.0
Total	696	100.0	100.0	

Table 4.20 shows that 309(44.4%) of respondents strongly agreed and 331(47.6%) agreed that classes were adequate. Based on this rating, it is reasonable to conclude that classes at study institutions were adequate for promotion of Training. However, it was observed in one institution classes were made of makeshift *mabati* structures without lockable doors and windows, a situation that was likely to compromise the training process particularly during rainy seasons. To promote effective training, there is need to put up modern classes to ensure that training process is not disrupted at any time.

Table: 4. 21 Trainees Rating of Adequacy of Agricultural Workshops at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	306	44.0	44.0	44.0
A	321	46.1	46.1	90.1
D	40	5.7	5.7	95.8
SD	29	4.2	4.2	100.0
Total	696	100.0	100.0	

From Table 4.21, majority of respondents (over 90 %) agreed that agricultural workshops were adequate to enhance effective. As if to confirm the above findings, through interviews one principal observed;

---as an institution we have a challenge of infrastructures particularly workshops. But I am happy that last year we were given one million shillings by Constituency Development Fund (CDF) that enabled us to put up this agricultural workshop.

In reference to the above statement, support among various stakeholders is critical in ensuring that adequate infrastructure is provided to promote effective teaching and learning.

Table: 4. 22 Trainees rating of adequacy of Home Science Rooms at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	54	7.8	7.8	7.8
A	12	1.7	1.7	9.5
D	315	45.3	45.3	54.7
SD	315	45.3	45.3	100.0
Total	696	1000	100.0	

Table 4.22 shows that majority of respondents (over 85%) either disagreed or strongly disagreed that Home Science rooms were adequate to enhance effective skill development. Inadequate Home Science rooms were likely to compromise effective skill development among Trainees taking courses by curtailing their ability to practical exposure. Walking (2001) observes that a practice session should follow demonstration immediately as a way of enhancing skill development. This is only possible if facilities such as Home Science rooms are available.

Table 4. 23: Trainees and HoDs responses of adequacy of ICT Laboratories at Study Institutions

	Trainees			HoD		
	Frequency	Response Percent	Cumulative Percent	Frequency	Response Percent	Cumulative Percent
SA	47	6.8	6.8	0	0.0	0.0
A	2	.3	7.1	0	0.0	0.0
U	16	2.3	9.4	0	0.0	0.0
D	513	72.5	83.0	54	60.0	60.0
SD	118	16.7	100.0	36	40.0	100.0
Total	696	100.0		90	100.0	

From Table 4.23 all HoDs (100%) as well as over 80 percent of the Trainees disagreed that ICT laboratories were adequate. This position was triangulated through observation and document analysis. Observation involved physical establishment of the number of ICT laboratories at study institutions and the state of enrollment putting in mind that ICT is a common unit across all classes. The results were used to compute Lab: Trainees ratio. The findings are presented in Table 4.24

Table 4. 24: State of ICT Laboratories at Study Institutions

Serial No	Number of Labs	Number of Trainees	Lab: Trainee Ratio
1	3	1779	1:593
2	2	1400	1:700
3	1	1050	1:1050
4	1	855	1:855
5	1	802	1:802
6	1	651	1:651
7	1	524	1:524
8	1	320	1:320
9	1	450	1:450
10	1	259	1:259

From Table 4.24 lack of ICT laboratories emerged as the greatest challenge facing TVET institutions considering that over 70 % of ICT laboratories were meant to serve over 500 trainees each with the worst case being one(1) ICT laboratory serving 1050 Trainees.

This picture depicted a serious challenge of provision ICT laboratories at study institutions, considering that access to Technology is critical for skill development in an ever evolving technological environment. This implied that even if technological devices such as computers were to be available, the

rooms to facilitate effective operation were grossly inadequate. This situation was likely to compromise skill development among the Trainees considering that computer lessons were compulsory across all classes.

Table 4. 25: Trainees Rating of Adequacy of Library at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	46	6.6	6.6	6.6
A	70	10.1	10.1	16.7
D	281	40.4	40.4	57.0
SD	299	43.0	43.0	100.0
Total	696	100.0	100.0	

Table 4.25, indicate that only 116(16.7%) of the respondents agreed that the libraries were adequate. These findings were corroborated through observation and document analysis with data obtained being used to compute Capacity: Trainee ratio. The findings are given in Table 4.26.

Table 4.26: Adequacy of Libraries at Study Institutions

Sno	No Library	Enrolment	Capacity	Capacity: Trainee Ratio	Percentage of population
1	1	1779	100	1:18	5.6
2	1	1400	80	1:18	5.7
3	1	1050	100	1:11	9.5
4	1	855	70	1:12	8.2
5	1	802	100	1:9	12.5
6	1	651	70	1:10	10.8
7	1	524	50	1:12	9.5
8	1	320	50	1:7	15.6
9	1	450	50	1:9	11.1
10	0	259	-	-	-

From Table 4.26, observation by the researcher revealed that 9 institutions had at least a library with one institution not having a library at all. The institution without a library had a book store where students could borrow books and read from elsewhere. However even the institutions that had libraries, their capacities were low as they ranged between 50 and 100. Capacities of the institutions showed that majority of the institutions' libraries were less than 10 percent (10%) of the institutions' enrollment. Though one could argue that libraries may not be very critical in enhancing trainees skill development as one could borrow a book and read from elsewhere, libraries provide relatively more conducive environment for learning compared to any other environment. From these findings, it can be concluded that adequacy of libraries emerged as one of the main challenges facing study institutions, a

situation that was likely to compromise development of quality skill development among TVET Trainees.

However, it was observed that in two institutions two major complexes were being put up through economic stimulus initiative to house libraries and ICT centers. This was likely to provide great relief to these institutions as they were direly in need of these resources.

Table 4. 27: Trainees Rating of Adequacy of Engineering Workshops at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	46	6.6	6.6	6.6
A	60	8.6	8.6	15.2
D	374	53.7	53.7	69.0
SD	216	31.0	31.0	100.0
Total	696	100.0	100.0	

From Table 4.27, only 46(6.6%) and 60(8.6%) of respondents strongly agreed and agreed respectively that engineering were adequate at the study institutions. Therefore majority of respondents (over 80%) perceived engineering workshop to be inadequate.

Data on this item was also collected through observation and document analysis. The findings were used to compute Workshop Trainee ratio. The findings are presented in Table 4.28.

Table 4. 28: State of Engineering Laboratories at Public TVET institutions at Study Institutions

Sno	No of Laboratories	Enrollment	Workshop: Trainee
1	5	500	1:100
2	2	425	1:223
3	2	320	1:160
4	2	324	1:162
5	2	360	1:180
6	2	202	1:101
7	2	182	1:91
8	2	90	1:45
9	2	102	1:51
10	1	64	1:64

From Table 4.28, only four (40% of study institutions) had a ratio of 1<100. This implied that a single workshop in majority of the institutions had to carry over 100 trainees. Informal interview with HoDs revealed that 20 trainees per class was the one that was regarded as the most convenient. Further analysis revealed that in 6 institutions the largest single class had over 80 trainees implying that classes were to be taken in a number of shifts. Shortage of Engineering Workshops turned up to be one of the biggest challenges at study institutions.

These findings agree with Dasmani (2011) who found that formal education in Ghana appears to be generally theoretical and skills provided by technical training needed to be complemented by workplace skills. Technical graduates lacked the requisite practical skills for the world of work due to lack of

relevant training resources at the training institutions such as laboratories, a situation that called for retraining of graduates before being employed.

4.4.3.2 Adequacy of Supply of Power at Study Institutions

Supply of power is important for smooth running of computers as well as enabling Trainees to undertake the studies particularly at night as well as running of day to day routine programs in the institutions. For effective running of the above, availability of electricity and standby generators is paramount. It was therefore necessary for the study to establish the same. The findings were captured through observation and presented in Table 4.29

Table 4. 29: Supply of Power at Study Institutions

With Electricity	Percent	With Generator	Percentage	Without Generator	Percentage
10	100	8	80	2	20

From Table 4.29, it can be concluded that all study institutions were adequately supplied with either generator and or electricity. This is a positive step given that availability of power is critical in promotion ICT and other machines to promote learning. Frishch Man (2005), states that lack of electricity hinders institutions ability to use ICT in teaching and learning as well as use of other machines such as welding to expose students to practical lessons, a critical component in skill development.

4.5.3.3 Influence of Infrastructure at Study Institutions on Access to People with Disability

People with Disabilities have been identified to form the largest minority group. However access to education is influenced by nature of building. The study therefore sought to establish suitability of facilities at study institutions to PWDs. The researcher carried out document analysis to establish PWDs enrolled and also observation of various structures to establish whether they had features suitable for use for PWDs. The study established that the total registration for PWDs stood at 22 spread across the study institutions whose enrollment stood at 8001.

The number of PWDs therefore represented 0.275 of the entire population. According to the United Nations Convention on the Rights of Persons with Disabilities (PWDs), of the with Global Population standing approximately standing at approximately 650 million people, the composition of PWDs stand at about 10% making them to be the largest minority. With such numbers PWDs are such a large number that failure to address their need as regards to opportunities such as access higher education and training would be regarded as greatest violation of Human Right.

According to the Convention of the Rights of the Persons with Disabilities 2006(UN, 2006), every member state of United Nation who is a signatory to the Convention must identify and overcome obstacles and barriers to accessibility to conducive environment. The study sought to establish availability of ramps on various buildings, specialized pathway to facilitate

easy movement on the wheel chairs by PWDs within the compound. Ramps are usually meant for easy access to and within the buildings for people with PWDs. Data to address this objective was captured through observation. The findings are presented in Table 4.30

Table 4. 30: Availability of Ramps on Various Infrastructures at Study Institutions

Institutions	Home	Classes	Libraries	Workshops	Toilets	Laboratories
	Science					
With ramps	2	0	2	2	1	0
Percent (%)	20	0	20	20	10	0
With no ramps	8	10	8	8	9	10
Percent (%)	80	100	80	80	90	100

Table 4.30 reveals that majority of facilities at study institutions did not have ramps that could have facilitated easy movement for PWDs with no institution (100%) having ramps on any class at all. The study further established that there was no institution with well-designed smooth pathways and only one institution had special lavatory meant for PWDs. It could therefore be concluded that TVET institutions ability to enhance access to PWDs was hampered by lack of necessary infrastructures. Absence of supportive infrastructure could be a pointer to low enrollment with PWDs. Soyinge, Ogundairo and Adenuga (2009) observed that absence of ramps, steep stairs

and slippery floors are major obstacles faced by physically challenged persons in Nigeria.

4.4.3.4 Correlation and Regression Analysis on Impact of Infrastructures at Study Institutions on Skill Formation for Economic Development in Western Kenya

The study also sought to determine the impact of infrastructures at public TVET institutions on skill development for economic development in Western Kenya. Skill development was measured based on trainees academic attainment in National examination on grading scale of 1-8 points where the best score was '1' progressing all through to worst score of '8'. To answer this objective, the heads of departments and Trainees were asked to tick against their level of agreement using a Likert scale.

4.4.3.4.1 Responses of HoDs on Adequacy of Infrastructure at Study Institutions

The data obtained from HoDs responses was used to generate Pearson Correlation Coefficient in Table 4.31

Table 4. 31: Pearson Moment Correlation Coefficient for Adequacy of Infrastructures at Study Institutions and Academic Performance

		X1	X2	X3	X4	X5	X6	X7	X8
Adequacy of classes X1	Pearson Correlation	1							
	Sig. (2-tailed)								
	N								
Adequacy of agricultural workshops X2	Pearson Correlation	.987**	1						
	Sig. (2-tailed)	.000							
	N	90	90						
Adequacy of home science rooms X3	Pearson Correlation	.534**	.540**	1					
	Sig. (2-tailed)	.000	.000						
	N	90	90	90					
Availability of ICT Lab X4	Pearson Correlation	.561**	.570**	.877**	1				
	Sig. (2-tailed)	.000	.000	.000					
	N	90	90	90	90				
Availability of spacious library X5	Pearson Correlation	.563**	.570**	.939**	.934**	1			
	Sig.(2-tailed)	.000	.000	.000	.000				
	N	90	90	90	90	90			
Availability of engineering workshop X 6	Pearson Correlation	.561**	.568**	.923**	.941**	.986**		1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
	N	90	90	90	90	90	90		
Availability of electricity X7	Pearson Correlation	.957*	.532**	.542**	.552**	.550**			1
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
	N	90	90	90	90	90	90	90	
Mean score X8	<i>Pearson Correlation</i>	.865**	.868**	.749**	.747**	.747**	.743**	.881**	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N								

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

The statistics in Table 4.31 shows there is positive correlation between academic mean score and adequacy of classes, agricultural workshops, home science rooms, ICT laboratories, spacious library, engineering workshops, and electricity with all variables having coefficient above 0.725 in a 2 tailed test at .001 significant levels

4.4.3.4.2 Regression Analysis on Impact of Infrastructures at Public TVET Institutions on Skill Formation in Western Kenya

In addition to Pearson's Correlation Coefficient, HoDs, and Trainers responses on adequacy of infrastructure were used for regression analysis on influence of infrastructures at TVET institutions on economic development of Western Kenya. Trainees responses on adequacy of infrastructures was run against results of Kenya National Examination Council (KNEC).The outcomes are reflected in Tables of 4.32 and 4.34.Multiple Regression analysis entails establishment of statistical relationship between independent and dependent variables.

Table 4.32 shows summary of regression model on regression analysis on influence of Infrastructures at public TVET on skill formation for economic development in Western Kenya.

Table 4. 32: Model Summary Regression of Impact of Infrastructure at Study Institutions on Skill Formation for Economic Development in Western Kenya

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797 ^a	.636	.632	.57505

a. Predictors: (Constant), Adequacy of Libraries, Adequacy of classes, Adequacy of Engineering Workshops, Adequacy of Power, Adequacy of Home science rooms, Adequacy of agricultural workshops, Adequacy of ICT Laboratories

Table 4.32 gives the values of R and R². Regression analysis used to establish the composition of independent variables in dependent variable in the given expression. The value of R² shows the value of independent variables that can be accounted in the dependent variable. The value assumed by R runs from -1 to 1 with the closer the absolute value of R is to 1 being the indicator of the stronger Correlation among the variables. The value R shows how much dependent variable “economic development” can be attributed to infrastructure. The value of R is 0.797, representing Multiple Correlations, which shows high Correlation. The adjusted R² is for normalization of R² so that it assumes best fit model of the population. R Square from the table is 0.632. This implies that 63.2 percent of dependent variable can be attributed to independent variables in a given expression.

Table 4. 33: Regression analysis of impact of Infrastructures at Study Institutions on skill formation and economic Development in Western Kenya

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.459	.091		26.895	.000
Adequacy of classes	.553	.124	.444	4.447	.000
Adequacy of agricultural workshops	.942	.130	.750	7.255	.000
Adequacy of Home science rooms	.126	.081	.111	1.565	.118
Adequacy of ICT Laboratories	.193	.199	.175	.970	.332
Adequacy of Engineering Workshops	-.298	.056	-.303	-5.308	.000
Adequacy of Power	-1.064	.074	-.910	-14.462	.000
Adequacy of Libraries	.512	.177	.472	2.897	.004

a. Dependent Variable: Mean score

Table 4.33 provides information concerning Multiple Regression concerning each variable under consideration. This analysis was critical for it facilitated the making of predictions on influence of infrastructures on skill formation and economic development of Western Kenya. The Table reveals both the constants (students mean score) and variables that make up the model by examining the values in significance column at 5 % (0.05) confidence level. The interpretation is that any value that is less than 0.05 means that the

independent variable has significance influence while any variable whose value is more than 0.05 means the variable has less or insignificant influence on dependent variable. From Table 4.32, the most significant predictors of economic development are adequacy of classes, adequacy of Agricultural Workshops, adequacy of power, adequacy of Libraries and Engineering Workshops for all have values that are less than 0.05 in significance column. However, adequacy ICT laboratories and Home science rooms had less significant influences as they had values falling above 0.05 in significance column.

Therefore on the basis of findings from Correlation in Table 4.31, Model summary Regression Table 4.32 and Regression analysis on influence of infrastructure on trainees' skill formation for economic development in Western Kenya Table 4.33, the hypothesis stating that,

H₀₃: There is no significant relationship between adequacy of infrastructure at Public TVET institutions and trainees' skill formation on economic development in Western Kenya was affirmed.

These findings are in agreement with earlier research on influence of adequacy of infrastructures on skill development. FrishchMan (2007) found out that lack of workshops hinders institutions ability to promote practical teaching; lack of electricity hinders institutions ability to use ICT in the learning including use of other machines such as welding to expose students to practical lessons which are critical in skill development. The findings further agrees with, Blaign (1998) who asserts that over 75% of country's school system was

inadequate to cope with demand in America making student's education attainment to remain stagnantly low over the years.

4.4.4 Impact of Teaching-Learning Resources at Public TVET Institutions on Trainees' Skill Formation for Economic Development in Western Kenya

Quality vocational training is an expensive venture that requires suitable equipment and tools; adequate training materials, such as books and training manuals. This study sought to establish how the Teaching and Learning Resources at public TVET institutions influences skill formation for economic development in Western Kenya. The study sought data to analyze the following hypothesis:

Ho₄: There is no significant relationship between the teaching and learning resources at Public TVET institutions and trainees' skill formation on economic development in Western Kenya

Data to address this objective was collected using 3 principal instruments. These were questionnaires, observation schedule and document analysis. Positive statements on the state of teaching and learning resources were posed to the Trainees in form of a Likert scale and scored. The Trainees were asked to tick against the given predetermined responses. The four items on perception scale index constituted four sub variables that signify adequacy of teaching and learning in the effective training process.

Data obtained was used for computation of Correlation and Regression analysis, whose findings formed a basis of evaluation of the hypothesis. The findings are presented in Tables 4.34 to 4.40.

4.4.4.1 Adequacy of Equipment in Engineering Laboratories at Study

Institutions

Equipment in laboratories are critical in facilitating skill development as they are used to expose the trainees to practical on what should be faced in actual field upon completion of the study. The study sought to know the adequacy of equipment in engineering laboratories at study institutions. The findings are presented in Table 4.34

Table 4. 34 Trainees Rating of Adequacy of Equipment in Engineering Laboratories at Study Institutions

Response	Frequency	Percentage	Valid percent	Cumulative Perce
SA	56	8.0	8.0	8.0
A	60	8.6	8.6	16.6
D	279	40.1	40.1	56.8
SD	301	43.2	43.2	100.0
Total	696	100.0	100.0	

Table 4.34 shows that over 570 respondents (over 80%) disagreed to positive statement that equipment in engineering laboratories were adequate. Through observation; it was revealed that equipment's like dummy engines were available in all institutions. All necessary equipment's for learning engineering courses were available in study institutions. However they were not in tandem

with the demands occasioned by high enrollment levels. Observation of the ongoing lesson in one study institution revealed that many students were crowded around some equipment during a practical lesson, a situation that implied that the equipment were not adequate.

However the study established that in one institution the available instruments were far much above the needs due to low enrolment as some classes had as fewer as 2 trainees. In another institution there was a lot of equipment that was received as a donation from Chinese government in Mechatronics lying idle for a period of over 3 years due to lack of qualified Trainers to use them. Despite these findings the state of equipment in engineering laboratories was inclined towards inadequacy, a situation that was likely to compromise their ability for individualized interaction with the equipment to develop relevant skills. Based on these findings, it is apparent that lack of equipment in engineering workshops was one of the major challenges facing study institutions.

These findings corroborate the findings of Ngure (2013a) who found that graduates of TVET institution who pursued motor vehicle mechanics though had sufficient theoretical knowledge lacked technical know-how, a situation that was traced to lack of adequate equipment at their training institutions.

4.4.4.2: Adequacy of Equipment in Home science Rooms at Study Institutions

Data for this objective was mainly obtained through observation. The equipment considered were fridges, freezers, and electric cookers, gas,

cooking and serving utensils among others and whether they were adequate enough to promote individual exposure of individual trainee. The study established that only one institution (10%) had equipment in Home science rooms that could be rated as adequate. The institution was even running a hotel that was serving the whole institution and therefore a source of income to the institution. The students also did their practical lessons there. The remaining 9 institutions (90%) did not have adequate equipment to in view of enrollments.

Beside availability and adequacy of equipment, the study endeavored to establish whether the equipment used at the institutions were modern or obsolete. Modern facility refer to the facilities that are in line with the facilities used in the industries while obsolete facilities referred to the state where the training equipment were absolutely out of tune with the facilities/equipment currently used in business Organizations and industries.

It was established that in six institutions; trainees were still using equipment like *jikos*, in two other institutions the equipment were blended, both modern and obsolete like *jikos*. It was only one institution that was using modern equipment to train its students. Based on these findings, it can reasonably be concluded that adequacy of equipment in home science rooms was one of the challenges facing study institutions. Failure to have necessary equipment was likely to compromise development of appropriate skills in line with Kenya Vision 2030 development aspirations. Balogun (1982) contended that inadequate modern equipment for training was likely to compromise the

quality training for students taking catering courses, a situation that was likely to compromise the competitiveness of such students on the labour market upon graduation. No proper Science Education training can take place in absence equipment for teaching resources as facilities enables the learner to develop problem-solving skills and scientific attitudes necessary for job performance.

4.4.4.3 Adequacy Textbooks at Study Institutions

Data to address this objective was captured from trainees who were users since they were in position to give a clear picture of what they had been undergoing as well as observation guide. Four positive statements on the state of textbooks and reference materials resources were posed to the Trainees in form of a Likert scale and rated as follows; Strongly Agree (SA); Agree (A); Undecided (UD); Disagree (D) and Strongly Disagree (SD). The Trainees were asked to tick against the given predetermined responses .The four items on perception scale constituted four sub variables that signify the requirements for effective teaching and learning in the training process. The findings are presented in Table 4.35

Table 4. 35: Trainees Rating of Adequacy of Textbooks and other Reference Materials at Study Institutions

	Frequency	Percent	Valid Percent	Cumulative Percent
SA	80	11.5	11.5	11.5
A	116	16.7	16.7	28.2
D	230	33.2	33.2	61.4
SD	267	38.5	38.5	100.0
Total	693	98.0	100.0	

From Table 4.35, the majority of respondents (over 70%) disagreed with the positive statement that they were adequate. Supporting these finding, observation by the researcher revealed that most textbooks that were available on the shelves were mainly one copy each for various authors in different fields, a situation that was likely to be a pointer to inadequacy considering that a number of trainees may want to use the same at a particular time. From these findings, it may be concluded that Trainees had a challenge in finding adequate reference materials to enhance their learning, a situation that was caused by lack of appropriate and adequate resources to supplement trainers' effort.

4.4.4.4: Adequacy of Computers at Study Institutions

The study further sought to establish the adequacy of computers at study institutions. Data to enable collection of this information was captured through document analysis and observation. The results are presented in Table 4.36.

Table 4. 36: State of Computers at Study Institutions at Study Institutions

Sno	No Of Labs	No Comp	No Working	No Not Working	Population Of Trainees	Comp: Trainee Ratio
1	3	50	34	16	1779	1:52
2	2	36	22	14	1400	1:63
3	1	26	22	14	1050	1:47
4	1	30	16	14	855	1:53
5	1	22	17	8	802	1:47
6	1	20	11	9	651	1:59
7	1	15	9	6	524	1:58
8	1	15	7	8	320	1:46
9	1	15	12	3	450	1:37
10	0	8	5	3	259	1:51

As Table 4.36 reveals, the ratio of computers to trainees ranged from 1:37 to 1:63. These findings show that Trainees rating of availability of computers is inclined towards inadequacy. The numbers of computers at study institutions were grossly inadequate to promote any meaningful technological learning. This prompted the researcher to find out whether trainees were having laptops as alternative to desk top computers. Through interview with principals, it was established that there was no condition for students to have a lap top and in any case that a trainee had, then it was personal choice.

Indeed one principal observed;

--how do you imagine that you can have a laptop as an admission requirement in this college considering that the cheapest laptop may be about Ksh 25,000 yet most parents have a bigger problem even the raising Ksh 15000 required for the term as fees?

This situation may imply that Trainees may have had limited experience in the use and interaction of ICTs in learning, a situation that is likely to compromise skill development. DeGennaro (2010) revealed how low social economic status in Massachusetts that had historical record of poor quality grades in areas of student achievement, grades, graduation, and parental involvement recorded improved performance upon implementation of 1:1 laptop initiative. The 1:1 initiative was used to offer courses to students and parents, the school leaders as well as teachers, a situation that saw overall improvements in education attainments for disadvantaged students.

The researcher sought to establish if the measures that were being put in place to ensure that trainees were exposed to technology by increasing their accessibility to computers. During interview with principals, one principal had this to say;

---though computers are critical in enhancement ICT, I don't see the board of management providing adequate computers soon. In fact in this financial year the board has committed to equip the library and ICT center with only 10 computers which is not adequate to address the needs of both trainers and trainees. Considering the rate at which the population is growing, there are other pressing areas such as classrooms that we have to give priority.

This statement is likely to imply that trainees are likely to continue experiencing non-exposure to technology due to inadequacy of computer, a situation that is likely to compromise their skill development thereby limiting their productivity and competitiveness on the labor market.

Similarly the study endeavored to establish institutions connectivity to Internet since it enables one to access a lot of information on various websites virtually on all issues that one may desire. It was therefore imperative to establish if study institutions had Wifi. The findings are presented in Table 4.37

Table 4. 37: Principals response on availability and adequacy of Internet at Study Institutions

Institution	Internet	Adequate	Inadequate
No with	5	2	3
Percent (%)	50	40	60
No without	5	-	-
Percent (%)	50	-	-

Table 4.37 reveals that only 50 percent (50%) of the institutions had internet. However the supply of internet was only reliable in two of the institutions. Reliability of the internet was based on ability of the availability to enable one to browse as and when he/she wishes. This implies that access to internet was a problem in study institutions that was likely to hinder trainee’s ability to access relevant information for skill development.

Brew (2012) in his study titled “Enhancement of ICT for Accelerated Development” in Ghana found Networking departments for faster access of

information, Audio Visuals and applications software were most important facilities that needed enhancement to aid students in order to promote accelerated development. The study established that enhancement of ICT facilities in Polytechnics leads to development of skills that are critical for accelerated development.

4.4.4.5: Adequacy of Furniture at Study Institutions

The study sought the state of furniture in the libraries in the study institutions, Classrooms and laboratories. Data to address this objective was captured through observation. Observation involved assessment of capacity, available furniture and the state, whether modern or old. Old furniture was on the basis of whether the seating surface was made up of timber/metal. Modern furniture is that is made of plastic or any other material that was more comfortable than timber/metal. The findings are presented in Table 4.38

Table 4. 38: Adequacy of Furniture at Public TVET institutions at Study Institutions

SNO	Capacity	No Available	Modern	Old
1	100	100	100	
2	80	80	80	
3	100	85		85
4	70	58		58
5	100	70		70
6	70	70	70	
7	50	50		38
8	50	37		37
9	50	40		40
10	-	-	-	-

From Table 4.38 furniture was fairly distributed in the libraries in study institutions relative to their capacities. However, 3 out of 9 institutions had modern furniture. This implies that majority of the libraries at study institutions did not have modern furniture to enhance comfort of trainees to enhance in their studies. This situation was likely to impact negatively on trainees learning thereby compromising the quality of skill development.

4.4.4.6: Adequacy of Furniture in classrooms at Study Institutions

Adequacy of furniture in classroom was on the basis of whether each trainee could be seated during any particular lesson undertaken. The study revealed that during common lessons such as Entrepreneurship Education that could had a class size as large as over 150 students, a number of trainees in 4(40%) study institutions were seen taking the lessons while standing. In 5 study institutions (50%) some Trainees could be seen moving with chairs from one room to another during change over lessons. The carriage of seats from one room to another could be a pointer of inadequacy of furniture in the institutions for it could be that such trainees were struggling to get seats and once one was able to lay his/hands on one, he/she kept on moving with it from one lesson to another. Further observation of furniture in classrooms revealed that in 3(30%) institutions some trainees were seating on flat benches and using the knees as tables for writing notes. During interview with principals, one principal noted;

yes the shortage of furniture in this institution can be put at 50 percent. However, last year it was at 30 percent. Therefore we are trying. However, I have to be honest and admit that we don't have adequate furniture that can match the status of a training college

These findings could be a pointer of the magnitude of furniture inadequacy at public TVET institutions. This state of furniture is likely to compromise quality of skill development.

4.4.4.7: Adequacy of Furniture in Laboratories at Study Institutions

Laboratories are meant to have special furniture such as stools as opposed to ordinary chairs found in classroom .The study sought to establish state of furniture in study institution. Data to answer this objective was obtained through observation. The study revealed that the number of stools in over 6(60%) institutions could not match with enrollments. For instance in one institution, it was observed that while 35 trainees were undertaking a practical lesson, the laboratory had only 20 stools. Informal inquiry about the situation in the department of the affected institution, one trainer had this to say;

---practical lessons are hands on activities and are best taken while standing. These are engineers and are not taking secretarial courses which entails luxury of seating. You know even in actual field an engineer may stand the whole day trying to fix a problem. Therefore standing during the practical lesson is part of the training. However, the lesson only lasts for two hours and they are lucky that they are working in pairs. This means that they can even keep changing roles including seating in shifts.

The above statement confirms that though there was inadequacy of furniture in laboratories, the problem could not be more pronounced in an ordinary classroom due to the nature of lessons undertaken.

4.4.4.9: Relationship between Teaching and Learning Resources at Study Institutions and Economic Development in Western Kenya

The study also sought to determine the relationship of teaching and learning resources on economic development in Western Kenya. Positive statements

responses by Trainees on the state of infrastructure at study institutions were rated on Likert scale and scored. Data obtained was used to run Correlation between variables and Regression analysis as shown in Tables 4.39 and 4.40 respectively.

Table 4. 39: Pearson’s Correlation Coefficient between Teaching and Learning Resources at TVET Institutions and Academic Performance

		X1	X2	X3	X4	X
Adequacy of TextbooksX1	Pearson	1				
	Correlation(sig-2tailed)	689				
N						
Adequacy of computersX2	Pearson	.975**	1			
	Correlation(sig-2tailed)	679	684			
N						
Adequacy of resources in WorkshopsX3	Pearson	.905**	.933**	1		
	Correlation(sig-2tailed)	679	674			
N						
Adequacy of resources in Home Science roomsX4	Pearson	.968**	.973**	.912**	1	
	Correlation(sig-2tailed)	677	684	674	681	
N						
Mean score in National exams	Pearson	.774**	.749**	.743**	.751**	1
	Correlation(sig-2tailed)					

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

Table 4.39 shows that there was no significant relationship between Teaching and learning resources and academic attainment. The significance level was above 0.7 in a two tailed test.

Table 4. 40: Regression Analysis of Teaching and Learning Resources at Study Institutions and Academic Performance

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.377	.088		38.443	.000
Adequacy of textbooks	.599	.086	.829	6.992	.000
Adequacy of computers	-.284	.100	-.404	-2.827	.005
Adequacy of equipment's in workshops	.292	.056	.359	5.251	.000
Adequacy of equipment's in home science	.010	.083	.014	.123	.902

a. Dependent Variable: Mean score

From Table 4.40, the following regression equation was developed

$$Y = 3.377 + aX_1 + bX_2 + cX_3 + dX_4$$

Where a=.829; b= -.4004; c=.359; d=.014 X₁=Adequacy of Textbooks; X₂=Adequacy of Computers; Availability of Equipment in workshops, X₄=Availability of Equipment in Home Science Rooms

$$\text{Therefore } Y = .829X_1 - .4004X_2 + .359X_3 + .014X_4$$

From Table 4.40, when Textbooks, equipment in workshops and home science rooms are increased by one percent, performance will increase by .829 percent, 0.359 and .014 respectively. However, reduction in computer shortage by one percent will lead to increase in performance by .4004 percent. From these findings, it can be deduced that the greatest influence on academic attainment was pegged on availability of textbooks as it accounted for 69 percent (69%) of academic attainments. The values in Significance column show that all variables have significant influence on economic development except equipment in Home Science room which had a value .902 which is above 0.05 Significance level bench mark.

Based on correlation from Table 4.39 and Regression equation derived from Table 4.40, it can be concluded that there is no significant relationship between the teaching and learning resources and academic performance which is a measure of Human resource development. Therefore the null hypothesis which stated that there is no significant relationship between the teaching and learning resources at Public TVET institutions and trainees' skill formation on economic development in Western Kenya was upheld.

These findings are concurring with earlier study by Balogun (1982) who established that no Proper Science Education training can take place in the absence of equipment for teaching, as facilities enable the learner to acquire problem-solving skills and scientific attitudes that are key ingredients for enhancement of job performance. The findings further echoes earlier study by Kitainge (2003) who found that trainees at Australian TVET institutions get

better training in comparison with their Kenyan counterparts, a situation that was linked to disparity in quality resources available in the two countries training institutions. Subsequently, the Kenyan graduates required more of on job training due to inadequate exposure during their training while in colleges.

4.5.5 Extent to which Qualification of Trainers at Public TVET institutions impact on trainees' Skill formation for Economic development in Western Kenya

Trainers are a critical element in the training process. The study sought to determine the extent to which qualifications of the trainers' impact on trainees' skill formation for economic development in Western Kenya. The information sought was in terms of adequacy, professional qualification, teaching experience and continuous professional development. This information was collected through document analysis, interview schedule and questionnaires. The respondents were principals and HoDs. On the basis of their responses, Regression analysis was run to test the following hypothesis:

Ho₅: There is no significant relationship between the qualification of Trainers at Public TVET institutions and trainees' skill formation on economic development in Western Kenya was run.

The finding are shown in Table 4.41 to 4.47

4.5.5.1 Professional and Academic qualifications of Trainers at Study Institutions

Professional and academic qualifications of trainers' are critical in determining the type of courses to be offered in any institution of learning. It

was prudent therefore to establish the professional qualification of the trainers who teach at the TVET institutions. The data on the academic qualifications of the trainers is captured in Table 4.41

Table 4. 41: Highest Academic Qualifications of Trainers at Study

Institutions

Category	M.Ed.	B.Ed.	Bsc	H Dip	Dipl	Total
Frequency	35	412	78	23	102	650
Percentage	5.4	63.4	12	3.5	15.7	100

From Table 4.41, the majority of trainers 80.8 percent had a minimum qualification of first degree and above. Even though the data may indicate that trainers were of high academic qualifications, it was important to know their areas of specializations. The findings are presented in Table 4.42

Table 4. 42: Classification of Trainers per Area of Specialization at Study

Institutions

Course	Electrical	Building	Mechanical/A utomotive	Bus/ Ente	ICT	Fashion/ Design	Medic al
No of Trainers	45	50	48	325	80	62	40
Percentage	6.92	7.69	7.38	50.0	12.3	9.54	6.15

From Table 4.42, the majority of Trainers (over 60%) had not done any technical related courses that were required in the institutions. A majority of them were teaching business related courses and ICT. It was only the diploma holders who had the pre-requisite qualifications to teach engineering related

courses. Since majority of Trainers were inclined to courses that were not technical oriented, it may imply that TVET institutions were not likely to yield development of human resource base both in quantitative and qualitative terms to meet the regions' economic development aspiration

During the interview with the institutions' principals on where the trainers come from, a majority of them said that the trainers are usually posted by the Teachers' Service Commission from among the university and college graduates. On further inquiry it came out clearly that there was no institute of higher learning in Kenya that trains technical teachers at degree level except the Kenya Technical Teachers Training College which offered diploma in technical education. This meant the TVET institutions did not have the human resources capacity to impart technical skills to the trainees that could have made Western Kenya realize marked economic development in line with Kenyas' dream of Kenya vision 2030. This was confirmed by the employers through the human resource officers as one commented;

the major problem of the TVET graduates is that most of them do not seem to have knowledge on the use of modern equipment and machines, we have to re- train them a fresh. Some of them do not have basic skills and theoretical understanding of engineering concepts.

These situations were linked to Trainers who lacked practical exposure, disadvantaging trainees especially when faced with advanced technology. These findings are in agreement with Changilwa, Akala and Wambua (2016) in their study titled "The Challenges Facing Effective Implementation of Artisan and Craft Courses in Catholic Sponsored Community Colleges in

Nairobi, Kenya” where they found out that inadequacy of teaching staff and the teaching and learning resources needed for carrying out practical sessions during teaching of skills was a major obstacle in skill development.

4.5.5.2 Adequacy of Trainers at Study Institutions

Adequacy of trainers is critical in effective curriculum delivery. An item in HoDs questionnaire sought to establish adequacy of trainers at study institutions. The majority of the respondents (78) (86.7%) indicated that the trainers were inadequate. The shortage of trainers therefore emerged as one of the main challenge facing TVET institutions in Western Kenya. When Trainers are inadequate, it means that there is high trainee trainer ratio which hinders effective interaction between individual trainees and trainers, a situation that end up compromising quality training. This situation is likely to compromise ability of TVET institutions to develop desired manpower for attainment of envisaged state of economic development.

It was necessary to find out how institutions were coping with state of inadequacy of trainers. The findings are indicated in Table 4.43

Table 4. 43: How Study Institutions were coping with Inadequacy of Trainers

Mode of Coping	Frequency	Percentage
Part time Trainers	66	84.6
Multi-grade Teaching	10	12.8
Multi-grade and Part-time	2	2.6

From Table 4.43, the Majority of the HoDs (66) (84.6 %) indicated that the situation was managed by hiring part time trainers. It was observed that Multi-grade teaching involved an option where the trainers combined trainees taking similar units at different levels into the same classroom, laboratories or work-shops.

Through document analysis, it was established in one study institution that, out of a total staff of 93 trainers, 63(67.7%) were part time trainers. During interview of with principal, it was remarked;

the major challenge I am facing in this institution is meeting salaries of Trainers employed by Board of Management(BoM). This has greatly impacted on our ability to put up other infrastructures that could have enhanced quality of TVET training. As part of measures employed to control the wage bill, we do not pay Trainers during school holidays. This even ends up impacting negatively on their rate of turnover.

The Pre occupation of TVET with part-time trainers is likely to compromise on continuity and quality of programs at TVET institutions. It was revealed that majority of part time trainers had Diploma training. Through document analysis, it was revealed that 30 out of 102 Diploma trainers who were not professionally qualified teachers were teaching on part time basis while 45 trainers with same qualification though professional qualified and duly registered by Teachers Service Commission (TSC), did not qualify to be employed by the same TSC. This is attributed to the fact the minimum requirement for TSC employment is a C+ in the two teaching subjects and an overall grade of C+ at KCSE. This may imply that unqualified Trainers were practicing, a situation that was likely to impact negatively on skill development.

4.5.5.3 Teaching Experience of Trainers at Study Institutions

Document analysis was carried in order to ascertain teaching experience of Trainers. The findings are presented in Table 4.44

Table 4. 44 Teaching experience of Trainers at Study institutions

Duration	No. of Trainers	Percentage
Over 15 yrs	217	33.38
10-15 yrs	155	23.85
5-9 yrs	98	15.08
Less than 5 yrs	180	27.70
Total	650	100

Table 4.44 shows that the majority of the Trainers (over 57.23%) had teaching experience of more than ten years. Based on these findings, it may be concluded that majority of Trainers had necessary experience to impart appropriate skills to trainees. Robertson (2008) identifies qualities that effective TVET trainers are expected to possess among being the number of years of practice as it is more likely that they are more competent in subject delivery as compared with those of lesser teaching experience.

4.5.5.4 Continuous Professional Development of Trainers at Study Institutions

Effectiveness of curriculum delivery is enhanced by continuous upgrading of the skills of Trainers. It was therefore necessary to get information on continuous professional development of trainers. This was measured on basis of initial qualification, furthering of studies, engagement in professional

practice and attendance of seminars related to area of ones' specialty. Data was captured through document analysis and the findings are given in table 4.45.

Table 4.45 Qualification of Trainers, Number Expected to be and Number Pursuing Further Studies at Study Institutions

Current Qualification	Current no. of Trainers	No. Expected to be Pursuing	No. Pursuing	No not Pursuing
M.Ed.	35	Phd-35	3(8.6%)	32 (91.4%)
B.Ed.	412	Masters-412	5(1.2%)	407(98.8%)
Bsc	78	Masters-78	1(1.3%)	77(98.7%)
Higher Diploma	23	Degree-23	2(8.7%)	21(91.7%)
Diploma	102	Degree-102	19(18.6%)	83(81.4%)
Total	650		30(4.6%)	620(95.4%)

Findings from Table 4.45 reveal that only thirty (30) (4.6%) out of 650 trainers were pursuing further studies at various levels. The number of Trainers pursuing further studies was too low, a situation that may imply that majority of Trainers were imparting skills in Trainees based on their historical competencies. These are in agreement with the findings of Ngure (2013a) who stated that Trainers professional development was low because the government did not provide a well-defined in-service programs for them. The

only alternative left for them to upgrade their training was to pay for it, resulting in myriad training levels and instruction depending on the motivation of each individual trainer.

As if to confirm this finding during interview with Principals, majority of principals (7) attributed the situation of low numbers of Trainers pursuing further studies mainly to inability of Teachers Commission (TSC) to appreciate those who pursue further studies through monetary rewards in form of salary increment. One principal stated;

.why should one waste resource pursuing further education when the employer does not recognize such effort? Why not invest the money in productive venture that can support your family?

Sandholtz, Ringtaff and Dwyer (1997) contend that teaching and learning in the era of digital revolution, climatic change and knowledge society has presented paradigm shift in teacher education and practices. They observe that there is rapid development of technologies, presenting short life cycle of technologies so far invented making continuous professional development a must if Trainers are to remain relevant.

4.5.5.5 Engagement of Trainers in Consultancy services at Study

Institutions

The study sought to establish whether trainers were exposed to industry. This was meant to assess the frequency of trainers' interaction with the industries to practice and gain relevant experience on using / handling modern equipment. This experience can be passed to the trainees in the course of their practical or

teaching sessions. Data was captured from HODS questionnaires and principals interview. The findings are given in Table 4.46

Table 4. 46: The HoDs Response on Engagement of Trainers in Consultancy Services at Study Institutions

	Frequency	Percentage
Always practiced	10	11.1
Sometimes Practiced	17	18.9
Never practiced	63	70.0

From Table 4.46, majority of the HoDs (63) (70%) indicated that trainers are not involved in practicing their skills outside the classroom. Through interview with the principals, it was established that the TSC code of Conduct does allow Trainers to be engaged in private practice as it amounts to conflict of interest. One principal remarked,

TSC code of conduct does not allow Trainers to practice. The only practitioners we have are those that we have engaged in medical department as part-time Trainers. If there is Trainer engaged in professional practice is doing it illegally.

Based on the study findings it can be deduced that though majority of trainers had the right qualification to teach, they mostly taught based on historical competencies. This was likely to impact negatively on skill development of TVET Trainees. This finding also point out the policy issue that need to be addressed. While engagement in professional practice may go a long way in promoting relevancy of TVET Trainers, the employer see it as a conflict of interest.

These findings concurs with the findings of Ngure (2014) who noted that Trainers in the technical institutions were rarely exposed to industries, which placed them at disadvantaged position to their Trainees were more exposed to modern technologies.

4.5.5.6 Relationship between Qualification of Trainers at Study Institutions and Trainees' Skill Formation on Economic Development in Western Kenya

The study sought to determine the relationship between qualification of Trainers at TVET institutions and academic attainment of trainees as measured by the mean score in the national examination. The HoDs were asked to tick against their level of agreement in the likert scale. Scores obtained were used to generate Table 4.47

Table 4. 47: Regression Analysis of Qualification of Trainers, In-service Courses for Trainers, Continuous Academic Development at Study Institutions and Skill Formation in Western Kenya

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	5.687	.063		90.645	.000
Trainers normally undergo in-service	1.670E-16	.017	.000	.000	1.000
All trainers should undergo in-service Training	.013	.062	.026	.208	.836
All Trainers should have high Academic qualification	.268	.074	.710	3.635	.000
All Trainers have High academic qualifications	-.268	.050	-1.026	-5.395	.000

Dependent Variable: Mean score

From Table 4.47, the following regression equation can be derived;

$$Y=5.687 +aX1 + bX2 + CX3$$

Where a=.026; b=.710; c= -1.026, X1=In-service Training, X2=Academic Qualification of Trainers and X3= Availability of Qualified Trainers at study Institutions

$$\text{Therefore } Y= 5.687 +.026 X1 +.710X2 -1.026X3$$

As seen from Table 4.47, Trainers qualification is the only variable with greatest influence on Trainees academic attainment as it accounted for 50.41 percent of Trainees mean score while in-service courses accounted for negligible influence(their values are above 0.05 Significance level) .Therefore if Trainers in-service courses and staffing Public TVET institutions under study with qualified Trainers were to increase by one percent, performance was set to increase by .026 and .710 percent respectively. Therefore failure to staff public TVET institutions with adequate qualified Trainers negates governments' objective of using TVET institutions as drivers of skill development. Based on these finding, the null hypothesizes that stated; there is no significant relationship between the qualification of Trainers at Public TVET institutions and trainees' skill formation on economic development in Western Kenya was upheld.

The findings on qualification of Trainers mirror the study by Robertson (2008) which identifies qualities that Public TVET trainers are expected to possess. Firstly they are expected to be experts in their professions and their discipline. Secondly they are expected to have practiced for a number of years to gain industrial experience prior to becoming teachers and instructors. These

measures are meant to ensure that trainers have developed widely to propagate appropriate skills to trainees. It also echoes Smith (2006) who found out that Trainers' style of curriculum delivery, their interest in the subject and their ability or willingness to update their competency influences the quality of skill development. Hinton (2004) had similar suggestion by asserting that since Trainers are the backbone of an organization, they need to undertake continuous professional development to empower themselves not only with existing skills but also to learn new ones based on dynamic labor industry.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND
RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the main findings. It also presents conclusions and recommendations on how TVET could be strengthened to promote economic development. The chapter also gives suggestion for further research.

5.2 Summary of the Study

The study aimed at establishing the Impact of Public Technical, Vocational Education and Training Institutions' on Economic Development in Western Kenya. The study investigated courses offered in TVET institutions, entry qualification of Trainees enrolled in various courses, state of infrastructures and teaching and learning resources at the institutions and qualification of trainers and how they influenced the level of skill development. .

The literature reviewed was undertaken globally and in areas related to this study. The review established that there was limited information on the impact of Public TVET institutions on economic development in Western Kenya. The sample of the study comprised 912 respondents: 800 Trainees, 100 HoDs, 10 Principals and 2 Human Resource managers in 2 major companies in study region where TVET Trainees normally undertook their practicum. Data was captured mainly through Questionnaires and interview schedule. However, document analysis and observation schedule were also utilized for

triangulation purposes. The response rate was above 87 percent. The study used proportionate sampling, simple random sampling, census and purposive sampling to get the respondents.

Analysis of Quantitative data was done using descriptive Statistics with results presented in Tables using frequencies and percentages by help of the computer software (SPSS version 23). Qualitative data were organized in themes as per the research questions and hypothesis and the thematic data analyzed using inferential statistic. This involved the running of Correlation and Regression that were used to test the relationship between and among variables.

5.3 Summary of Findings of Impact of Public TVET Institutions on Economic Development in Western Kenya

The study sought to establish the Impact of Public TVET on economic development of Western Kenya under various study objectives. The objectives included to:

- Examine how courses offered in Public TVET institutions impact on trainees' skill formation for economic development in Western Kenya.
- Determine how entry qualifications of Trainees admitted at Public TVET institutions influence trainees' skills formation for economic development in Western Kenya.
- Establish the extent to which adequacy of infrastructure at Public TVET institutions affect trainees' skill formation for economic development in Western Kenya.

- Establish how teaching-learning resources at Public TVET institutions influence trainees' skill formation for economic development in Western Kenya.
- Determine the extent to which qualification of trainers at Public TVET institutions impact on trainees' skill formation for economic development in Western Kenya.

5.3 Summary of Findings of Variables

The first objective sought to find out how courses offered in TVET institutions impacted on skill development for economic development in Western Kenya. The study revealed that though a variety of courses were offered at TVET institutions, majority of both trainees 130 (18.7%) and 25 (27.7%) trainers asserted that business courses were most popular. Science courses were dominated by male Trainees while female Trainees dominated Business and Liberal Arts courses. It was further established that there is no significant relationship between courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya. However, there was significant difference between popularity of Business courses and skill formation in Western Kenya.

The second objective sought to determine how entry behavior of Trainees admitted at Public TVET institutions influenced skill formation for economic development in Western Kenya. The findings showed that the majority of trainees (445)(63.94%) had entry qualification of D+ (D plus) and below. The minimum entry qualification for certificate and diploma courses were

D+ and C- respectively, however, some courses such as pharmacy had entry mean score set at C plain. Regression equation between entry behavior of trainees and development of skill formation for economic development (represented by academic performance) was found as;

$Y=3.65 +.974X$; where X percentage increase in academic attainment.

: It was therefore deduced that there is no significant relationship between the entry qualifications of the Trainees admitted in Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

The third objective sought to establish the Establish the extent to which adequacy of infrastructures at Public TVET institutions affect trainees' skill formation for economic development in Western Kenya. The study established that there was no significant relationship between the following variables on trainees 'skill formation as measured by the trainees mean scores: classes, agricultural workshops, home science rooms, ICT laboratories, spacious library, engineering workshops, and electricity and achievement of economic development. The variables were all at significant level above 0.725 in a 2 tailed test at .01 significant level. All institutions (100%) were adequately supplied with electricity and had generators save for two institutions (20%) which did not have generators. However, through observation, the study established that infrastructures were crossly inadequate as their capacities could not match the levels of enrollments in many institutions. The study also established that even though majority of buildings were available, they had not been modified to promote access for PWDs. This situation may have

contributed to low level of enrollments of PWDs as the number stood at 22 in all study institutions.

The fourth objective sought to establish how teaching-learning resources at Public TVET institutions influence trainees' skill formation for economic development in Western Kenya. The study revealed that furniture was inadequate in libraries, laboratories and classrooms. However, classrooms were worst hit particularly during common lesson such as Communication Skills and Entrepreneurship Education. This situation saw trainees move from class to class carrying seats during lesson change over in a number of institutions. Similarly, most furniture particularly in libraries were not appropriate for reading as it was made of hard materials that could not have made one to comfortably seat for a long time. Document analysis revealed that, the ratio of computers to trainees ranged from 1:37 to 1:63, which was very high. Therefore availability of computers was inclined towards in adequacy. Trainees noted inadequacy in the Textbooks and other reference materials (over 70% of respondents). Observation also revealed that majority of the institutions lacked adequate and modern resources in Home Science Rooms (90%). However, two institutions were found to have more resources compared with number of trainees who were enrolled .In one institution, it was further established that resources for Mechatronics which came as a donation were available yet the institution did not competent trainers to use them.

Based on the responses of positive statements on the adequacy teaching learning resources, the following regression equation was developed to show the relationship between adequacy of teaching learning resources and skill formation as reflected by mean score.

$Y = .829X_1 - .4004X_2 + .359X_3 + .014X_4$; where; Y=Mean score, X1=Textbooks, X2=Computers, X3=Equipment in the workshops X4= Equipment in Home science rooms. When textbooks, equipment in workshops and home science rooms were increased by one percent, performance would have increased by .829 percent, 359 and .014 respectively. The study established that the greatest variables that contributed to economic development of Western Kenya were textbooks and other reference materials as they accounted for about 69 percent (69%) of academic attainments. From these findings, it was established that there was no significant relationship between the teaching and learning resources at Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

Lastly the study sought to determine the extent to which qualification of trainers at Public TVET institutions impact on trainees' skill formation for economic development in Western Kenya. The study established that over 80 percent of Trainers had at least first degree and above. However, majority of these Trainers were mainly teaching Business and ICT related courses. The study established that TVET institutions were inadequately staffed and as such these institutions relied on part time Trainers to bridge staffing deficit. Though professional development is critical in enhancing skill development and

ensuring relevancy of Trainers, it was revealed that less than 15 (5%) Trainers were pursuing further studies and other aspects of professional development like seminars and professional practices.

The following regression equation was developed showing relationship between Trainers and human resource development;

$$Y=5.687 +aX_1 + bX_2 + CX_3$$

Where a=.026; b=.710; c= -1.026; where; X₁= in service courses; X₂=academic qualification; X₃ Availability of qualified trainers

Therefore Y=5.687 +0.026 X₁ +.710X₂ -1.026X₃, Y=Mean score

Therefore if trainers in-service courses and staffing with qualified Trainers were to increase by one percent, performance was set to increase by .026 and .710 percent respectively. Similarly upgrading academic qualifications of Trainers by one percent would have led to positive increase in Trainees academic attainments by 1.026 percent. The study established that staffing TVET institutions with qualified Trainers is the major contributors to skill development as it accounted for 50.41 percent of Trainers and that there is no significant relationship between the qualification of Trainers at Public TVET institutions and trainees' skill formation on economic development in Western Kenya.

5.4 Conclusions of the Study

The study sought to assess the impact of Public TVET on economic development in Western Kenya and the following conclusions were drawn.

The study revealed that business courses were mostly offered in Public TVET institutions in Western Kenya. Despite the fact that all Trainees undergo industrial attachments, the 3 Months period for the exercise is inadequate for industrial exposure. It was further asserted that there was no significant relationship between courses offered in Public TVET institutions and trainees' skill formation on economic development in Western Kenya. Thus the null hypothesizes that stated that there was no significant relationship between courses of offered Public TVET Institutions and trainees' skill formation on economic development in Western Kenya was upheld. However, the study established that though Business courses were popular, there was significant difference between popularity of Business courses and economic development in Western Kenya.

The study found out that majority of trainees had entry qualification of a D+. The bulky of Trainees in TVET institutions had minimum qualification of D plain and C minus. These were the entry qualification for certificate and diploma courses. It was established that there was no significant relationship between the entry qualifications of the Trainees admitted in Public TVET institutions and trainees' skill formation on economic development in Western Kenya. Thus the Null hypothesis was upheld.

The study revealed that public TVET institutions lacked adequate home science rooms for practical lessons, well equipped ICT and agricultural workshops and libraries. The study further established that there was no significant relationship between adequacy of infrastructure in public TVET institutions on trainees' skill formation and economic development of Western Kenya. Therefore the null hypothesis stating that there was no significant relationship between adequacy of Infrastructures at public TVET institutions and trainees' skill formation on economic development in Western Kenya was accepted.

The study established that text books and other reference materials were the main determinants of achievement of economic development as they accounted for 69 percent of Trainees mean score. The study further revealed that there was no significant relationship between adequacy Teaching and Learning Resources at Public TVET institutions and trainees' skill formation on economic development in Western Kenya. Hence, the Null hypothesis was accepted.

Finally the findings revealed majority of Trainers did not have the capacity to discharge their mandate of imparting skills to Trainees in line with Country's' Vision 2030 development aspirations as they possessed general qualifications that fell outside the mandate of TVET. The study established that there was no significant relationship between qualification of trainers at Public TVET institutions and trainees' skill formation on economic development in Western Kenya. Thus the null hypothesis that stated; there is no significant relationship

between the qualification of Trainers at Public TVET institutions on trainees' skill formation and economic development of Western Kenya was upheld.

5.5 Recommendations

Based on the findings of this study, it is recommended that:

- TVET institutions should diversify their courses to embrace a wider scope in terms of skills and competence acquisition of learners. However, this should be done after skills analysis of the industrial needs putting in mind current skill needs and anticipation of future needs of the industry as a way of addressing mismatch between demand of labor and supply of the same.
- There is need to project positively TVET institutions so that they are not seen as institutions meant for academic failures. This measure will ensure that TVET institutions attract trainees of varied qualifications for different courses in order to produce human resources required by different sectors of the economy
- There is need to ensure development of adequate infrastructures such as workshops, libraries and laboratories which should be equipped with sufficient teaching and learning resources as a way of improving learning environment to promote appropriate skill development among trainees. However, such infrastructure should be put up in a way that addresses the needs of PWDs to ensure that they are not denied opportunity to access education.

- The government should ensure adequate supply of qualified Trainers at TVET institutions. However, these Trainers should be regularly sponsored by the government to upgrade their skills in line with needs of the industry to ensure that they do not compromise skill development of trainees by continuing to deliver the curriculum on the basis of historical competencies which may become irrelevant with time.
- There is need to revisit policy issue that criminalize Trainers from engaging in professional practice, as the exercise enables them to remain professionally relevant.

5.6 Suggestions for Further Research

The following are areas recommended for further research

- Since the study was done in Public TVET institutions of Western Kenya, a similar study could be conducted in other regions or Counties.
- This research concentrated mainly on Public TVET institutions, there is need for a comparative study to be done in private institutions since there are many Private TVET institutions that are engaged in skill development.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

**THE UNIVERSITY OF NAIROBI
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND
PLANNING
P.O. BOX 30197
NAIROBI.**

Dear participant,

**REF: IMPACT OF PUBLIC TECHNICAL, INDUSTRIAL,
VOCATIONAL EDUCATION AND TRAINING INSTITUTIONS' ON
ECONOMIC DEVELOPMENT IN WESTERN KENYA.**

I am a postgraduate student at the University of Nairobi pursuing Doctor of education in educational planning in the department of Education Administration and Planning currently undertaking my research on the above topic. You have been randomly selected to participate in this Study. I would appreciate your support by participating in answering the questionnaire. All information gathered will be confidential and will only be used for academic purposes. Your participation will assist in compiling data related to TIVET institutions' Human Resource Development on the achievement of economic development in Western Kenya.

Yours sincerely,

Sister Chepkoech Selina

APPENDIX II:

TRAINEES' QUESTIONNAIRE

You have been randomly chosen to participate in the study. You are kindly requested to answer the following questions as honestly as possible to the best of your knowledge. Do not write your name anywhere and remember there no wrong or correct answer. The answers given will only be used for academic purposes and will be treated with utmost confidentiality. Tick the most appropriate

PART A: BACKGROUND INFORMATION

- 1.1 Indicate your gender? Male () Female ()
- 1.2 What is your age? 15-20 years () 21-25 yrs () 26-30 yrs ()
31-35Yrs () 36-40 yrs() Over 40 yrs ()

PART B: COURSES IN TVET INSTITUTIONS

- 2.1 What courses are offered in your institution? _____
- 2.2 Which courses are most popular among Trainees as reflected by enrollment? _____
- 2.3 Which course are you taking? _____

Tick against what is most appropriate.

	Nature of Courses	SA	A	UD	D	SD
2.4	Some courses are more marketable than others					
2.5	I chose this course because it has high prospects securing formal employment					
2.6	Given the course I am taking, I am assured automatic employment upon graduation					
2.7	Learning of Computer increases chances of employability of graduates of TVET institutions					
2.8	Learning of computers enhances ones' skills					
2.9	Learning of computer enhances ones' effectiveness					
2.10	The minimum entry requirement for training for this course is very high					
2.11	All courses include industrial attachment					
2.12	Industrial attachment gives Trainees adequate exposure					

Legend: SA-Strongly Agree; A-Agree; UD-Un-Decided; D-Disagree; SD-Strongly Disagree

PART C: TRAINEES' QUALIFICATION

3.1 What is your highest academic qualification?

Below Standard 8() Standard 8() Below form 4() any other (please specify) _____

3.2 What was your highest grade or mark in 1.3 above where (applicable).....

Please tick against what you think is most appropriate

	Students' Qualification	SA	A	UD	D	SD
3.4	Initial qualification influences pass rate in final examination					
3.5	Entry qualification is very low for various courses					
3.6	Low entry qualification has kept off bright student					
3.7	Initial qualification influences ones ' choice of the course					
	PART D: Adequacy of Infrastructure	SA	A	UD	D	SD
4.1	Classes are adequate to accommodate all Students during the lessons					
4.2	The college has agricultural workshop to accommodate practical lessons					
4.3	The college has adequate home science rooms for practical lessons.					
4.4	The college has a well-equipped ICT laboratories that accommodate all students during lessons					

4.5	The college has spacious library to accommodate all students without congestion					
4.6	The College has Engineering workshops to accommodate all students for practical lessons.					
4.7	The college is adequately supplied with electricity and standby generators such that lessons are never interrupted due to power failure					

PART E: Teaching and Learning Resources

	Teaching and Learning Resources	SA	A	UD	D	SD
5.1	Text books are adequate as all reference materials					
5.2	Computers are adequate as students can access Computers for practical lesson any time without any problem.					
5.3	Our engineering workshop is adequately equipped with all necessary tools that and equipment for practical lessons.					
5.4	Our home science rooms are equipped with all necessary resources					

APPENDIX III

QUESTIONNAIRE FOR HEADS OF DEPARTMENT

You have been randomly chosen to participate in the study. You are kindly requested to answer the following questions as honestly as possible to the best of your knowledge. Do not write your name anywhere and remember there no wrong or correct answer. The answers given will only be used for academic purposes and will be treated with utmost confidentiality. Tick the most appropriate

PART A: BACKGROUND INFORMATION

1.1 Please indicate your gender. Male () Female ()

1.2 What is your age? Below 25 yrs 26-30 yrs() 31-35 yrs() 36-40 yrs () 41-45 yrs() Over 46 yrs ()

PART B: Courses Offered in TVET Institution

2.1 Please list the courses offered in this institution

2.2 Of the courses offered, which course is most popular among Trainees?

Please tick against what you think is most appropriate

	Courses offered	SA	A	UD	D	SD
2.3	The above course is popular because it offers high prospects of employment to students after graduation.					
2.4	All courses offered include ICT					

2.5	All courses offered have industrial attachment					
2.6	Industrial attachment give learners adequate exposure					

Legend: SA-Strongly Agree; A-Agree; UD-Un-Decided; D-Disagree; SD-Strongly Disagree

PART C: Students Qualification

3.1 What is the minimum qualification for; Diploma Course-----

Certificate Course_____

Please tick against what you think is most appropriate

	Student qualification	SA	A	UD	D	SD
3.2	The pass rate in national examination is affected by entry behaviors					
3.3	The entry requirement in TVET institutions is very low					
3.4	The low entry requirement has kept off potential students with high qualifications on assumption that such institutions are meant for academic failures.					
3.5	The minimum course requirement is so low that does not attract right students who could come up with innovations required to stimulate creation of employment opportunities.					

PART D: Adequacy of Infrastructure

Please tick against what you think is most appropriate

	Infrastructure Development	SA	A	UD	D	SD
4.1	Classes are adequate to accommodate all Students during the lessons					
4.2	The college has adequate agricultural workshops					
4.3	The college has enough home science rooms					
4.4	The college has ICT laboratories that accommodates all students during a particular lesson					
4.5	The college has spacious library to accommodate all students					
4.6	The college has adequate Engineering workshops					

Legend: SA-Strongly Agree; A-Agree; UD-Un-Decided; D-Disagree; SD-Strongly Disagree

PART E: Teaching and Learning Resources

Please tick against what you think is most appropriate

	Teaching and Learning Resources	SA	A	UD	D	SD
5.1	We receive adequate support from government for supply of teaching and learning resources					
5.2	The college has adequate Teaching and Learning resources needed for my Training					

5.3	All teaching and learning resources are effectively utilized by teachers and learners					
5.4	Inadequate Teaching and Learning Resources compromise skill development					

PART F: Qualification of Trainers

6.1 What is the state of Trainers in this institution in your department?

Adequate ()

Inadequate ()

6.2 If the answer above is inadequate, what measures have you put in place to cope with the situation? _____

6.3 What is the general breakdown of teaching experience of members of your department? Over 15 yrs () 10-14 yrs () 5-9 yrs () 1-4 yrs ()

Please tick against what you think is most appropriate

	Qualification of Trainers	SA	A	UD	D	SD	SA
6.4	The Trainers of TVET should have high academic qualification for them to be more effective						
6.5	All Trainers in this college have high academic qualification.						
6.6	Trainers should always undergo regular in-service courses for them to remain						

	relevant						
6.7	Trainers in this institution normally undergo in-service courses						

THANK YOU

APPENDIX IV

PRINCIPALS' INTERVIEW SCHEDULE

This is a tool to find out information the impact of Public TVET institutions' on economic development in western Kenya. You have been randomly chosen and kindly requested to answer the following questions as honestly as possible. Your answers will only be used for the purpose of this study.

- 1) Which courses does your institution offer?
- 2) What type of students does each course attract? (Probe: gender, quality, family background)
- 3) What is your enrolment in terms of gender?
- 4) What are the entry requirements? Kindly stratify for different courses and levels.
- 5) What is the state of facilities in your institution ?(probe: modern, outdated, availability of internet, computers)
- 6) What is the state of Trainers in terms of numbers and qualification?(Probe: Coping, professional development, Professional practice)
- 7) How do you compare the skills developed through the courses that you offered in your institutions in relation to the needs of the industry?
- 8) How easy is it for your graduates to find employment?
- 9) How do you compare the skills you offer in relation to the needs of the industry? Explain.
- 10) To what extent do you think the objectives of TVET have been met by TVET training institutions?

APPENDIX V

OBSERVATION SCHEDULE GUIDE

- i) The researcher will observe the state of infrastructure and teaching and learning resources in TVET Institutions and record.

Resource	No available	Capacity	Actual enrolment	Adequate /Inadequate	Modern/Old/ Obsolete (Where applicable)
Classrooms					
Home Science Room					
Agricultural Workshop					
Engineering laboratory					
Computer Laboratory					
Computers					
Libraries					
Textbooks					
Workshop tools					

- ii) The researcher will observe the existing infrastructures at study institutions to evaluate their suitability for use by People with Disabilities by checking for',
Availability of special facilities such as lavatories meant for use for PWDs
Availability of ramps
 - (a) The wideness of passage such as doors
 - (b) Availability and smoothness of passages joining various buildings
- iii) The researcher will carry out observation to see how classes are conducted to establish the adequacy of furniture, numbers in classes

APPENDIX VI

INTERVIEW SCHEDULE FOR HUMAN RESOURCE MANAGERS

- i) Do you normally have some Trainees on attachment programs from TVET institutions on attachment in your institutions?
- ii) If yes, how long do the programs take?
- iii) What can you say about the nature of courses offered at TVET institutions as reflected by Trainees who come for attachment?
- iv) Give reasons for your answer above?
- v) Generally comment on performance of your employees who are graduates of TVET institutions.
- vi) In your on view, how can the training of TVET institutions strengthened in order to make the performance of TVET graduates even more effective?

APPENDIX VII
DOCUMENT ANALYSIS GUIDE

The researcher will examine records in TVET institutions on enrolment, Entry requirement for various Courses, Performance in National examinations and Staff returns to establish the following:

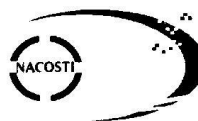
- i) Courses offered and entry requirements
- ii) Enrolment per course
- iii) Enrolment in terms of people with disability and gender
- iv) Entry academic attainments of students enrolled in TVET institutions
- v) Pass rate of students in national examinations
- vi) The number of Trainers
- vii) Areas of specialization of various Trainers
- viii) Qualification of trainers
- ix) Areas of Staff deficits
- x) Areas of Staff Surplus
- xi) Trainers pursuing further education

APPENDIX VIII

MAP OF STUDY REGION



APPENDIX IX: RESEARCH AUTHORIZATION



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471.
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/79810/17112**

Date: **15th May, 2017**

Selina Chepkoech
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Impact of Technical Vocational Education and Training Institutions human resource development on the achievement of economic development in Western Kenya,”* I am pleased to inform you that you have been authorized to undertake research in **Bungoma, Busia, Kakamega and Vihiga Counties** for the period ending **8th May, 2018.**

You are advised to report to **the County Commissioners and the County Directors of Education, selected Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioners
Selected Counties.

The County Directors of Education
Selected Counties.

APPENDIX X: RESEARCH PERMIT

**THIS IS TO CERTIFY THAT:
MS. SELINA CHEPKOECH
of UNIVERSITY OF NAIROBI, 0-50300
MARAGOLI, has been permitted to
conduct research in Bungoma, Busia,
Kakamega, Vihiga Counties**

**Permit No : NACOSTI/P/17/79810/17112
Date Of Issue : 15th May,2017
Fee Received :Ksh 2000**

**on the topic: IMPACT OF TECHNICAL
VOCATIONAL EDUCATION AND TRAINING
INSTITUTIONS HUMAN RESOURCE
DEVELOPMENT ON THE ACHIEVEMENT
OF ECONOMIC DEVELOPMENT IN
WESTERN KENYA**



**for the period ending:
8th May,2018**

.....
**Applicant's
Signature**

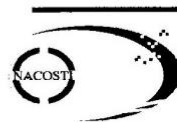

.....
**Director General
National Commission for Science,
Technology & Innovation**

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice



REPUBLIC OF KENYA



**National Commission for Science,
Technology and Innovation**

**RESEACH CLEARANCE
PERMIT**

Serial No.A **14122**
CONDITIONS: see back page