LABOUR MARKET DYNAMISM: IMPLICATIONS FOR TRAINING DIPLOMA IN ENGINEERING GRADUATES FOR SELF-EMPLOYMENT IN KENYA

BY

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DECLARATION

DECLARATION BY THE CANDIDATE

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

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…… ……

EDU/D.PHIL/TED/02/10 **DATE**

DECLARATION BY THE SUPERVISORS

This thesis has been submitted for examination with our approval as the University supervisors.

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DEDICATION

This work is dedicated to my family and my parents for their immense support and sacrifice that enabled me to reach this far. I dedicate this work also to my colleagues and classmates who played such important roles along the journey, as we engaged in making sense of the various challenges we faced and in providing encouragement to each other at times when it seemed impossible to continue. I also, salute and give special appreciations to my employer Moi University for giving me opportunity and time to complete this thesis.

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ABSTRACT

This study investigated how graduates of Diploma in Engineering from TVET institutions are prepared for self-employment in a labour market dynamics. The study was grounded on a constructivist research paradigm which claims that a research problem has multiple realties that need to be exposed under investigation of participants' view of the world they live in. The study was based on human capital theory and supported by push – pull theory. The study sought to: establish how existing training equipment in TVET institutions prepares trainees for self-employment; establish how acquisition of technical content in TVET institutions prepares trainees for self-employment; examine how acquisition of generic content in TVET institutions prepare trainees for self-employment and to establish how available support systems in TVET institutions prepare graduates to be self-employed. The study adopted both quantitative and qualitative approaches in an effort to sought answers to research questions. The study targeted diploma in engineering graduates who graduated in 2011 who had been out in the world of work for at least five years. The study used stratified and snow ball sampling techniques to select 268 graduates while purposive sampling technique was used to select 35 trainers. The quantitative data were collected using questionnaires while qualitative data were collected using interview and focus group discussion. The validity of instruments for qualitative data was considered credible after intensive scrutiny by experts in the department Technology Education of University of Eldoret. While the validity of quantitative instruments were taken through piloting which thereafter the findings were subjected to statistical analysis where Cronbach's alpha of 0.7 was attained and used. The data obtained by the questionnaires were presented and analyzed quantitatively as frequencies and percentages as per the research questions. While qualitative data was transcribed and organized into themes to check on their frequencies based on the research questions. The study found that the training strategies, technical content, soft skills content and experiences used in TVET institutions did not give graduates adequate skills and confidence to engage in self-employment. The study also found that graduates were not given support as they transited into self-employment hence could not identify and exploit business opportunities. In conclusion TVET institutions do not actually prepare their graduates for self-employment but for paid employment. The study recommends that TVET graduates need to be assisted as they transit to self-employment by having competence based curriculum, guided on the choices they make, and connecting them to funding sources. The researcher suggests for a creation of an institution that can mentor graduates in innovative skills, business startups and link them to existing market niche for their products.

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LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

AU	African Union
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GoK	Government of Kenya
HCT	Human Capital Theory
ICT	Information Communication Technology
ILO	International Labour Organisation
KICD	Kenya Institute of Curriculum Development
KIHBS	Kenya Integrated Household Budget
KKV	Kazi Kwa Vijana
KNBS	Kenya National Bureau of Statistics
KNEC	Kenya National Examinations Council
MDGs	Millennium Development Goals
MoE	Ministry of Education
MSE	Medium and Small Enterprises
MTP	Medium Term Plan
NACOSTI	National Commission for Science Technology and Innovation

TVC	Technical and Vocational College
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
YEDF	Youth Enterprise Development Fund

OPERATIONAL DEFINITION OF TERMS

Diploma in Engineering Graduates: Graduates who have acquired diploma certificate in Electrical, Automotive, Mechanical and, Building and civil engineering in TVET institutions.

Dynamisms of Labour Market: Transition of graduates into labour market Characterised rapidly changing labour markets due to emerging technologies and globalisation

Employability: Ability to secure job, keep it and ease of shifting to a new one.

Formal Sector: It is registered, organised public or private enterprise that follows official process and procedures, rules and regulations, and has employees and employers union.

Generic or Soft Content: Refers to skills acquired outside core curriculum that are required by graduates as they relate to others in the world of work. These include communication skills, interpersonal skills, creative and thinking skills among others which are acquired through interactions colleagues in TVET institutions.

Informal Sector: Unorganised type of enterprises not covered by national labour legislation, social protection or entitlement to certain employment benefits such as paid annual or sick leave. For example a person engaging in “Jua Kali” sector in Kenya.

Learning and Training Strategies: Refers to processes and actions that are consciously deployed by trainers in order to impart practical and theoretical skills to diploma in engineering trainees.

Self-employment: Is a situation where an individual creates, sets up and takes control of his or her own business by applying skills acquired in TVET institution.

Support Systems: Strategies put in place in TVET institutions to prepare trainees as they transit into self-employment. These include guidance and counselling, entrepreneurship skills and for survival in self-employment.

Technical Content: Discipline or specific area of study in engineering programs and expectation of turning the technical content acquired into skills needed in the labour market.

Technical Education - refers to theoretical and practical vocational preparation of students for jobs involving applied science and modern technology to prepare trainees for occupations that are classified above the skilled crafts but below the science and engineering occupations.

TVET - Technical and Vocational Education and Training, refers to the study of technologies and related sciences, and the acquisition of practical skills

TVET Graduates: Diploma in engineering Trainees churned out TVET institutions into labour market, attitudes, values and knowledge relating to occupations in various sectors of economic and social life.

Unemployment: Unemployment is defined as a situation where someone of working age is not able to get a job but would like to be in full time employment.

Vocational Education - refers to education offered to students to equip them for jobs in designated trades or occupations.

Working Age: is everyone between 18-65 years either in employment or looking for employment.

Youth: An individual aged between 15-35 years old according to Kenya constitution

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Overview

The chapter entails background of the study, statement of the problem, research objectives, and research questions, purpose of the study, justification of the study, significance of the study, scope of the study, scope and limitation of the study, theoretical and conceptual framework.

1.2 Background of the Study

Technical and Vocational Education and Training (TVET) is said to be comprehensive term that refers to those aspects of the educational process involving, in addition to general education, the study of technologies and related science, the acquisition of knowledge, practical skills and attitude relating to occupations in various sectors of economic and social life (ILO, 2010; Okorafor, 2014; UNESCO, 2011). Throughout the world, and in particular the countries of Sub-Saharan Africa, there is renewed focus towards TVET with a belief that it delivers skills that enhance productivity and sustain competitiveness to catch up with a dynamic global economy brought by rapidly emerging technologies and globalisation (Marope, Chakroun, & Holmes, 2015; McGrath & Lugg, 2012; 2017). In recent years, African countries have been trying to make TVET relevant to the dynamic labour market, where globalisation and technological changes have made demand for particular skills difficult to be satisfied (Cameron & O′ Hanlon-Rose, 2011; 2014).

Indeed, globally young job-seekers from around the world endure high unemployment, extended unemployment periods and unpredictable future job placement. This implies that young people with TVET training face difficulties in securing employment, due to high number of candidates for every job opportunity. The job challenge is not only one of quantity but also of quality of training offered in training institutions. While the developing world has rapidly improved educational attainment, the gap between the skills acquired through formal education and the type of jobs available has widened considerably (Lorenz, Lundvall, Kraemer-Mbula, & Rasmussen, 2016). On the other hand African economies cannot absorb the high number of youth across the continent, which is often accused of lacking employable skills. However, there are few programs aimed at increasing the "real work" element in training youth to overcome these obstacles (Badawi, 2013; Helyer & Lee, 2014).

The problem is not only lack of jobs but skills acquired are made archaic by rapidly by changing world of work, characterised by increasing hi-tech systems, automation and integration of organisations, and global connectivity (Meagher, Mann, & Bolt, 2016). Indeed, mastering all of these aspects requires new skill-sets which current institutions do not deliver. Strong demand for high-skilled workers has been growing while at the same time the surplus of low-skilled workers continues to expand hence deteriorating unemployment situations especially in developing countries (Alix-Garcia & Bartlett, 2015; Walker & Fongwa, 2017).

These imbalances are expected to continue to grow and add pressure on social and political situations in developing countries. In such dynamic labour market, formal job placement is slim, therefore one is left with no other choice but to add value to their acquired technical skills through soft skills so that it may be a key driver for job assurance (Gibb, 2014; Hamid, Islam, & Manaf, 2014). The term soft skill is taking a new shape in the global arena and is said to rival technical and academics skills in the modern world of work where knowledge economy is enhanced by the stiff competition.

TVET is said to have potential to reduce high rates of unemployment especially among the youth and women by providing them with hands-on skills (Ogwo, 2018). Indeed, hands-on skills are important especially in informal sector where there is wide range of activities and through TVET the much needed skills can be offered to develop the informal sector (Apunda, de Klerk, & Ogina, 2017). Although TVET is emphasized as an instrument for job creation, employment and development, in Africa it has been neglected and its significance has not been fully realised. In real sense TVET has been abandoned in favour of institutions concentrating on purely academic education. In fact, masses view TVET negatively as education and training meant for those who are not academically gifted in the society (Oketch, 2014).

In Africa, youth unemployment is increasingly becoming a major concern for many governments and TVET training has been up on their agendas as the only hope for preparation of youth as they transit to the world of work (Innocent, 2014). It is reported

that over 20% of the youth population of about 200 million in sub-Saharan Africa are either unemployed, engaged in low-pay jobs or are engaged in unsecured jobs (Garcia & Fares, 2008a; Gough, Langevang, & Owusu, 2013). Similarly, a study by Hutchinson and Kettlewell (2015), indicated that there are about 173 million Africans between the ages of 15 and 24 years, most of whom have entered the world of work from early childhood with inadequate education and skills for proper employment and jobs. It is also reported that every year about 10 million poorly skilled young Africans make a difficult transition from school to the labour market which no longer employs them (Fox, Senbet, & Simbanegavi, 2016; Fox & Thomas, 2016; Kivunja, 2017; Marginson, 2016). As a result, they end up in insecure and sometimes dangerous employment with no prospect of future decent employment.

Globally youth unemployment phenomenon is a major concern and Kenya is not an exception to this problem. Youth is said to represent a valuable asset if really they all can contribute to national development of a country as in case of Asian countries (Ekpoh, Edet, & Uko, 2014; Kang'ethe, 2014). Nonetheless, there have been a considerable number of surveys conducted, reports and studies published that relentlessly suggest that there are persistent risks and challenges faced by youth in the developing countries. This include; unemployment, marginalisation, harassment by the police, and hurdles in accessing essential facilities and services such as education and healthcare (Apunda et al., 2017; Hope Sr, 2012).

Kenyan formal labour market sector is said offer limited number of job opportunities per year against over a million youth churned into the labour market yearly (Muthee & Scholar, 2010; Onyeiwu, 2015; Sikenyi, 2017). The informal sector on the other hand has been a "safety valve", which offer alternative employment opportunities to large number of graduates both with and without formal technical skills (Omolo, 2012). This means that large number of youth find themselves in informal sector which is associated with poor pay, dangerous working environment and insecurity. The frustrated youth is said signify a "ticking time bomb" for the country especially when considered in the context of the 2008 post-election violence in Kenya (Mattes & Richmond, 2015; Omolo, 2012; Stormes, 2014). Indeed, idle youth, whether out of work or not in school, are exposed to manipulation and incitement, hence being potential social problems (Elder & Koné, 2014; Quintini & Martin, 2013; Rinne, Schneider, & Uhlendorff, 2011; Vasile & Anghel, 2015). To the matters worse the situation, Kenyan economy and the established industries cannot create enough jobs even to those with technical skills like diploma in engineering from TVET institutions.

As outlined in Vision 2030, employment is a function of economic growth (Mwenzwa, 2014). Conventional prudence has it that economic growth leads to job creation, and hence, if an economy is on a growth path, there is no need to worry about jobs (Feldman & Storper, 2018; Houston & Braunstein, 2015). At most, policies may be needed to ensure a smooth and efficient functioning of the labour market, so that impasses and

rigidities do not create problems of adjustment. Moreover, active labour market policies are expected to serve the purpose of aligning the supply side with the demand side.

This follows the traditional economic thinking which predicts a positive relationship between economic growth and employment. Although it is well documented, the Kenya Vision 2030, Medium Term Plan (MTP), of 2008 - 2012 economic growth was expected to grow to 10%, resulting to creation of about 700, 000 new jobs every year totalling to 3.5 million within the period, however, the target was not achieved (GoK, 2007; Ndung'u, Thugge, & Otieno, 2011). Likewise, the second MTP of year 2013 - 2017 plan is far from being realised since the economic growth has not hit double digit as it was projected, therefore the formal sector has not created jobs as it was focused.

In Africa, the overall message that young people are receiving from their governments, as well as from local and international organizations, is that they should become 'job creators' rather than 'job seekers' by setting up their own enterprises (Spigel, 2017; Stam, 2015). In Kenya numerous interventions have been put in place to promote youth employment despite very little being known about the likelihood of success of these programmes (Chigunta, 2017; Ramirez, Kora, & Brodhead, 2017). A case in point is, 'Kazi Kwa Vijana' (KKV) was started in Kenya in 2006 with a view that it would assist youth to secure manual employment in all sectors of government especially in the ministry of roads.

Youth Enterprise Development Fund (YEDF) was also initiated as source of capital for the youth who want to start their own enterprises (Okoth, Okelo, Aila, Awiti, Onyango, & Oguty, 2013). However, it seems little has been gained out of these programs since they are tied with rules and regulations which youth may not be able comply with. Indeed, these policies have fallen short of expectations then raising questions on the training imparted to learners in TVET institution in preparation of youth for self-employment (Baxter, Chapman, DeJaeghere, Pekol, & Weiss, 2014; Webster, Joynt, & Sefalafala, 2016). It is either education curricula or programmes that are missing their targets, making misguided attempts to target the most vulnerable, or are inadequate to support the youth in their search to engage in self-employment (Burchell, Coutts, Hall, & Pye, 2015; Flynn, Mader, Oosterom, & Ripoll, 2016; Goldin, Hobson, Glick, Lundberg, & Puerto, 2015).

Technical and vocational education and training (TVET), is emphasized as an instrument for job creation, employment and societal development (Ramírez, Kora, & Brodhead, 2016; Were, 2017). However, in Africa, it has been left to the periphery and its significance has not been fully felt in the labour market. It has been neglected in favour of institutions concentrating on purely academic education. One of the major problems facing TVET institutions in developing countries is the cost of delivery. (Khan, Nambobi, & Ali, 2017). TVET training is a very expensive undertaking in terms of equipment, physical facilities such as workshops, training materials and teachers'

salaries. The government funding of TVET has been inconsistent in most cases making it difficult for proper upgrading of facilities (Ifeyinwa & Serumu, 2016).

Despite several attempts made in TVET institutions in Kenya, it seems little has been achieved in measuring up to the expectations of furnishing young people with necessary skills that coincide with the needs of the self-employment sector (Ampofo, Bizimana, Ndayambaje, Karongo, Lawrence, & Orodho, 2015; Darvas & Palmer, 2014; Filmer & Fox, 2014). Formal TVET provision systems tend to be fundamentally school-based and supply based to the limited formal job opportunities in the labour market (Shrestha, 2016). In addition, TVET system tends to be largely dominated by theory lessons, examinations and the quest for certificates rather than the acquisition of competencies in demanded in the labour market (Boahin & Hofman, 2013; Okoye & Okwelle, 2013; Teshome, 2008).

In the face of unemployment and lack of paid job opportunities in the formal labour market, the skills offered in TVET institutions should be geared towards making graduates job creators (Hilson & Osei, 2014; Shehu & Nilsson, 2014; Wals, 2012). However, graduates of TVET have been trained on specific skills and little is known on how they survive in the world of work. This builds basis for this study to investigate how current training in TVET institutions prepare diploma in engineering trainees for self-employment in the modern world of work.

1.3 Statement of the Problem

Unemployment is a global phenomenon that signifies an economic and social crisis with potential threats to dignity and livelihoods of millions of individuals, including young people (Tang, 2015; Vogel, 2015). Globally, informal employment has remained above 42 per cent of the total employment, accounting for 1.4 billion people worldwide in vulnerable jobs, of which over 1.3 billion are in developing countries alone (Cleland & Machiyama, 2017; Filmer & Fox, 2014; ILO, 2017) In addition, there are over 200 million young people, who are outside any form of employment and are desperately looking for jobs (Ackah-Baidoo, 2016; Johnson, 2014; Moore & Morton, 2017; Wignall, 2016).

In Africa, young people constitute more than 50 per cent of the entire population (Filmer & Fox, 2014; Page, 2012; UNESCO, 2012). Whereas high number of young people presents an opportunity as energetic work force for the continent, it brings high rate of unemployment that presents significant economic, social and political challenges in Africa. Similarly, UNDP (2010), report indicates that 39.1 % of the Kenyan populations of working age group are unemployed which is highest as compared to the other countries in the region. Youth in Kenya, below 35 years old represent approximately 78% of the Kenyan population of over 40 million people. Given that Kenyan formal employment can only absorb less than 10% of jobs to a given cohort of new job entrants

of about 1 million yearly leaving the rest about 83% to the vulnerable jobs in the informal sector employment (KNBS, 2016).

Kenyan government has made drastic effort of revamping TVET institutions, increasing access in order to provide skills to large number of youth to enable them transit successfully into the labour market (Odora & Naong, 2014; Tukundane & Zeelen, 2015). Despite the effort to engage young people in the labour market, majority of the youth in Kenya are still unemployed, while a good number are engaged in precarious informal sector jobs (Hope Sr, 2012; Muthee & Scholar, 2010). Whereas youth remain unemployed, industries complain that they lack appropriate skills, knowledge and attitudes for available vacancies (Anindo, Mugambi, & Matula, 2016; Yungungu, Maleche, Ndurumo, & Ogolla, 2014). On the contrary, findings indicate that industries have shifted to casualization of labour or temporary employment on the same youth who remain optimistic of permanent employment (Amimo, 2012; Kaminchia, 2014; Omolo, 2013). The reviewed literature seemed to have dwelt on formal employment and not on how TVET institutions prepare youth for self-employment. As such there is paucity of research on how engineering graduates of TVET institutions are prepared for transition into self-employment in a dynamic labour market in Kenya. It is with this in mind that this study was carried out to find how TVET institutions could be utilized as way of reducing unemployment among the youth by preparing them for self-employment in Kenya. The findings could be a reference in repackaging the diploma in engineering

programs in order to provide graduates with skills required for self-employment in modern Kenyan dynamic labour market.

1.4 Purpose of the study

Study was carried out to find how TVET institutions could be utilized as way of reducing unemployment among the youth by preparing them for self-employment in Kenya.

1.5 Objectives of the study

1.5.1 Main objective of the Study

The main objective of the study was to establish how engineering graduates were prepared in TVET institution to enable them transit into self-employment in a dynamic labour market in Kenya.

1.5.2 The Specific Objectives of the Study

The study focused on five research specific objectives:

1) To establish how existing training equipment in TVET institutions is effectively used to prepare trainees for self-employment
2) To determine how learning and teaching strategies prepares trainees for self-employment
3) To establish how acquisition of technical content in TVET institutions prepares trainees for self-employment

4) To examine how acquisition of generic content in TVET institutions prepares trainees for self-employment
5) To establish how available support systems existing in TVET institutions prepare graduates to be self-employed in a dynamic labour market

1.6 Research Questions

1) How existing training equipment in TVET institutions prepares trainees for self-employment?
2) How do learning and training strategies applied by trainers prepares graduates for self-employment?
3) How do acquisitions of technical content in TVET institutions prepare trainees for self-employment?
4) How do acquisitions of soft skills content in TVET institutions prepare trainees for self-employment?
5) How existing support systems in TVET enable graduates transit into self-employment?

1.7 Justification for the Study

Unemployment in Kenya has been persistent problem which has been addressed through many policy interventions and education reforms over the years. However, the problem cannot be contained with ever increasing population where current economy can only

provide limited jobs against a large number of youth churned out of training institutions. Similarly, technological changes and globalization has worsened situation such that graduates of TVET trained traditional curriculum cannot fit in the modern labour market. Given that, the mandate of TVET is to train workforce that is ready to participate in the world of work TVET therefore is a major player in reduction of high rate of unemployment in Kenya. However, self-employment is said to offer an alternative opportunities in Kenya yet it has not been fully exploited. It is therefore worth conducting research on how TVET institutions prepare graduates for self-employment in a dynamic labour market as response to high rate of unemployment among the youth in Kenya.

1.8 Significance of the Study

The findings of this study provides vital information for policy formulation on how engineering programs in TVET need to be repackaged in order to provide graduates with skills required for self-employment, in the face of limited formal job opportunities in Kenya. The Ministry of Education (MoE) may benefit from the findings of this study in inventing appropriate measures that can counter current challenges of high rate of unemployment by training youth to focus on self-employment particularly engineering students where their training is hands-on.

As the direct consumers, students stand to benefit once any necessary remedies are instituted to address challenges that face youth as a result of unemployment. The findings of this study might create awareness on the importance of integrating job market

requirements in the instruction of engineering curriculum. Finally, the findings of the study sought to contribute to the existing pool of knowledge on dynamic labour market demands and survival skills required for self-employment in Kenya.

1.9 Scope and Limitations of the Study

1.9.1 Scope

This study was conducted to determine how the training in TVET institution prepare diploma in engineering trainees for self-employment in a dynamic labour market characterized by lack of employment in the formal sector in Kenya. There could be several other factors that influences and contributes to self-employment. Nevertheless, this study focused on the training process as perceived by diploma in engineering graduates and trainers. The study was conducted to investigate how training process in TVET prepare trainees for self-employment in situation where paid jobs no longer exist in formal employment.

Engineering Diploma students were preferred in this study since they acquire both practical and theoretical skills as preparation for both paid and self-employment. In situation where paid or formal employment becomes scarce graduates are expected to engage in self-employment. The study focused on graduates of diploma in engineering the following areas; Electrical and Electronics, Automotive, Building and Civil Engineering, And Mechanical Engineering Option. As such diploma students are better placed to be investigated on the components of skills acquired in TVET institutions

against their perception of engaging in self-employment. This study was conducted in five selected TTIs in the counties of Nakuru, Trans Nzoia, Nandi and Uasin Gishu.

1.9.2 Limitations to the Study

The study was affected by a number of limitations as had been anticipated. It is believed that some of the respondents may not have provided honest or informed answers thus the researcher did triangulation of research instruments where questionnaire, interview schedule and focus group discussions where used in enrich data collected from the respondents

Secondly, some respondents who were very busy in the world of work trying to make the ends meet were requested to suggest their convenient time to participate in FGD. Some who were out of reach were requested to give their emails to necessitate sending them questionnaires electronically. The respondents who feared victimization of giving their opinion on the TVET preparation of trainees for self-employment were assured of confidentiality of their response.

1.10 Theoretical Framework

In trying to understand how engineering graduates were prepared in TVET institution to enable them transit into self-employment, the study was underpinned in human capital theory and push-pull theory as a theoretical framework. The two theories are diagrammatically represented in Figure.1 page 24, as contextualised in the study. The

origin of human capital theory can be traced back to the work of Theodore William Schultz in 1961, which was later extensively developed by Gary Stanley Becker in 1964 (Becker, 1993; Becker, 1994; Boccanfuso, Savard, & Savy, 2013; Schultz, 1988; Sweetland, 1996).

Gary Stanley Becker developed the human capital theory based on Schutlz's research on return-on-investment and introduced the concept of general human capital and specific human capital which is widely used by human resource development practitioners worldwide (Bae & Patterson, 2014; Bryant & Javalgi, 2016; Gibbons & Waldman, 2004). General human capital is acquired through education and work experience while specific human capital is acquired through managerial capabilities, entrepreneurial capabilities, technical capabilities and business ownership experience (Becker, 1993; Farquharson, 2009). Human capital theory rests on the assumption that formal education is highly instrumental in improving the production capacity of a country's population.

Education is said to be an economic good which is not easily obtainable and thus need to be allocated with resources to facilitate the learning process. Productivity is measured as a result of investment in education and training commonly referred to as inputs (Agasisti, 2014; Van Ark, 2014). In this study, inputs are usage of appropriate technical content, generic content, training resources, straining strategies and support system amassed during training process that enabled smooth transition of trainees into labour market.

Economists regard education as both consumer and capital good because it offers utility to a consumer and also serves as an input into the production of other goods and services (Cahuc, Carcillo, Zylberberg, & McCuaig, 2014; Obi & Obi, 2014). As a capital good, education can be used to develop human resources with both technical and generic skills that are required in economic and social transformation. The focus on education and training as a capital good relates to the concept of human capital which emphasizes development of skills as an important factor in production activities (Backman, 2014; Heckman & Mosso, 2014). It is widely accepted that education creates improved citizens that helps to upgrade the general standard of living in a society (Auer, 2015; Marvel, Davis, & Sproul, 2016; Walter & Block, 2016).

Human capital theory holds that the well-being of a society is a function not only of the traditional stocks of financial capital, labour and natural resources but also of the knowledge and skills of individuals (Backman, 2014; Gilead, 2017). This means that human capital can be used like any other asset to generate outcomes of value to individuals and society. In particular, the theory predicts that increased knowledge and skill will yield improved economic outcomes for both individuals and societies (Oketch, 2014; Wambugu & Ombui, 2013). This idea has attained increased prominence in the past couple of decades because of the widely held view that we are in a "knowledge economy," in which knowledge and skill convey a greater premium than in the past (Igbokwe-Ibeto, Chukwuemeka, & Okechukwu, 2014; Kereluik, Mishra, Fahnoe, & Terry, 2013).

As presented in Figure 1 the theory postulates the input, process and output model. In this study the input includes training facilities, training materials, technical content, and soft content skills are considered as investment in education and training. The process entails the strategies put in place in preparation of trainees into skilled and competent graduates who at the end are regarded as an output of the training process. The output in this study refers to engineering TVET graduates who during training process have accumulated enough human capital or skills to venture into self-employment.

Accumulated human capital in this case is acquisition of knowledge, skills and expertise (i.e. intangible resources) that are acquired by individuals over specified period through training process with appropriate learning strategies and usage of availed relevant facilities (Mehrotra, 2016; Oyekan, 2015). Since TVET is mandated prepare trainees for the world of work which includes self-employment it is success is measured by productivity of its graduates in the world of work. In readiness to venture into self-employment, the trainees are expected to acquire entrepreneurship skills which include identification of business opportunities, resource mobilization and risk taking.

Such skills are supposed to be practically acquired and thus the need to be accumulated over a period of time through general and specific experiences (Brush, Greene, & Hart, 2001; Yangben, 2014). In Kenya, diploma in engineering takes three years which a period long enough to enable trainees to accumulate both general and specific human capital skills (Banks & Chikasanda, 2015; Orangi, Wandaka, & Ngige, 2016). TVET

graduates with greater human capital exposure may identify more opportunities and innovativeness may suggest a 'quality' opportunity (Marvel, 2013; Shane, 2000). The human capital theory has been applied in the past studies to demonstrate the relationship between education and business start-up. For example, McGuirk, Lenihan, and Hart (2015) found that employment, earning potential and prospects of further training are higher in all instances for employees of higher skills than for those of lower skills. He concluded that educational attainment is an effective means of assessing levels of skills in a workforce.

In a study of human capital of firms' founders, Colombo and Grilli (2005) found that, specific human capital (in the form of specific education and experience including managerial, commercial and technical experience) provided positive contributions to firms' performance and survival. In addition to education, specific human capital attributes of entrepreneurs, such as capabilities that they can directly apply to the job in the firm, may be of special relevance in explaining enterprise growth (Colombo & Grilli, 2005). These specific human capitals are required in business start-up and sustenance skills and considered equally important in preparation of trainees for self-employment. Similarly, in their study of the human capital of firms' founders, (Boden & Nucci, 2000); Criaco, Minola, Migliorini, and Serarols-Tarrés (2014) found that entrepreneurial education positively influenced business start-up and survival.

Similarly human capital theory has not escaped criticism, especially on the basis that productivity of an individual is directly related to formal education and training. The concern of scholars is how to maintain the linear relationship between education and productivity (Bagger, Fontaine, Postel-Vinay, & Robin, 2014; Klees, 2016). For example, shortage of educated people might limit productivity and while excess supply might create unemployment and thus limit economic growth of a country (Babalola, 2003; Bowman, 2014). Indeed this is expected, especially when education and training is supply based and not demand based as the situation is currently in Kenya currently (Musyimi, 2016).

Another critic of HCT is its failure to account for a gap between graduates higher learning acquired and diminishing number of commensurate jobs to apply their higher knowledge accumulation especially in developing nations (Olaniyan & Okemakinde, 2008; Tikly, 2013). Human Capital Theory assumes that labour markets are efficient in placing people in work in relation to their skills and that opportunities are shared equally which is totally wrong (McLean & Akaraborworn, 2015). The Human Capital Theory do not explain why people with the same amounts of human capital may face unequal employment opportunities (Ngcwangu, 2015). Indeed, other factors like the advantages of family wealth and social networks and access to private schools for example, are not considered by the Human Capital Theory (Andriani & Christoforou, 2016; Arregle, Batjargal, Hitt, Webb, Miller, & Tsui, 2015). In addition new higher skills are required in dynamic labour market, where competitions for labour

market are increased by globalization and new technologies. Countries with strong economies also provide reliable labour markets for graduates churned out of learning institutions.

Despite the critics of human capital theory, there is clear evidence to shows that education is responsible for both the difference in labour productivity and differences in overall levels of technology that we observe in the world (Mustapha, 2017; Packard & Van Nguyen, 2014). In East Asia for example, countries such as Taiwan, Korea, Singapore and Hong Kong have achieved unprecedented rates of economic growth while making large investments in education especially in TVET institutions or hands on skills (Ismail & Rasdi, 2016; Packard & Van Nguyen, 2014) .

To take advantage on strength of human capital theory and neutralize critics, push pull theory was adopted in this study in order to understand how TVET trainees are prepared for self-employment in a dynamic labour market. The dynamic labour market characterized by high rate of unemployment, lack of jobs in formal labour market and shifting of labour force towards informal labour market including self-employment (Eichhorst, Rodriguez-Planas, Schmidl, & Zimmermann, 2015; Gamble, 2013). The push-pull theory can be traced back to Oxenfeldt (1943). The push-pull theory commonly referred to as model was later developed extensively by Johnson and Darnell (1976) and later tested on framework of analysis by Harrison and Hart (1983). Push pull theory or commonly known as push pull factors argues that an individual faced by unemployment

decides to leave unemployment by venturing into self-employment. Johnson and Darnell (1976)'s starting point is as a result of movement of individuals in dissatisfied salaried employed or unemployed towards self-employment. Such a decision is taken when the net monetary and non-monetary benefits resulting from self-employment, interpreted as the utility level, exceed the net benefits of salaried employment or unemployment (Dibie, Edoho, & Dibie, 2015; Morselli, 2015). The decisive element in this decision can then, according to Johnson and Darnell (1976) be interpreted as a function of two types of forces: push or pull.

This theory asserts that in the event of increased unemployment in a country, an unemployed person might be forced or "pushed" into self-employment due to the poor prospects of finding a job, similarly an individual may be attracted or "pulled" by opportunities existing in the economic environment (Baraya & Aliyu, 2014; Staber & Bögenhold, 1993). A country may not be able to absorb all the graduates because of weak economy and yet they posse relevant skills, such graduates may remain unemployed waiting to be employed in the formal sector (Gamble, 2016; Timmons, Spinelli, & Tan, 1994). Others may engage in the informal sector where they apply skills not trained for while others still engage in self-employment (DeJaeghere & Baxter, 2014).

TVET institutions endeavour to offer effective training that promotes acquisition of quality, relevant and adequate skills (Mutereko & Wedekind, 2016). This in return will raise the chances of employment in the graduates. As a result the outcome of the training

process as per the human capital theory, the absorption of graduates to the job market as a productive employee who earns a good salary (Fleming, 2017). Graduates with accumulated human capital are expected to possess some entrepreneurship skills which can enable them identify opportunities and apply innovativeness in creating new products (Hordern, 2014).

The knowledge gained from education represents an economic resource which includes opportunity identification and expectation which pulled individuals into self-employment (Akoojee, 2016; Hordern, 2014). Similarly, individuals may be pushed by circumstances to see opportunities and venture into new business. The chances of such individual succeeding may be minimal. In this case, unlike human capital theory productivity may not only be influenced by schooling and earning but other internal and external factors such as economic environmental, unemployment, age and dissatisfaction in current employment (Blattman, Fiala, & Martinez, 2013; Kuratko, 2005). These factors are known as push-pull factors or commonly as push pull theory.

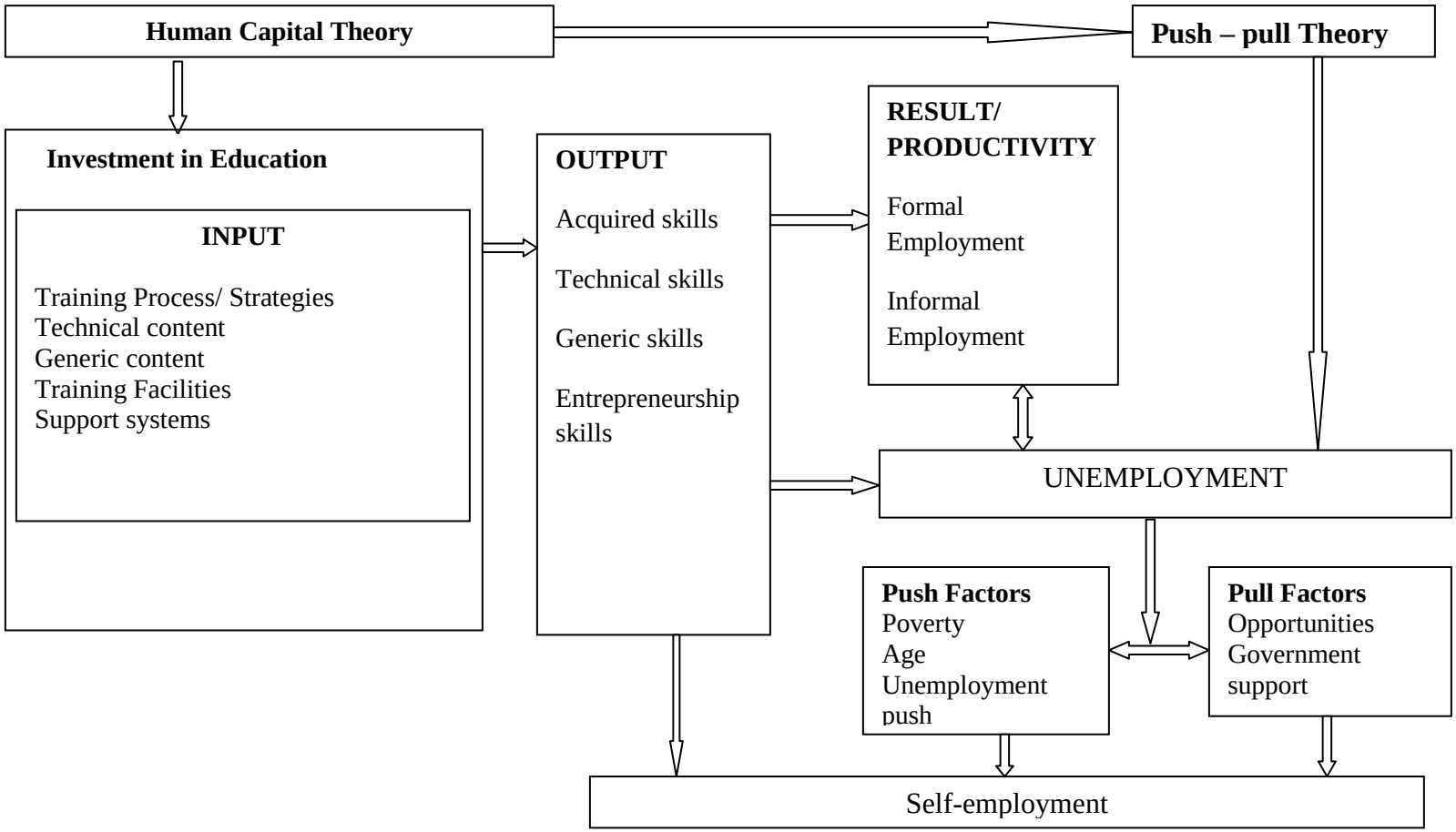

Figure 1: Theoretical Framework Diagrammatic Representation

Source: Author (2018)

1.11 Conceptual Framework

The study of preparation of TVET diploma in engineering graduates for self-employment in a dynamic labour market can be clearly understood through underpinning this study in theoretical perspective as supported by reviewed related literature. This study is mainly underpinned in two concepts developed from human capital theory and push-pull theory. The study tried to understand how training was done in preparation of diploma in engineering graduates for self-employment in environment of unemployment and increasing informal paid employment. Self-employment refers to ability of individual to create one's own job or business and be own boss. TVET training is therefore should impart technical skills in ones area of specialization, portable skills which includes innovations to enable individual survive as own job creator. In addition, a TVET institution is supposed to give career guidance, expose training to networks, track where about of their trainees and entrepreneurship skills for new business venturing.

The relationship between independent and dependent variables is as shown in Figure 2, page 28. The study sought to find how engineering diploma graduates were prepared to venture into self-employment in the face of high rate of unemployment in Kenya. The study sought opinion of graduates who graduated in 2012 in order to understand how they are applying skills acquired in TVET institutions. The study sought the views of graduates on the technical content, training facilities, training strategies employed by

trainers, generic skills acquired and support systems offered to them as preparation for transition into world of work.

Graduates of TVET are believed to have invested in training and in the process they are prepared through a specific curriculum or input in terms of having technical content, generic skills, taught using available training resources and learning strategies, and supported to gain survival tactics in self-employment. The quality and relevance of acquired technical skills, generic and entrepreneurial skills determine the output of graduates produced that enabled them become self-employed.

The trainers made their inputs by applying training strategies on delivery of technical and generic content. They made use of available facilities and materials to prepare graduates for self-employment. Thus their opinions were also sought in terms of relevance of the skills taught, usage of training facilities, strategies they employed to impart skills to trainees and their general opinions on preparation of trainees for self-employment.

Through the training process in TVET institutions trainees are changed through teaching and learning by their trainers and in the process acquire specific skills in readiness for the world of work. The end product of the training process is engineering graduate of TVET whose competency level would be realized by their ability to put into use their accumulated skills. The eventual success of an effective training process is a trained graduate, who is self-reliant. In the current situation of high rate of unemployment in

Kenya trainees are expected to have been trained on entrepreneurial skills required in self-employment.

With high rate of unemployment, it means that formal training in TVET do not directly translate into formal employment. TVET training is supposed to make trainees self-reliant upon graduation hence they are supposed to identify opportunities and turn them into business ventures. Engagement in self-employment can take three dimensions as follows; first group is graduates who rather than remaining in the state of unemployment they sought self-employment as alternative means of earning, that is they are pushed by unemployment into self-employment. The second group are known as opportunity identifiers, even if employed they can resort to self-employment since there is a chance of earning more than in the formal employment. This second group is said to have been pulled into self-employment, thus the push-pull theory. The last group is the one who have chosen a program initially with intention of joining self-employment upon graduation.

While other factors such as economic growth of a country and policies put in place by government determines self-employment. When economic growth is stagnant it may also be a major contributor of unemployment in Kenya. The current study dwelled on preparation of trainees in TVET for self-employment in the face of diminishing chances of employment in the formal sector.

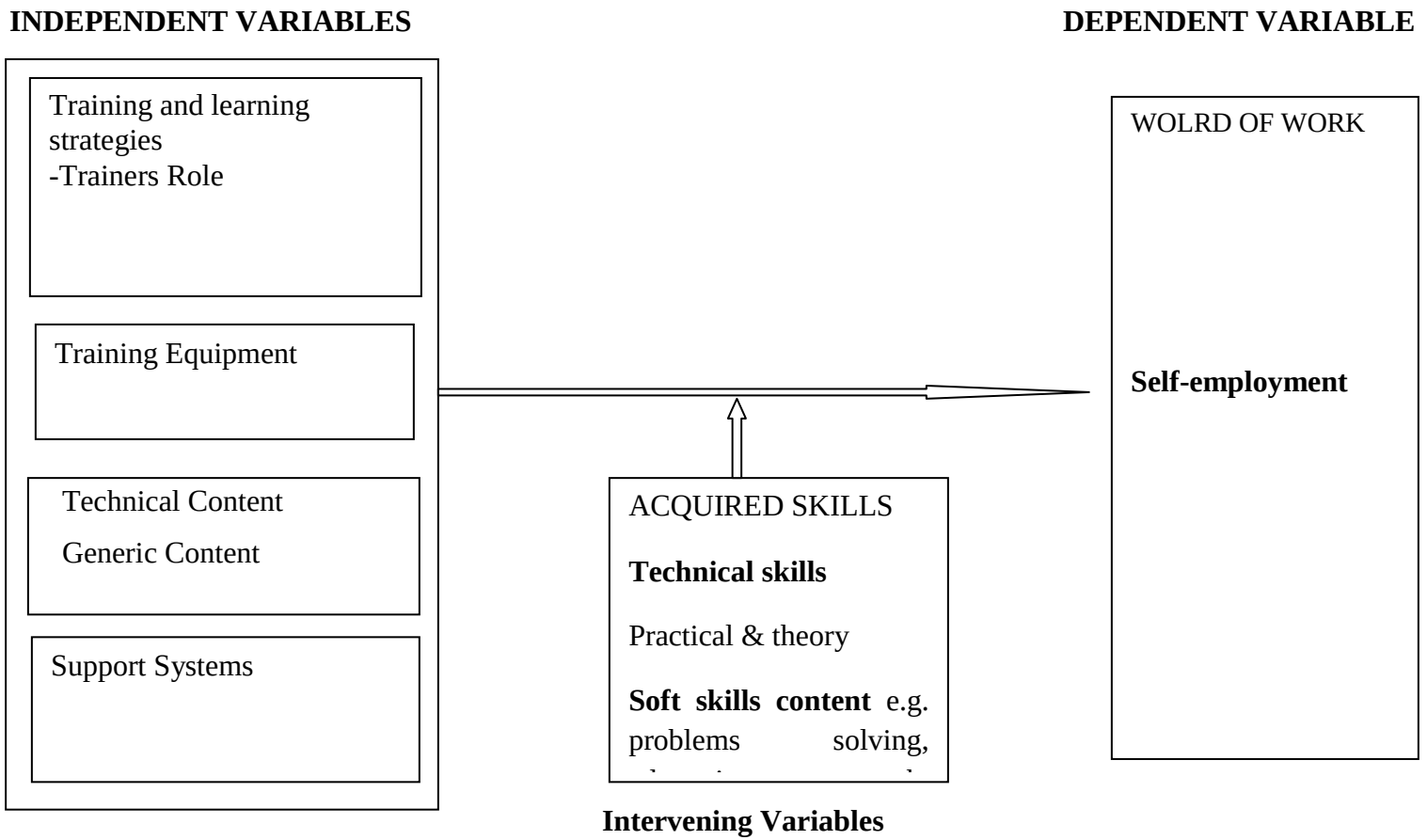

Figure 2: Relationships between variables

Source: Author, 2018

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter presents the related literature that was widely collected and synthesized according to the objectives of the study. Related existing literatures are presented in this chapter under the following sub-headings; The concept of a dynamic labour market, The labour market and TVET training, Self-employment in the global perspective, Self-employment in Kenya, Training Strategies and self-employment, Technical Content and Self -employment, Soft skills content and self-employment, Support Systems and Self-employment, Government intervention to promote self-employment. In conclusion, a summary of reviewed literature and analysis of knowledge gap is also presented.

2.2 The Concept of a Dynamic Labour market

Globally, the labour market has been changing drastically, the past decade has witnessed proliferation of jobs that previously did not exist (King, 2014; Maclean & Pavlova, 2013). Emergence of jobs such as application designer, social media manager, data architect, and cloud services specialist are just but examples of the transformation the labour force has experience in the past years. A good example is the innovation brought with, and mass consumption of the smart-phones globally. It is interesting to note that, first iPhone was introduced in 2007, but since then more than one million applications have been sold all over the world by 2011 (Holzer & Ondrus, 2011). The sell is said to have fetched over US$15 billion in revenues to the world economy (Drysdale, Triggs, & Wang, 2017; Hogan, 2014).

Similarly, social networks like LinkedIn, Facebook, YouTube and Twitter have drastically multiplied as information traffic to institutions, governments and global business community (Cant, 2016; Selvan, 2015). These examples help to figure out how innovation and technology are driving and giving direction to future jobs across economies in the world (David, 2015; Mokyr, Vickers, & Ziebarth, 2015). The very nature of work, and the jobs that future generations seek, are changing very fast making it difficult for training institutions to satisfy labour market demands. In the past, earlier generations used to rely on one job for their entire professional careers until retirement, but currently, one can be rendered jobless upon employment by automations of routine processes or by introduction of robots. The question of routine jobs where workers were engaged in, are being automated as manufacturing sector shift to lean operations. Previously many generations were actually trained to take over jobs their parents were doing but with automation these jobs no longer exist.

In today's world new technologies have changed human capital participation in the labour market right from communication to manufacturing industry processes. Whereas there is disappearance of traditional jobs in the labour market, the new technologies have brought up new plenty of jobs. A good example is Southeast Asia, Latin America and parts of Sub-Saharan Africa where millions have been lifted out of poverty by massive growth of new jobs in labour market associated with new technologies (Graham, Hjorth, & Lehdonvirta, 2017; Maclean, Jagannathan, & Panth, 2018). The affordability and increase in accessibility due to emergence of smart phones have enhanced rapid

interconnectivity across the globe, creating new jobs and new perception amongst users of technology from New York City to Mumbai to Nairobi (Acharya, 2015; Swilling, Musango, & Wakeford, 2016; Tchamyou, 2017).

In today's world, new technologies have created new jobs at lower levels right from repairing, servicing, selling devices and accessories where many graduates engage in self-employment. Similarly entrepreneurs, investors' educators and service industry are in demand of application designers and data managers to run their daily operations and upscale their performance. Globalisation is probably the long-term trend which will have the most impact on the future of jobs and work (Cheong & Lee, 2016; Shaw, Shaw, & Blake, 2016).

Across the world interconnectivity and interdependence trend is expected to proliferate with time to the extent that no country holds monopoly in job creation, innovation and market orientations. It is true that, globalisation and technological changes have shaped world economy and financial system, characterised by interdependence and connectivity evading government stringent measures (Fraser, 2014; Poirier & Remsen, 2017; Postiglione & Wright, 2017). The interconnected systems have globalised the world to the extent that interference in part of it can have critical immediate consequences across all world economies which consequently get governments sectors into action to reverse the circumstances (Murray, Skene, & Haynes, 2017; Yeung, 2015).

Similarly, global technological development has led to increasing levels of automation and productivity gains, resulting in a continued decline of jobs, particularly in traditional manufacturing (Kibor & Obwoge, 2014; Manyika, Chui, Miremadi, Bughin, George, Willmott, & Dewhurst, 2017; Poirier & Remsen, 2017). Unfortunately, training institutions are still training youth for jobs which no longer exist since some of the traditional jobs have been taken over by technologies through automation. The formal sector in developing countries is small and has a low job growth, so that it cannot absorb all school leavers and graduates who seek employment. When TVET curricula are focussed on creating "job-creators" (self-employed workers) rather than "job-seekers", unemployment in developing countries can be reduced, thereby allowing developing countries to get closer to meeting the MDGs (Gough et al., 2013). This is particularly true for combating unemployment among youth who graduates from secondary school, but do not proceed to the tertiary level because of various reasons.

Currently TVET is regarded as an instrument in creating new employment opportunities and income-generating activities in the formal and informal sectors of the economy, the need for which has become more acute due to the financial crisis (Okoye & Michael, 2015). TVET can play an important role in economic development and poverty reduction if due attention is given to customizing or targeting education and training provision to local and global needs

2.3 Labour Market and TVET Training

The labour market is just like commodity markets where goods and services are bought and sold. In labour market, effects of supply and demand skills have to attain equilibrium. In case of disequilibrium it means labour supply and demand do not match, which is the case in current labour markets in developing countries (Amior & Manning, 2018; Green & Henseke, 2016). In a situation where disequilibrium continues with over supply hence with limited youth absorption in the labour market, it may results in high rate of unemployment (Humburg, De Grip, & Van der Velden, 2017).

Unemployment is a common problem all over the world and as intervening measures governments have been put up in their agendas and policy reforms which are geared towards investment in training of youth which that yet to bear fruits. These policies, reforms in education and training are expected to be responsive to disequilibrium dictated by labour market forces (Finkelstein & Grubb, 2000; Nyangau, 2014). These forces are economic growth of a country, globalization, technological changes and new work place culture. Indeed much of the world of work requires TVET education, an even larger percentage is needed in some countries to adequately skill their populations (Lambert, Vero, Ekbrand, & Halleröd, 2015). If TVET training is available to all who require it, there will be a reduction in poverty, a movement towards equity and fairness, and disadvantage will diminish. TVET institutions should offer responsive training that deals with these challenges or labour forces. Thus imparting employable technical skills to

trainees and supplying of them to the labour market (Kaas & Kircher, 2015; Tatsiramos & Ours, 2014).

The pioneering classical economist Smith (1976), pointed out that, whenever there is unemployment in an economy, it is usually a temporary disequilibrium caused by excess labour at the existing wage rate. Smith asserted that workers are attracted by paid employment, in a situation where paid employment becomes scarce, they opt to be self-employed (Heinz, 2014). However, the same point could mean that more people will demand employment if real wages are high. In times of high unemployment, programs are introduced to promote the transition from unemployment to self-employment (Kolstad & Wiig, 2015; Svaleryd, 2015). Policy makers view self-employment as a hopeful way to grow stagnant economy and avert growing rate of unemployment (Were, 2017). Therefore as mitigating strategy, policy makers have tried in establishing a "new culture" of self-employment as a sources of employment which may in turn reduce high rate of unemployment (AM, Dem Isaiah, & Barfa, 2014).

In developed countries like Germany, dual training was introduced to match training and industrial demands of labour are reported as a success and other countries like Malaysia have adopted it (Mustapha, 2017). Apart from education and training the question of unemployment is still a problem which has been dealt with by creating special fund known as bridging allowance as an inducement to the unemployed youth to start their businesses (Wolff & Nivorozhkin, 2012). As a result its reported that the bridging

allowances managed to increase self-employed from 13,000 in 1991 to over 100,000 in 1998, which determined about one fifth of all the new self-employed people (Fritsch, S. Kritikos, & Sorgner, 2015; Reize, 2000). However, the option of self-employment is determined by a number of factors which include the economic climate of a country, demographic, entrepreneurship, education (Earle & Sakova, 2000; Nikolova & Bargar, 2010).

Despite economic inability to create jobs, schools in developing countries, continue to systematically produce every year a large number of graduates classified as academic failures (Chisholm, 2015). However, the graduates produced from institutions find it difficult to enter into labour market since they are inadequately prepared to succeed in the world of work. The graduates of informal and traditional apprenticeships training seemed to do better in the informal employment since their training is tied to current skills as demanded in the informal labour market and work practices required in informal sector (Peter-Cookey & Janyam, 2017). While formal TVET training often relies on out-dated curricula and lacks involvement of industry seemed to take longer time to transit into informal employment sector where employment growth still exist especially in developing countries.

There is a new notion in African countries that have shifted focus to TVET as a means of addressing persistent youth unemployment problem by introducing the term “skills for jobs” in their training curricula (Oketch, 2007). This renewed hope is yet to be realised

since the rate of unemployment has remained high over time. In Kenya, training institutions are undergoing revitalization or expansion of TVET institutions, skills development, and preparation for world of work and funding training programs with assistance of development partners (Balwanz, 2012). The intention is to change mind-set of youth that training lead to direct employment in the formal sector which is currently unable to offer jobs to ever increasing graduates from institutions.

Actually in developing countries governments are no longer in position to offer jobs to in public sector since apart from huge wage bills crucial areas like security, health and education are in demand from same struggling governments. The only hope is in the informal sector which has continued in upward trend with potential to absorb unemployed youth with little support from the government. Despite regulations hindering expansion of informal sector growth, the sector has been characterized as innovative and entrepreneurial in nature having a potential to create new jobs for many youth. In Kenya informal sector is said to create jobs for over 83% of graduates cohorts transiting from schools.

In Kenya, unemployment is largely attributed to the slow growth rate of economy resulting in weak labour market absorptive capacity, mismatch in skills development and demand, imperfect flow of labour market information and inherent stringencies within labour market (Kaminchia, 2014). As compared to other programs the major problems facing TVET development is the cost of delivery. TVET training is a very costly

undertaking that is in terms of equipment, physical facilities such as workshops, training materials and teachers' salaries. The government funding of TVET has not been consistent despite policy reforms and promises which are not true reflection on the ground (Ngure, 2015).

As response to high rate of unemployment, educational reforms emphasise competency training which also consider extracurricular that equip youth with team skills, leadership skills, personal skills and innovations among other soft skills. The extra curriculum activities that equip youth with soft skills include participation in sports, clubs, associations and organizations. Whereas the self-employed are their own bosses and act as independent contractors on the market, employed persons are subject to the institution of hierarchy. The findings by Guerra and Patuelli (2016) suggest that individuals attach a substantial value to self-employment, and not because it is associated with superior instrumental outcomes, such as higher pay or lower working hours but high level of satisfaction derived from it.

2.4 Self-employment in Kenya

As the weak Kenyan economy struggles to survive, the situation is being worsened by the high population growth rate which stands at over 2.9% hence extra labour force continues to hard more pressure on the limited labour market. Currently, the population is increasing by over 1,000,000 per year, among which 43% of the population is younger than 15 years. The working age population comprises around 20 million, almost half of the country's

population estimated at 41 million in 2011(KNBS, 2013). Nevertheless, there about 800,000 young Kenyans who enter the labour market every year against less than 60, 000 job provided by the public sector which majority are composed of teachers and security forces (Allen, Garst, Bowers, & Onyiko, 2016; Sirera, 2014). Indeed, Kenya faces a significant unemployment problem with youth being hit hardest than adults.

Kenya's unemployment crisis over the last decades indicates that the economy is not doing well, and the growth is equally inconsistent to accommodate large number of graduates from TVET and Universities. This is worsened by Kenya's high population rate that increases by over one million people each year. As a result, the country's economy is missing out on the labour market dividend, instead of reaping from the bulge in its youthful population in terms of productivity, innovation and consumer market growth. The high unemployment is also attributed to the overall unfavourable investment climate in the country and the economy's inability to create new jobs (Muriithi, Kinuthia, Ngure, Waithima, Kizito, Kiarie-Makara, akoth Omondi, Odongo, Nyaole-Kowuor, & Njuguna, 2017). Graduates of TVET institutions and Universities find it difficult to enter the labour market as paid employees, hence they a long period waiting for employment opportunities.

The other reasons contributing to this ranges from shortfall in education and skills, lack of work experience, difficulty in obtaining information about career options and job chances, skewed recruitment practices by employers, and lack of necessary funds and attitudes to become self-employed. As mitigating measures, the Kenya government has embarked on

many programmes to deal with the biting youth unemployment. However, too little is known about what works best in youth employment promotion in Kenya. In order to guide future investment decisions of government and development partners, more evidence is needed about the effectiveness of different initiatives and approaches in promoting youth employment and fostering a smooth transition from education and training to work.

In Kenya, negative effects of Structural Adjustment Programmes (SAPs), which were experiened in the 1980s; liberalization policies, and later realized in 1990s; and together with globalization and new technologies have greatly impacted on the job dynamics (Ikiara, 1998; Yamazawa, 2000). With these reforms the Kenyan economy has been weakened by reduction in donor funding. As Kenyan labour market experienced drastic decrease in formal jobs the focus have shifted towards informal sector job provisions (Betcherman & Khan, 2018). The idea of translating skills development into skills utilization, and therefore economic growth and poverty reduction, is dependent on various factors like quality of education, supportive environment, facilitative infrastructure and a favourable work environment.

Kenya's past has witnessed development of national and sectorial policies aimed at facilitating employment creation (Ahmed, 2016; Omoju & Abraham, 2014). However, while some of the policies have been noble, more often than not, they have not been effectively implemented. In situations where policies have been implemented, not much monitoring and evaluation has been undertaken to assess the achievement of outcomes,

identify the strategies that may have worked, isolate the non-viable strategies and learn from the possible mistakes (Sohn, Kang, & Lim, 2017). In Kenyan situation, unemployment interventions have been termed as curative in nature rather than offering training that can change the mind-set of trainees that as upon completion training they to create jobs for themselves (Maringa, 2014; Puerta, 2012).

The Kenya Vision 2030 recognizes that employment would have to increase significantly if the goal of poverty reduction is to be achieved (Fourie, 2014; Odongo & Wang, 2016). According to the Vision 2030, additional jobs required to absorb the idle and increasing labour force was to be realized from the targeted economic growth of 10 per cent over the Vision horizon (Balwanz, 2012; GoK, 2007; Muiya, 2014), within the context of the Medium Term Plan (MTP) of 2008-2012 which was projected that the economy would have grown at an average rate of 8.2 per cent annually over the period 2008-2012 as indicated in Table 1 page 41. The projection estimated that formal sector would create an average of over 700,000 new jobs every year. Within the period, a total of 3.5 million new jobs were expected to have been generated.

As a matter of fact, at the end of the period the GDP has never grown beyond 5 % within as was expected to grow by over 10%. The next new projection of MTP of 2013-17 has also come to an end with formal sector performing even more poorly in terms of jobs creation. Indeed going by this trend, it means that the Vision 2030 might miss to achieve

its targets of poverty reduction totally if the trend of current economic performance continues (Fourie, 2014; Razavi, 2016; Yumi, 2017).

Table 1: GDP Growth and Employment Projections (2008-2012)

	2003-07		2008	2009	2010	2011	2012	**2008-12**	
GDP Growth (%)	**Total**	Average	Projections					**Total**	Average
Total		5.3	4.7	8.4	8.7	9.1	10		8.2
Employment (000)									
	2344	469	425	759	787	823	904	**3518**	703

Source: Republic of Kenya (2008)

The share of Kenya work force is dual in nature, which is categorized into formal and informal employment. The behaviour of labour market since 1985 is as shown in Table 2. The table indicates that 80.33% of the total employment was in formal employment, the self-employed and unpaid family workers were about 2.26 per cent, while those in informal employment were estimated to be about 17.41 per cent of total employment. Henceforth, since 1985, the trend of formal absorption has shifted towards informal sector which is attributed to Structural Adjustment Programmes (SAP) introduced by World Bank in 1990s (Bruno, Choudhry Tanveer, Marelli, & Signorelli, 2017; Kapunda, 2018; Poku, 2017). This increased rate of growth of the informal labour force is attributed to the liberalization policies, government promotion of the informal sector, and also

better data capture, but above all to the inability of the formal sector to adequately generate jobs for the increasing labour force (Kanbur, 2017; Kimenyi, Mwega, & Ndung'u, 2015; Omolo, 2010).

Table 2: Shares of Kenya's total employment (1985–2014)

Year	Modern Sector: Wage employment (%)	Modern Sector: self- employment & unpaid family workers (%)	Estimated informal employment	Total Employment
1985	80.33	2.26	17.41	146 200
1988	77.47	2.54	20.00	173140
1991	56.38	2.04	41.58	255710
1994	44.86	1.74	53.41	335620
1997	35.06	1.36	63.57	469840
2000	28.68	1.10	70.22	591160
2003	23.53	0.90	75.57	733940
2006	20.66	0.75	78.60	899340
2009	19.13	0.65	80.23	1045650
2012	16.87	0.60	82.53	1278110
2013	16.89	0.62	82.49	1351700
2014	16.56	0.72	82.73	1431670
Average for the period 1985-2014	169582(26.55%)	6179(0.97%)	463036(72.49%)	

Source: Kenya Economic Surveys: Kenya National Bureau of Statistics

With this trend it means that Kenyan economy may no longer in a position to create jobs to ever increasing population mostly the graduates churned out of training institutions including TVET. The intervening measures that includes; Vision 2030, Youth Development Fund, Kazi Kwa Vijana among others seemed to have not delivered desired outcome (MaryStella & Kithae, 2015; Were, 2017). The informal sector which seemed to absorb majority of the youth is given little attention when it comes to formulation policies that address unemployment in the country (Ferreira & Rossouw, 2016).

Indeed, educators believe that TVET training is academic and theoretical in nature, therefore it should be deemphasized and technical skills should be more emphasized (Undie, Sule, & Bassey, 2012). Similarly, skills in business and entrepreneurial which is said to assist youth in self-employment need to be included and emphasised more in the core curriculum. In fact both technical and business management skills need to be emphasized in order to make the TVET more useful after the training.

2.5 Instructors Role and Self-Employment

In TVET institutions, trainers' instructional ability and content knowledge in engineering courses are, therefore, crucial on students' understanding of the course and the subsequent grasping of requisite skills (Dasmani, 2011; Hargreaves & Shaw, 2007; Malunda, Onen, Musaazi, & Oonyu, 2016; Union, 2007). Instructors play an important role in training because training impacts on skill acquisition and the subsequent performance at the work place (Akhuemonkhan, Raim, & Dada, 2014). According to

Jegede (2009); Musau and Migosi (2015) there is a direct relationship between the qualification of an instructor and the acquisition of skills by students besides other factors. One of the aspects of service provision is the human resource needed to cope with the dynamics of labour demand (Coltart, 2012; Okolie & Yasin, 2017; Riboud, 2015).

The realization of the national growth in engineering-based technology hinges largely on the quality of the instructors. This view is supported by Daugherty (2008) submission that instructor's quality greatly influences the quality of skills imparted to the learners. A study by Ngada (2008), on teachers' quality observed that over 80% of respondents viewed most instructors in colleges as carriers of weaknesses. The weaknesses include, among others, inadequate exposure to industrial practice, poor classroom management and control, shallow subject-matter and lack of professionalism (Bassey & Otu, 2015; Fong, 2008; Orangi et al., 2016). The professional qualities of a teacher include; mastery of the subject matter, sense of organization, ability to clarify ideas, ability to motivate students, good imagination, and ability to involve the students in meaningful activities. In fact throughout the period of teaching, management of the details of learning and frequent monitoring of students' progress through variety of tests is teacher paramount duty (Hanushek, Schwerdt, Woessmann, & Zhang, 2017; Manuti, Pastore, Scardigno, Giancaspro, & Morciano, 2015).

TVET institutions are in position to offer training reforms which are in line with dynamically changing and evolving labour markets and economies that can facilitate young people to transit into more productive and sustainable jobs. Training that is result into long term attachment to the labour market is worth long term investment since accrued benefits seemed to last long. Education and skills training can also expand the quality of the labour force and help to reduce the mismatch between demand for and supply of labour (Maclean & Pavlova, 2011).

In fact active labour market policies relating to training and retraining of workers can play an important role in bringing about the necessary adjustments in the labour market and reducing unemployment. On the supply side, policies relating to education may have both quantitative and qualitative effects on labour force. Policies aimed at raising the rate of enrolment and encouraging young people to continue with education/training, can reduce the supply of labour in the market. The speed of technology advancement and the necessary human resources and skills required is fast and dramatic. The human resource development strategy, therefore, should take into account this diversity and dynamics. Although public institutions can capture the changes in demand, it would not be easy to cope with it promptly since they would need to retain instructors and renew the facilities (Davison & Gezi, 2014; Nyerere, 2009a).

2.6 Training Equipment and Self-employment

The objective of TVET is to provide and promote life-long education and training for self-reliance. However, challenges facing training institutions include inadequate facilities and capacities to cater for graduates of primary and secondary education wishing to undertake programmes (GoK, 2011; Tolentino, Garcia, Lu, Restubog, Bordia, & Plewa, 2014). A study by Makhoha (2012) on factors influencing the quality of engineering graduates, ranked availability, adequacy and quality training resources and physical facilities highest among many other factors. In addition Collins (2013) and Kingombe (2012) affirmed that TVET is an expensive form of education and expanding it without necessary and adequate facilities and equipment does not translate into increasing productivity in the long run.

Teaching aids and resources are essential requirements for successful training of engineering trainees in TVET institution. Material resources are important in curriculum implementation of the syllabus if they are effectively put into use (Dasmani, 2011; Majumdar, 2011; Milligan, 2017; Singh, 2000). Engineering being a practical oriented subject, training facilities must be in place for effective programmes. According to Wadhwa, Gereffi, Rissing, and Ong (2007), some of the challenges still facing include inadequate facilities and capacities to cater for the large numbers of those who complete primary and secondary education and wish to undertake.

One of the issues bedevilling public institutions is that they do not have adequate mechanisms of accumulative capital to mitigate ever diminishing Government funding (Ayako, 2015; Dudwick & Srinivasan, 2013). However, it is also not clear whether there is any practice of planned renewal of the facilities. Some technical institutions which were started with donor funds in form of finance package and equipment (Workshops, Machines, cutting tables and body forms) find it hard to cope with depreciation due to lack of continuous investment (Bhorat & Tarp, 2016; Fredriksen & Kagia, 2013). This has led to missing link between the technology in the industry and the technology used in the Training Institutions. In fact students are normally technologically challenged when they are attached to engineering companies (Hussain, Ismail, Nor, Mulop, & Mohamed, 2015; Nyerere, 2009a).

The equipment and tools in TVET institutions are basically unable to cope with the current need for competency training, and out of tune with modern technology (Anindo et al., 2016). This is coupled with the fact that some teaching personnel do not possess the right skills, has led to a mismatch of the skills being imparted without the requirements of the industry. Despite these impediments, there has been no study that has concisely investigated the skills that graduates of diploma in engineering acquired from TVET institutions against job market requirements. Moreover, studies that showed how insufficiency of facilities and equipment, learning and training materials thwarted curriculum implementation in TVET institutions (Kigwilu & Akala, 2017; Orangi et al., 2016; Wanyeki, Kisilu, & Ferej, 2017).

2.7 Instructional Strategies and Self-employment

An effective teacher is judged ultimately in terms of imparting knowledge and value that student can comprehend. Jawarneh (2013) observes that for one to be a good teacher, one has to adopt an acceptable style of teaching. When given a set of behavioral objectives, the teacher must provide an environment in which the objectives may be best achieved, and select the teaching methods suited to the subject matter and type of learning involved (Majumdar, 2009; Reece & Walker, 2016). According to Mouzakitis (2010) the success of the curriculum depends on the selection of appropriate teaching strategies and learning activities. There are a variety of methods and techniques that the engineering instructor can employ during teaching in order to make students understand the lesson. Different teaching methods and technique will take care of individual differences in students (Bietenbeck, Piopiunik, & Wiederhold, 2018; Magolda, 2014). These include lecture, demonstration, group discussion, question and answer, practical and assignments.

A demonstration method is a practical display or exhibition of a process and serves to show or point out clearly the fundamental principles or actions involved (Ahmad, Nordin, Ali, Md, & Ab Latip, 2017; Sobel & Taylor, 2005). Teaching by demonstration is a useful tool available to the instructor and plays an important part in teaching practical skills (Engr Amaechi, Orlu, Obed, & Thomas, 2017; Hampton, 2002; Shrestha, 2016). Contrary to this assertion, Wals (2012) observes that there is need for less emphasis on teacher-centered skills such as the traditional demonstration, and more emphasis placed

on skill of enquiry, discovery method, self-directed learning, creativity and initiative on the part of learner. Generally, lecturers use demonstrations alongside other methods of teaching (Habib & Nsibambi, 2017). Demonstration trains students to observe things, it stimulates thinking and the formation of concepts and generalizations and it arouses the students interest greatly by the equipment and material used (Ahmad et al., 2017; Sobel & Taylor, 2005).

A practical session should follow a demonstration immediately in order to reinforce procedures learners learn best by doing and there is no substitute for practice in the acquisition of skills (Khanal, Lamichhane, Joshi, Koirala, Bhatta, Neupane, Karki, Gautam, Neupane, & Yadav, 2014; Kyarizi, 2012). According to Lowry (2009), students learn when they are actively involved and that they must be allowed to practice after the teachers' demonstration. Also a study by Daly, Mosyjowski, and Seifert (2014) indicates that, practical experience in engineering courses makes learning more meaningful and the concepts and ideas learnt not easy to forget.

In addition, students of engineering in TVET institutions are said to lack the knowledge and practice on basic processes used in mechanical engineering an indication that topics were tackled theoretically (Rui, Cuervo-Cazurra, & Un, 2016). Similarly, Torres, Sousa, and Torres (2018) argued that, there is need to streamline the teaching methods used by tutors for affective technical education in engineering courses since practical skills are essential job-market skills.

2.8 Technical Content and Self-employment

Technical and Vocational Education and Training (TVET) is broadly defined as Education which is mainly leads participants to acquire the practical skills, knowhow and understanding, and necessary for employment in a particular occupation, trade or group of occupations (Wildschut & Meyer, 2016). Such practical skills or know- how can be provided in a wide range of settings by multiple providers both in the public and private sector.

According to Bennell (2000) the role of TVET in furnishing skills required to improve productivity, raise income levels and improve access to employment opportunities has been widely recognized. In support, Nyerere (2009a) asserts that developments in the last three decades have made the role of TVET more decisive; the globalization process, technological change, and increased competition due to trade liberalization necessitates requirements of higher skills and productivity among workers in both modern sector firms and Micro and Small Enterprises (MSE). Skills development encompasses a broad range of core skills (entrepreneurial, communication, financial and leadership) so that individuals are equipped for productive activities and employment opportunities (wage employment, self-employment and income generation activities) (Bennett, Dunne, & Carré, 1999; Eldridge & Nisar, 2006; Raybould & Sheedy, 2005).

The root of the shortage of skilled labour can be traced to persistence of obsolete and unresponsive training mechanisms vocational and technical systems that are not

providing new entrants with appropriate skills (Oni & Crafford, 2016). A study by Allais (2012) focused on school vocational education and training, found that youths training was largely focused on the acquisition of technical skills and acquisition of soft skills, was presumably incidental which their acquisitions was assumed to occur largely by chance.

Youth demonstrated a high awareness of the role that personal attributes and demeanours would play in obtaining and maintaining employment in the trades. Bakar (2011) argues that people need new competencies for the knowledge economy which included skills in language, communication, logistical and mathematical thought, and problem solving skills, team working, negotiation skills, and self-confidence and developing social networks. This was echoed by Valiente (2014) that skills such as basic skills and digital age literacy; academic skills; technical skills; generic skills; soft sk ills and leadership skills were necessary in the labour market.

In most developing countries, TVET is limited in scale, scope, quality and relevance. The programmes are not relevant to the needs of the local labour market, the curricula and syllabi are out-dated and the institutions lack the tools and equipment necessary for a practical education. Where present, the equipment in workshops and laboratories is often out-dated, bearing little resemblance to the technologies currently used by industry. Insufficient training equipment leads to trainee overcrowding during practical demonstrations, with most of the students only observing the demonstration and not

having the opportunity to get some hands-on practice. Due to the fact that the institutions are poorly resourced, the education and training remains theoretical and the graduates are not considered more skilled than their academic counterparts by the labour market. The institutions thereby acquire a poor image, and produce graduates with lower employability.

2.9 Soft Skills Content and Self-employment

In today's globalised world, where the survival of the fittest is the norm, it has become crucial to acquire soft skills as a blend to technical skills (Jules & Sundberg, 2018). Indeed, technical skills are acquired through training, assessed through an established standard examination and eventually award of certificate. For soft skills this process is not applicable since it is a sociological process which in actual sense refers to individual's emotional intelligence. Likewise, modern manufacturing firms are looking for employees who can add value to their organization with their soft skills. Indeed individuals with ability to build up and utilize soft skills are said to stand a chance in job offer and definitely an asset to an organisation.

Actually in serous organisation, a soft skill is a prerequisite for employment hence one with a certificate showing good grades may be left out in job recruitment. Any candidate who wants to get an edge over competitor in a job vacancy is expected to possess practical soft skills. Indeed, this observation is supported by Dabke (2015) that, employers value soft skills because they are just as good as sign of sound job

performance. Likewise in self-employment one is required to possess high soft skills proportion, apart from the technical skills in order to survive in a competitive business environment.

Despite being said to have ability to unlock technical skills possessed by graduates, soft skills have been not been fully included in TVET curriculum. Without soft skills one who is grounded in technical skills may remain jobless while with time acquired skills becomes obsolete. Indeed, other than being left at periphery soft skills, should provide with trainings as a part of core curriculum which trainees take it seriously. Soft skills acquisition helps to improve one's creativity and eventually a smooth transition to the world of work. The graduates of TVET are faced with lack of employment in the job market upon graduation hence possession of soft skills makes difference as one seek or being self-employed in the world of work. In fact, (Watts M and Watts R. K, 2008) observed that technical skills contribute to only 15% of one's successes while remaining 85% is made by soft skill. Despite such immense findings and being recognised globally, soft skills have not been taken seriously and included in TVET curriculum. Self-employment is a difficult journey for fresh graduates from institutions, if they lacked soft skills in their trainings, they will find practical skill acquired being useless and may get frustrated and might eventually engaged in crime.

Indeed globally people who possess basic intellectual skills, but more importantly people who possess other competencies like critical thinking, problem solving and

entrepreneurship survive in self-employment (Fasih, 2008). In the current globalised labour markets characterised by development and adaptation of new technologies in places of work, soft skills is said to be a driving force. In fact youth are said to be jobless because of "21st century skills mismatch", since they only possess specific skills while surviving or engagement in the modern labour market require high possession of soft skills which is lacking.

With onset of globalized economy, there is more demand for a highly skilled and more flexible work force even in small enterprises which are basically driven by elements of soft skills. For African countries to compete in global arena with fast technological changes their workforce need to possess a richer technical content, a higher skill levels and constant enhancement of workforce skills (Alsharari, 2018). Indeed, globalization calls for participation in terms production or service provision such that if one is not engaged can lead to being isolated from global labour market. As a matter of fact, access to information and competence is a requisite for engagement in the current global economy driven technology. The effect of information communication technology (ICT) has increased the speed of access and use of the labour market information (Dobrzykowski & Tarafdar, 2015).

Investment in education translates into investment in human capital and hence productivity not only for an individual, but also for a whole country (Frey & Osborne, 2017). Indeed, competency centred skills training is crucial factor for progress of human well-being and

sustainable development. In the global economy, youth need to possess the right skills that are applicable and adaptable to the demand of the constantly changing labour markets (Sankale et al., 2017). This means that with skills acquired one should make use of opportunities brought as a result of global labour markets. Therefore, training institutions especially in Africa need to focus on opportunities in the global labour market, particularly for the growing youth population which local labour may not absorb.

Indeed, globalization continues to have a major impact on the need for flexible work skills, therefore unresponsive practical skills training, is deemed irrelevant to the current labour market (Balwanz & Ngcwangu, 2016; Jang, 2016). Arguably, the many gains praises for TVET, such as higher productivity, readiness for technological change, openness to new forms of work placement, the ability to attract foreign direct investment and the realization of Millennium Development Goals, all these depend on the quality of the skills acquired, and ability to fit into dynamic environment in which they can be applied (Marvel et al., 2016).

In agreement, Habib and Nsibambi (2017) observes that TVETs are important for their orientation towards the world of work and the need for emphasis of curriculum that enhance acquisition of soft skills. TVET delivery practices are well positioned to train the skilled and entrepreneurial workforce that Africa needs to create wealth and come out of poverty (Ismail & Abiddin, 2014; John, Benedict, Kanayo, & Ekenechukwu, 2016; Pongo, Effah, Osei-Owusu, Obinnim, & Sam, 2014). Nevertheless, the supply of skilled graduates

to the labour market has not been able to match required skills. In countries with general lack of jobs for technical vocational TVET graduates, TVET is likely to remain less popular than general schooling (Rajadurai, Sapuan, Daud, & Abidin, 2018). In countries like South Korea, China and Mozambique, where formal job growth has been in upward trend in recent years, there has been policy commitment towards investment in TVET. In fact, TVET has not been driver in production of the required workforce in all sectors of economy (Apunda et al., 2017; Cheong & Lee, 2016).

In fact, TVET institutions not only equip trainees with the knowledge and skills they need for work, but also ensure that they have adequate language, literacy and numeracy skills needed for a sustainable economy and societal stability (Cooney, 2010; Li, Ahmed, Khan, & Hongwei, 2016; Wheelahan & Carter, 2001). Similarly there is a need for technological skills, and knowledge skills for further learning as the basis for changes to existing work and individual occupational growth which is paramount in today's global economy (Akanbi, 2017; Gamble, 2016).

In Kenya, entrepreneurship education is possibly the most recent significant change in education and training systems. In the past decades there has been introduction of various skills at almost all levels of education and training in primary and secondary education to TVET institutions (Badawi, 2013). Indeed, providing young men and women with relevant skills is important as enter workplace, practical and soft skills is crucial element in addressing youth unemployment, which affects an estimated 74.8 million youth worldwide

(Anyanwu, 2014; ILO, 2012). In Kenya, TVET can play a central role in preparing young people for work, but experts says that; in most cases such programmes fail to respond to labour market needs (Garcia & Fares, 2008b; Singh, 2000).

However, Sang, Muthaa, and Mbugua (2012) reveals that the existing public technical and vocational education training (TVET) system in Kenya suffers from critical problems including the decline of quality; lack of relevance to occupational and social realities: under-enrolment; and under-funding. This shows that Kenya faces difficult future because of ever escalating problem of unemployment associated with poorly prepared youth churned out of TVET institutions yearly into already flooded labour market (Were, 2017). On the other hand, within and global industries demand high order skills or innovative skills which cannot be produced in TVETs institutions.

Unfortunately, the TVET system that is expected to play a critical role in this endeavour by providing necessary skills that will catalyse industrialization processes is in incapacitated state. In this study, generic competences is concerned with the meaningful objectives and learning content that may stimulate personal development of students and eventually position them within the domain of knowledge that can best prepare them for learning, employment and future life (Travers, Morisano, & Locke, 2015; Yusof, Roddin, & Awang, 2015).

2.10 Support Systems and Self-employment

In practice, business incubation can strengthen competency based teaching and learning to make it easier for graduates of TVET to formulate intelligent use of the product of technology and develop better entrepreneurial skills and create innovative workers (Kikechi, Owano, Ayodo, & Ejakait, 2013; Mulder & Winterton, 2014; Otuya, Kibas, & Otuya, 2013). For graduates to succeed in self-employment they need to nurture their entrepreneurial skills, to be able to create enterprises, of which some would engage in after leaving the incubator to create direct and indirect employment, with incomes and assets, which in turn make their livelihood out of it.

For one to survive in a competitive labour market, characterised with lack of jobs there, there is need of a supportive environment that can enable new graduates to transit into employment or self-employment. The study agree with a study by Hasmori, Yunos, Hamzah, and Aripin (2015) that Training institutions also seem not to track the employment destination of their graduates. Consequently, the institutions have not taken advantage of feedback from past trainees on the quality of the training they have received to improve their curricula and training packages (Mayombe & Lombard, 2015). In short, the implementations of outcome evaluation and tracer studies that can be used improve training programme as responsiveness of labour market demand is still lacking.

Similarly, Ncube, Brixiova, and Bicaba (2014) maintains that lack of employment and entrepreneurial experience, weak links to professional networks, and limited start-up

capital and access to credit renders young people unemployed. Indeed, young entrepreneurs face higher cost than adults when searching for opportunities and turning them into profitable business. Indeed, professional networking as a critical factor in self-employment since it is difficult to start and run a business without knowing your customers and their taste. In addition, Okoye and Okwelle (2013), indicated that easy access to information on self-employment, access to wealth and social networks all enhance business opportunities and can potentially reduce the perceived uncertainty associated with self-employment.

Apart from advantage of being accessible to capital, availability of networking business community trained entrepreneurs tends to be successful for a variety of reasons unrelated to education. Similarly, unemployed youth without specific training have lower endowments of human capital and entrepreneurial skills to set up and maintain a new business. The reality that self-employment has been focused as one of the key solutions to reduce high rate of unemployment especially in Africa, youth engage as a break of long queues waiting formal employment (Gamieldien & van Niekerk, 2017; Jeske, 2018; Odora & Naong, 2014). This seemed to indicate that those who join self-employment do so as a result of “push factors”. That is being forced into self-employment so as to earn a living. Indeed a study to measure the impact of unemployment on transition to self-employment should be the one guiding policy makers as they deliberate on tackling high rate of unemployment in the country.

A study by Robb, Valerio, and Barton (2014), revealed that entrepreneurial training enrolled in Sri Lanka that targeted in urban settlement, did not affect existing businesses practices but there was significant acceleration of unemployed women into self-employment within a short time. It true that TVET graduates possess technical knowledge through which has to be tied with creativity and career guidance that can drive them to higher innovative capacity of required in self-employment. TVET graduates can take advantage of existing technological solutions for their own circumstances and be more innovative to existing global problems hence creating a niche to themselves in the global labour market. The technological divide between the developed and developing countries may continue to widen as developing countries continue acquiring technological devices and solutions from developed countries (Amankwah-Amoah, 2015; King & Palmer, 2010).

Without proper intervention such as grasping of the existing technological advances and information technology in the modern knowledge economy, the development gap may widen more and reduce participation of developing countries in the global economy. Ones flexibility in labour market reduces traditional employments, which were characterized by permanent careers, where individuals were to remain in an employment throughout one's working life (Marope et al., 2015). This kind of employment is risky since closure of an organisation or getting automated; someone may be rendered jobless and becomes difficult get another job.

Indeed, TVET institutions are no longer expected to not only train on "traditional routine skills" which may be taken away through automation as a result the graduates remain unemployable but introduce high order thinking in training. The graduates are required to possess soft skills which enrich technical skills that make one fit into the labour market. TVET is in a position to produce flexible human capital that are able to shift from a one-job-for-life culture to higher career mobility through lifelong learning as opposed to traditional technical or specific skills acquisition (Eichhorst et al., 2015; Manuti et al., 2015; Sutherland, Naidu, Seabela, Crosson, & Nyembe, 2015).

There are reforms in TVET training in Africa that call for adoption of Competency Based Training (CBT) that require application of knowledge and skills relative to an industry standard of performance and focuses on what is expected of an employee in the workplace (Abdullah, Aryanti, Setiawan, & Alias, 2017). This implies that just knowledge acquisition is no longer a requirement in the labour market but also ability for lifelong learning and a show of other skills like creativity, problem solving, and adaptation to new working environment among others. This means that such graduate possesses ability to transfer and apply technical skills and knowledge to new work places, fields and situations without difficulties or being re-trained by the organisations. The CBT approach which is increasingly being adopted by TVET institutions in Africa, is deemed to facilitate the creation of an adaptable workforce and enables their graduates' transit into modern dynamic world of work, globalisation and new technologies (Augustine, Richard, & Donatha, 2017; Ogwo, 2018).

2.11 Summary and Gaps Identified

The literature reviewed indicates that worldwide the problem of unemployment go hand in hand with questions on responsiveness of education and training grounded in demand based. The demands in labour market today are based on technologies that did not exist 50 years ago (Darvas & Palmer, 2014). The jobs which have recently emerged includes new ones in information technology, service industry, sell of electronics that are based largely on technology developed in the past 10 to 20 years (Davis, 2016; Pavlova, 2007). Indeed, with these changes new jobs are created which require extra skills in addition to technical skills which can be an answer to high rate of unemployment. TVET institutions need to shift focus to training that can prepare graduates in readiness for the modern world of work where there are new jobs for self-employment. In this study the preparation of diploma in engineering graduates for self-employment in Kenya was investigated.

Diploma in engineering program is practically oriented and it has opportunities for self-employment in electrical energy, construction, automotive and mechanical industries which all seem to be having positive opportunities to large number of youth who are unproductive despite having technical skills growth. Well-trained workers are better innovators, as a requirement by the labour market good training programs should be a key priority for those training institutions aiming to survive in the 21st century. There is little research in the reviewed literature which has investigated how training of diploma

in engineering prepares trainees for self-employment in a dynamic labour market. The present study aims to contribute towards filling of this gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter covers the research methodology of the study or steps that were followed in conducting this study. It covers philosophical view, research approach, research design, research method, study area, population and sample, sampling procedures, research instruments, validity and reliability of research instruments, data collection procedures, ethical considerations and data analysis techniques

3.2 Philosophical View

The study was based on a constructivist research paradigm highlighted by Lincoln and Guba (2016) Lincoln and Guba (2013) and Johnson and Onwuegbuzie (2004b). The constructivist approach focuses on individuals' meanings of events that are contextualized. Constructivist approach understands the reality which involves coming to an understanding of the view of the world held by those people involved in the situation rather than adopting a "stranger" or outsider perspective (Guba & Lincoln, 1994; Krauss, 2005; Morrow, 2005; Shannon & Hambacher, 2014). On this basis, the current researcher needs to recognize that the problem under investigation has multiple realties that need to be exposed from the inner perspective of participants.

Likewise, the constructivist approach does not only enable participants to describe their stories about the reality, but also identify the potential actions to overcome certain barriers (Baxter & Jack, 2008; Crotty, 1998; Denzin & Lincoln, 2005; Maxwell, 2012). That is, the constructs of the reality (preparation of trainees for self-employment in a dynamic labour market) was examined in light of the inhibiting factors to its success.

The above argument is consistent with the overall objective of the study. That is, a better understanding of preparation of engineering trainees for self-employment is served through an investigation of related multiple constructs in specific TVET systems. This is particularly relevant to the current study, where the constructs under investigation are graduates perception on knowledge, practical skills and attitude acquired from TVET institutions. Similarly, trainers' opinion was sought on their perception about training they impart to trainees under prevailing learning environment in TVET institutions.

More specifically, the importance of the constructivist approach is highlighted by the mixed method researchers. The scholars argue that constructivism is desirable when there is very little known about the problem under investigation (Duit, 2016; Onwuegbuzie & Tashakkori, 2015; Venkatesh, Brown, & Sullivan, 2016). Likewise it is said to be applicable to problems which cannot be separated from the participants' context and if the purpose is to explore how several issues interact in a natural setting (Biesta, 2010; Cohen, Manion, & Morrison, 2013; Heron & Reason, 1997). In addition, constructivist approach is recommended when the inquiry needs significant interactions between the

researcher and research participants so a complex understanding of the problem can be achieved (Greene, 2008; Schwandt, 1994; Seale, 2002; Sommer Harrits, 2011).

The constructivist approach in this study involves the use of induction (the discovery of constructs or patterns) and deduction (testing the overall constructs) in relation to the literature (Harrison, 2013; Lincoln, Lynham, & Guba, 2011; Onwuegbuzie & Leech, 2006). Thus, the study will involve both quantitative and qualitative components (mixed method approach)

3.3 Research Approach

This study adopted mixed method approach. Mixed method approach utilises both quantitative and qualitative designs in the same research study, advanced as a response to the observed limitations of both quantitative and qualitative designs. Mixed method approach is said to offer richer insights into study being conducted and allows the capture of information that might be missed by utilizing only one research design (Creswell & Creswell, 2017; Mayoh & Onwuegbuzie, 2015). In this study, the mixed method was adopted were both quantitative and qualitative data were executed concurrently and converged at analysis and interpretation level to enrich each other. Consequently, it enhances the body of knowledge on TVET graduates, and acted as source for more questions of interest for future studies that can multiply research questions since researchers are not limited to one research design.

In fact the proponents of mixed method approach believe that this approach provides researchers with opportunities to compensate for one method weaknesses, inbuilt method strengths, and consequently counteract expected method biases. Also, Hesse-Biber (2015) comments that mixed method approach enables a greater degree of understanding to be formulated than if a single approach was adopted to specific studies. In this study, mixed method was employed in order to establish how engineering graduates were prepared in TVET institution to enable them transit into self-employment in a dynamic labour market in Kenya. This study took advantage of utilizing strengths of combining the two approaches consequently, minimising weaknesses of each approach. In utilising mixed approaches the two approaches were conducted concurrently, that is both quantitative and qualitative data sought at the same time and merged at interpretation stage.

For quantitative data, questionnaire was used to seek graduates opinion on training they received in their former TVET institutions in relation to self-employment as way of responding to unemployment menace in the country. Likewise, interview schedule was conducted that sought opinion of trainers of the same respondents about their feelings on how their graduates utilised skills they receive in engaging in self-employment as they enter into labour market characterised by lack of formal employment. Similarly, FGD was conducted on TVET graduates of Automotive, Electrical, Building and Mechanical to seek their opinion on usefulness of training they received as they engage in the present-day labour market. Both interview schedule and FGD helped in bringing out qualitative data, as TVET graduates narrated their attitudes towards training they received

and interpretations as they engaged self-employment as an option out of unemployment. On the other hand, closed ended questionnaire brought quantitative data, on standardised form that ensured uniformity, and thus generated required data describing opinion that can numerically analysed.

The study was anchored on distinct justifications for the integration of quantitative and qualitative research data, as argued by (Gibson, 2017) that: Triangulation provides opportunities for convergence and corroboration of results that are derived from different research methods. Complementarity, seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from another (Greene et al., 1989, p. 259). Finally, development sees researchers utilising the results from one method to inform another method which covers all aspects of the inquiry. The triangulation design is one which seeks to gather complimentary yet distinctly different data on the same topic which can then be integrated for analysis and interpretation. In this study, the data collected from both quantitative and qualitative approaches were collected at the same time independently and merged at the interpretation level. The merging helped to confirm and complement opinions of TVET graduates on training received, hence enhancing clarification of the results analysed.

3.4 Research Design

Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in conducting research

problem (Creswell & Creswell, 2017; Walliman, 2015). Others have called them strategies of inquiry (Denzin & Lincoln, 2011; Lewis, 2015; Spillman, 2014; Yvonne Feilzer, 2010). This study adopted a cross sectional survey research design which yielded both qualitative and quantitative data as a basis for interpreting perception of respondents on how TVET institutions prepare graduates for self-employment. Survey research design is deemed suitable when collecting information about people's attitude, opinions, habits or any of the variety of education or social issues (Harding & Seefeldt, 2013; Sommer Harrits, 2011; Teddlie & Tashakkori, 2010). Survey research designs are used in preliminary and exploratory studies to allow researchers to gather information, summarize, present and interpret for the purpose of clarification (Denzin, 2012; Johnson & Onwuegbuzie, 2004a; Morse, 2016)

In addition, survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population in order to provide suggestions for improvement of educational practice and instruction (Koul, 1992; Landrum & Garza, 2015). Moreover, survey research design can be used to describe, explain or explore the existing status of and relationships between variables at a given time (Mugenda & Mugenda, 2003; Turner, Cardinal, & Burton, 2017). Survey research design is suitable to this study because it seeks to obtain information that described the participants' perception about preparation of graduates by TVET institutions for the world of work and the gap if it exists and what can be done to bridge the gap. In this study both quantitative and qualitative data were collected concurrently and converged in

data analysis to give perspective of preparation of trainees in TVET institution for self-employment. The qualitative data through interview and focus group discussion was used to confirm qualitative data collected through closed ended questionnaire.

The opinion of trainers was sought through engaging them in extensive interviews. Indeed, extensive interviews methods involve studying a small number of subjects through extensive engagement to develop patterns and relationships of meaning (Creswell & Plano Clark, 2007). The qualitative data collected will enrich and compliment the quantitative data obtained from the cross-sectional survey.

3.5 Research Method

A research method refers to the instruments and/or tools that researchers use as they carry out any form of inquiry or investigation (Almalki, 2016; Creswell & Creswell, 2017). There are a numerous number of tools which can be used to conduct different enquiries (Johnson & Onwuegbuzie, 2004a; Yvonne Feilzer, 2010). It is therefore, upon researcher to decide on the most suitable instrument for a specific study. In most cases tools are selected to complement each other, in order that, the data generated is relevant to the objective of the study and follow a logical progression (Almalki, 2016; Jonker & Pennink, 2010). It is also pertinent to note that there is no right or wrong method for conducting a specific piece of research (Teddlie & Tashakkori, 2011; Wei & Lin, 2017). However, it is important to have in mind, that the method is selected in order to heighten the dependability and trustworthiness of the data collected and their interpretation. Using

more than instrument increases strengths and lessen weaknesses of using a single instrument to collect data. This study applied both qualitative and qualitative research instruments, which was appropriate in collecting data on perception of TVET graduates on impact of their training on self-employment. In this study the research instrument deemed best, were closed ended questionnaires which was used to collect quantitative data, while, interview schedule and FGD were used to collect qualitative data. The reason behind combining methods was triangulation of research instruments was to enhance data collection on the same topic. It was also used to complement each other and ultimately improve trustworthiness and dependability of results generated.

The quantitative data were collected using questionnaire which sought opinions of TVET graduates about their training they had received and self-employment. Since graduates were far apart and dispersedly located in the labour market participations hence questionnaire was the most appropriate instruments for data collection. The quantitative data from questionnaire were presented in numerical form or statistically in form of frequencies and percentages that reflect attitudes and perception of graduates towards training for self-employment. On the other hand, qualitative data were collected through interview schedule with trainers, which were presented as descriptive narration with words that attempts to understand their attitude towards training received and relevance to labour market. Interview schedule for trainers was considered appropriate since they had practiced training over the years thus they are deemed to possess vast knowledge on the impact of training against self-employment.

FGD was used to get opinions of graduates' experiences, especially on their common ground on their attitudes towards training they received as response to labour market dynamics. In this case FGD was conducted among TVET graduates from; Automotive, Building, Electrical and Mechanical as they experienced on labour market in their engagement, was sought to reinforce what they had shared on the questionnaire.

3.6 Study Area

The study area was Nakuru, Uasin Gishu, Trans Nzoia and Nandi Counties in Kenya. These counties have 5 established public Technical Training Institutions (TTI) currently named Technical and Vocational Colleges (TVC) as shown in page 223. These TVCs offer Diploma in engineering courses. The selection of these TVET institutions is based on the fact that they have been in existence for long and they offer diploma in engineering programs. The institutions are situated around towns associated with high growth hence offer employment opportunities to TVET graduates. These TVET institutions admit students from all counties in Kenya and after graduation they are released into the labour market anywhere in Kenya. This indicates that the selected TVET institution is a true reflection of TVET institutions in Kenya.

3.7 Target Population

The target population comprised of all graduates of diploma in engineering in five (5) TVET institutions in Rift Valley region, Kenya. All 488 engineering graduates of 2011

and their trainers were included as target population. The selection of this group was based on the fact that they have been out for at least five years a period considered long enough to venture in the world of work (Tukundane, Minnaert, Zeelen, & Kanyandago, 2015). According to Therefore, this research acted as a follow up to find out what type of employment the graduates are engaged in after graduation in 2011.

3.8 Sample Size and Sampling Procedures

Sampling involves the selection of a number of study units from an identified study population. This study used both probability and non-probability sampling strategies. Probability sampling allows researcher to capture all characters of the whole population, saves time and allows the chance of an element being selected to be quantified, but it is largely inappropriate for qualitative research (Dattalo, 2008; Scollon, Prieto, & Diener, 2009). The probability sampling strategies used in this study are cluster and disproportionate stratified sampling since the study targeted four different programs having different job opportunities in the labour market.

In non-probability sampling method, the chances of including each subject of the population in a sample is impossible since it does not involve random selection. The non-probability sampling method is used to gather data from the key informants and it is suitable for qualitative research. In this study the non-probability sampling methods used were purposive and snowball.

3.8.1Sampling Techniques for the Graduates

The graduates of diploma in engineering were first grouped into the following programs; electrical and electronic program, automotive, building and civil engineering, and mechanical engineering option. It was then followed by determining the minimum number of graduates required in each category, where disproportionate stratified random sampling method was used. The objective was simply to have representative samples of engineering programs to assure that even the small groups in the population were fully represented. Stratified random sampling techniques ensure that all categories of the population are represented in the sample in order to decrease the error in estimation (Acharya, Prakash, Saxena, & Nigam, 2013; Bell & Bryman, 2007; Robinson, 2014).

The third step was to complete the lists of diploma in engineering graduates showing their whereabouts as per data available at TVET institutions. From the list at least two graduates from each stratum or program were identified. Using snow ball sampling, the two purposely identified graduates were contacted to give where about of the other graduates required in the study. The use of more than one initial contact in each stratum is recommended in snow ball sampling technique as it ensures validity and reliability of the data collection process (Gogtay & Thatte, 2016; Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015; Singh & Masuku, 2014). Same process was repeated in the other four institutions.

3.8.2 Study Sample for the Graduates

The study targeted a sample size of 268(55.0 %) of diploma in engineering graduates from 488 target population who graduated in TVET institution as summarized in Table 1. According to De Vaus (2013) in follow up surveys, a sample size of 30% is representative enough. Since the target population were few in each stratum a sample size of 50% of the target population was taken in stratum. In a situation where the target population was less than 15 all were included in the study thus disproportionate stratified sampling to consider each character in the study.

3.8.3 Sampling Techniques for the Trainers

In selecting trainers to participate in the interview purposive sampling technique was used. The trainers who were believed to have adequate information about engineering courses offered in TVET institutions were purposively chosen to participate in the study.

In purposive sampling, the researchers judgment plays a key role in selecting respondents that are a representative population for the study (Oppong, 2013; Rea & Parker, 2014). The purposive sampling method was used in a key informant survey to target individuals who are particularly knowledgeable about issues under investigation (Palinkas et al., 2015; Ritchie, Lewis, & Elam, 2013; Robinson, 2014).

Table 3: Graduates' Sampling Plan

Institution	Courses	Target Population (N)	Sampled Size (S)
A-RVTTI	Mechanical engineering	29	15
	Automotive engineering	56	28
	Electrical & electronic	41	21
	Building & construction	33	17
B-OTTI	Mechanical engineering	12	12
	Automotive engineering	10	10
	Electrical & electronic	15	15
	Building & construction	17	9
C-RVST	Mechanical engineering	23	12
	Automotive engineering	24	12
	Electrical & electronic	29	15
	Building & construction	33	17
D-KAIBOI	Mechanical engineering	21	11
	Automotive engineering	24	12
	Electrical & electronic	19	10
	Building & construction	17	9
E-KTTI	Mechanical engineering	19	10
	Automotive engineering	25	13
	Electrical & electronic	24	12
	Building & construction	17	8
TOTAL		**488**	**268**

The participants for the interview among trainers purposive chosen from each TVET institution included head of department, career and guidance representative, industrial attachment liaison officer and any other senior trainer from each Department in engineering namely; Electrical and Electronic Program, Automotive, Building and Civil Engineering, and Mechanical Engineering Production Option.

Similar procedure was done in all the five public TVET institutions participating in the study. In this study, head of departments are considered resourceful in terms of information about programs offered in their departments and how their graduates were bearing in the labour markets. Career and guidance master in TVET institutions also plays a key role in assisting trainees to choose their career path correctly therefore he or she is crucial in this study. Similarly, industrial attachment coordinators liaise with industry during placement and assessment of trainees hence they are knowledgeable to trainees' experiences in the world of work. One trainer who taught 2011 engineering trainees was included in interview to make a group of four in each of the five selected TVET institutions. This means that a total of four interviews were done in each institution making twenty interviews in the five TVET institutions.

3.8.4 Study Sample for the Trainers

The study purposively selected four key informants from each department in the four departments namely; Mechanical engineering, Automotive engineering, Electrical & electronic and Building & construction engineering in the five selected TVET institutions

making a total of twenty. One from each institution: Head of Department, industrial attachment coordinator from each institution, head of guidance and counselling department and a trainer in the five selected TVET institutions. The sample size for trainers is as summarized in Table 4.

Table 4: Trainers' Sampling Plan

Institution	HoD	IAC	GCM	Trainer	TOTAL
A	4	1	1	1	7
B	4	1	1	1	7
C	4	1	1	1	7
D	4	1	1	1	7
E	4	1	1	1	7
TOTAL	**20**	**5**	**5**	**5**	**35**

For the focus group discussion (FGD) Nakuru and Eldoret town were chosen since they are major towns within the area of study. Sample size included one graduate from each of the five departments under study.

3.9 Data Collection Instruments

This study employed graduates questionnaire, trainers' interview guide and focused group discussions guide for graduates as data collection instruments. Educational researchers use questionnaires to obtain information about thoughts, feelings, attitudes, beliefs, values, perceptions, personality and behavioural intentions of research (Johnson & Christensen, 2008; Rowley, 2014). In other words questionnaires provide researchers with the opportunity to measure different kinds of characteristics. Questionnaires are classified into; open ended and closed ended, open ended are used for exploratory research to know participants feeling or experience about a phenomenon, while close ended are quantitative questionnaires mainly focused on getting participants responses to standardized items for the purpose of confirmatory research (Cohen et al., 2013; Frels & Onwuegbuzie, 2013). The study used close ended to measure variables drawn in the conceptual framework.

The interview schedule was used to target trainers to obtain in-depth opinions on relationship between training offered and self-employment. In addition, an interview schedule gives researcher chance to freely use probes to obtain responses clarity and additional information which might be difficult to get in close ended questionnaire (Fusch & Ness, 2015; Mertens, 2014; Tashakkori & Teddlie, 2010). Interview schedule is also used when dealing with small sample size. Focus group discussion (FGD) guide was to ensure that sufficient data has been collected (Rowley, 2012; Stewart & Shamdasani,

2014). This explains why it can be advantageous to bring together a diverse group to maximize exploration of different perspectives within a group setting. FGD was done after collection of questionnaire and interview data, mainly to have participants interact with each other to confirm issues. Having more than one instruments is advocated by researchers such as who have asserted that triangulation of research instruments enhances validity and reliability of the study (Hussein, 2015).

3.9.1 Graduates' Questionnaire

The graduate questionnaire was the main instrument for collecting data from diploma in engineering graduates. The questionnaire included six sections. Section A, dealt with introduction, Section B, focused on graduates' demographic information namely; sex, age and educational background. Section C focused on existing training equipment used in TVET institutions to prepare trainees for self-employment. Section D, focused learning and training strategies applied by trainers to prepare graduates for self-employment; three research items were presented. In this section the respondent was required to rate on a scale of (1) very poor to (5) very good, the listed aspects of the training process. Section E, focused on technical content used to prepare trainees for self-employment. Section D focused acquisitions of soft skills in TVET institutions prepare trainees for self-employment. In this section, eight research items were presented and section E, focused on existing support systems that enable TVET trainees to transit into self-employment in a dynamic labour market. In this section 5 items were tested.

3.9.2 Interview Guide

An interview guide is a set of questions that an interviewer asks when interviewing respondents and assists in ensuring standardization of the interview situation. The guide enabled interviewers to ask the same questions in the same manner. The guide contained structured and open-ended questions in order to obtain more complete and comprehensive data. This study used the interview guide to determine skills that trainer consider important for survival of graduates in self-employment.

3.9.3 Focus Group Discussion Guide

The focus group discussion give participants opportunity to refine and illuminate a research issue, also useful if what is required is creative thinking, solutions and strategies (Bryman & Bell, 2015; Ritchie, Lewis, Nicholls, & Ormston, 2013). Similarly, Guest, Namey, and Mitchell (2012) argued that, Focus Group Discussion (FGD) guide has become a popular and effective instrument for collecting qualitative data.

3.10 Pilot Testing

Pilot results are used to inform the study but cannot in themselves, constitute a study and normally occur with both experts contributions and a small sample of the targeted population (Feig & Stokes, 2011; Levy & Lemeshow, 2013). In this study pilot testing was done at Nairobi Technical Training Institute where 2011 diploma engineering graduates in the Departments of Mechanical engineering, Automotive engineering,

Electrical & electronic and Building & construction engineering were selected for the study. The targeted departments were requested to give a list with contacts of the engineering graduates of 2011. The researcher, randomly sampled two respondents from each Department, called them to know how to reach them with questionnaires. Those who were within reach were issued with questionnaires while those who were out of reach were requested to be emailed.

The sampled graduates were again requested to locate one of their classmates. The process was repeatedly done until ten (10) graduates from each department were issued with questionnaires. The questionnaires were collected and analysed. Upon analysis alpha value of 0.57 was attained which below accepted value. As a result adjustment was done by deleting or adding some of items until alpha of 0.7 was attained and which was ultimately accepted for the study.

The deficiencies discovered in the questionnaire during analysis were addressed. For example, the items in research question five were increased from three to five. Then the graduates' questionnaire was rearranged to give proper sequencing of items sought in each research question.

3.11 Validation of Data Collection Instrument

Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under study (Gelo, Braakmann, & Benetka, 2008; Street & Ward, 2012). If such data is a true reflection of the variable, then the inferences based on

such data was accurate and meaningful. The instruments were content and face-validated by subjecting them to thorough scrutiny from experts in the Department of Technology Education, University of Eldoret.

For qualitative data validity means “appropriateness” of the tools, processes, and data. Whether the research question is valid for the desired outcome, the choice of methodology is appropriate for answering the research question, the design is valid for the methodology, the sampling and data analysis is appropriate, and finally the results and conclusions are valid for the sample and context. The experts report indicated that all the instruments had sufficient information that could answer all research questions. However additional information was incorporated in graduate questionnaire according to experts suggestions. The instruments were found adequate enough to answer research questions. The length of the entire instrument was found appropriate and the content was logically organized. The general recommendation for all the instruments was acceptable with minor editing.

3.11.1 Content Validity

Content validity seeks to find out if the data collection instrument is a good representation of the content which needs to be measured (Kimberlin & Winterstein, 2008). According to Rubio, Berg-Weger, Tebb, Lee, and Rauch (2003) and Frels and Onwuegbuzie (2013) content-related evidence can be accumulated by distributing the instrument to reviewers who have a sound knowledge of the subject matter. Thus, the

questionnaire was given to the experts in the Department of Technology Education, University of Eldoret.

Each of the experts separately judged the objectivity, clarity and relevance of the items to the research questions. The constructive feedback and responses received from the experts were used to improve on the content of the instruments before being finally administered to participants.

3.11.2 Face Validity

Face validity is used to check whether the instruments are appropriate to the study purpose and content area (Csikszentmihalyi & Larson, 2014; Healy & Perry, 2000; Jansson & Nordgaard, 2016). Specifically, it evaluates the (Fusch & Ness, 2015; Taherdoost, 2016). Face validity was undertaken by the same experts in the Department of Technology Education who assessed the content validity. Each question in the instruments was assessed in terms of the clarity of wording, level of difficulty in reference to the targeted audience, the layout and formatted accordingly. The questions was thoroughly examined and revised to achieve face-validity.

3.12 Reliability of Data Collection Instrument

The data collection instruments were subjected to statistical analysis to determine their reliability. The most commonly used technique to estimate reliability is the correlation coefficient, often termed as reliability coefficient (Lakin & Chaudhuri, 2016; Lee &

Paek, 2014; Menold & Tausch, 2016). There are typical methods used to estimate test reliability in education research namely; test-retest reliability, parallel forms, split-halves and internal consistency. This study considered all typical methods of estimating the reliability but adopted Cronbach's alpha a measure of internal consistency. Cronbach's alpha is the most common method of estimating reliability of an instrument (Cho & Kim, 2015; Eisinga, Grotenhuis, & Pelzer, 2013; Yang, Watkins, & Marsick, 2004).

The most common reliability coefficient is the Cronbach's alpha which estimates internal consistency by determining how all items on a test relate to all other items and to the total test - internal coherence of data. Most authors recommend that a value of 0.6 to 0.85 as an acceptable value for Cronbach's alpha; values substantially lower indicate an unreliable scale. In reference to the merits and limitation of various reliability tests, this study adopted Cronbach's alpha technique and a value of 0.7 as an acceptable value. The Statistical Package for Social Sciences (SPSS) computer software program was used to compute the alpha. The computer software has a facility whereby it is possible to request that the alpha for the scale be computed with a particular item deleted, if there is a sharp rise in the level of alpha when any item is deleted, that item will then become a candidate for exclusion from the scale (Blunch, 2012; Hardy & Bryman, 2004). Adjustment was done by deleting or adding some of items until alpha of 0.7 was attained and accepted for the study.

In quantitative research, reliability refers to exact replicability of the processes and the results. In qualitative research, reliability is challenging, hence the essence of reliability for qualitative research lies with consistency (Leung, 2015; Silverman, 2013). A margin of variability for results is tolerated in qualitative research provided the methodology and epistemological logistics consistently yield data that are ontologically similar but may differ in richness and setting within similar dimensions (Leung, 2015; Merriam & Tisdell, 2015; Noble & Smith, 2015). In addition, Silverman (2013) proposed five approaches in enhancing the reliability of process and results: Refutational analysis, constant data comparison, comprehensive data use, inclusive of the deviant case and use of tables. As data were extracted from the original sources, researchers must verify their accuracy in terms of form and context with constant comparison. In addition to this reliability was improved by writing items visibly, making test instructions easily understood, and effectively by making the rules for scoring as precise as possible. For qualitative data, triangulation involves the use of different methods, especially observation, focus groups and individual interviews, which form the major data collection strategies for much qualitative research.

Whereas FGD and interviews schedules suffer from of interpretations of the researcher, their discrete characteristics also improve in total strengths. Actually the use of different methods in single study compensates for their individual limitations and exploits their respective advantages. In this study, FGD was composed of graduates of Automotive, Electrical, building and Mechanical who they shared their opinions and experiences

which were eventually confirmed alongside. This improved overall representation of the attitudes, beliefs concerning preparation of TVET graduates for self-employment hence enhancing trustworthiness and dependability of qualitative results generated. Similarly, site triangulation was done by having FGD in Eldoret and Nakuru town with of TVET graduates from the four different specialities in engineering improved trustworthiness of data generated. As advanced by Dervin's theory of "circling reality", where he defined circling reality as necessity of obtaining a variety of perspectives in order to get a better, more stable view of 'reality' based on a broad range of observations from a wide base of points in a given time-space. Indeed sampling of a range of respondents in different regions may be employed to provide the diversity that underpins

3.13 Data Collection Procedures

After being given an authorisation permit by the Department of Technology Education, University of Eldoret, the researcher sought a letter of authorization from the National Council of Science Technology and Innovation (NACOSTI) as shown in page 221, before embarking on data collection in the counties of Nakuru, Uasin Gishu, Nandi and Trans Nzoia all Rift Valley Region of TVET. The principals of the sampled TTIs were contacted and dates of visiting each institute were scheduled. Before administering the instruments on the agreed dates, the researcher explained to the administration the purpose of the study and need to track former graduates.

The instruments for data collection were administered by research assistants and collected by them on the same date of administering them. The interviews by the researcher followed after the questionnaires had been administered. The interviews were tape-recorded for future use if a need would arise. Qualitative data from open-ended questions and interviews were analysed in four successive steps. The four stages in qualitative data analysis that was followed are; organization of the data, perusal of the entire data several times to get a sense of what it contains as a whole (Creswell, 2012; Onwuegbuzie & Teddlie, 2003).

In this study, tape-recorded interviews were carefully transcribed as soon as they were recorded from the field. The researcher, upon collecting all the data, keenly listened to the tape recorder over and over again and transcribed each recorded interview. After transcription of the interviews, the data was edited and ambiguities removed. The data was then be paraphrased and organized in a meaningful way to facilitate analysis. This was realized through a number of steps. First the transcribed data was printed and the researcher wrote them into themes. The identified themes formed the coding categories for the data. Thereafter, the sorted data was analysed by identifying excerpts that either supported or challenged the interpretation made by the researcher. The summarized data was presented in form of narratives and direct quotations.

3.14 Data Analysis

Data analysis is a systematic arrangement of information into meaningful patterns. The analysis involved both quantitative and qualitative data analysis. In analysis each research question is taken, the analysis of the data for answering it is described, summaries of the data relevant to it are presented and interpretation of the data is done before proceeding to the next research question.

Descriptive analysis technique in form of counts, frequencies and percentages was used to determine respondents' rating on how graduates were prepared for self-employment. The summated score obtained from the perception scale was interpreted as general perception of respondents about the training process in TVET institutions.

3.15 Ethical Considerations

This study adopted the acceptable research ethics as articulated in literature (Creswell & Creswell, 2005; Johnson & Christensen, 2008). Upon approval of the research proposal, the researcher sought permission to conduct research from the NACOSTI. The research permit enabled the researcher to proceed to the field for data collection.

In the letter, the researcher informed the research participants about the purpose and procedure of the study so that they understand the nature of the research and any likely impact had on them (Creswell & Creswell, 2017; Merriam & Tisdell, 2015). The participants were informed that their participation was voluntary and they would not be

coerced to participate in the study. In addition, consent from those to be interviewed was sought to allow recording of the interviews.

The study ensured the confidentiality of data; anonymity, privacy and safety of participants was observed and maintained. The research participants were assured that the data they provided would remain confidential and would not be disclosed in any manner without their consent. Indeed, Kombo and Tromp (2009) stressed that the identity of the research participants should not be disclosed in the study. In addition, the raw interview data, questionnaires and recordings were kept safely as reference to the study findings.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the data collected by use of the methods and techniques described in chapter three. The chapter begins with presentation of demographic characteristics of graduates and trainers. Then followed by descriptions of data presentation, data analysis and data interpretation done as per research question. Each research question is composed of itemised questions that sought answers to each research question and finally solution to the main study problem. The research questions that guided the study were:

1) How do existing training equipment in TVET institutions prepares trainees for self-employment?
2) How do instructional strategies applied by trainers do prepares graduates for self-employment?
3) How do acquisition of technical content in TVET institutions prepares trainees for self-employment?
4) How do acquisition of soft skills content in TVET institutions prepares trainees for self-employment?
5) What are the existing support systems that enable TVET trainees to transit into self-employment in a dynamic labour market?

4.2 Demographic Characteristics of the Respondents

The study targeted diploma graduates in engineering fields and trainers in five established TVET institutions in the former Rift Valley region. The graduates were targeted to give their experience as they enter into the world of work, relationship between the programs they did and self-employment. The trainers were also sought to give their opinion of graduates churned out of the institutions into the labour market. The study population was composed of diploma in engineering graduates (N=488) and trainers (N=64) who were prepared accordingly. To supplement quantitative data collected through the questionnaire, qualitative data was collected through focus group discussions and scheduled interviews.

4.2.1 Demographic Characteristics of Graduates

The important demographic characteristics of graduates in engineering in this study include: sex, age, type of employment after graduation in 2011 or 5 years after completion of diploma program, graduates' areas of specialization, mode of employment, reasons in engaging in current employment and need for further studies. Two hundred and sixty eight graduates responded to the data collection instruments.

4.2.2 Gender and Age Distribution of Technician Engineering Graduates

The study sought to find out gender and age distribution of diploma engineering graduates, the summary of findings is as summarised in Table 5.

Table 5: Gender and Age Distribution of TVET Graduates

Variable		Age				
		24 years and below	25 – 27 years	28 – 32 years	33 years and above	Total
Gender 217(81.0%)	Male	14(5.2%)	139(51.9%)	46(17.2%)	18(6.7%)	
	Female	3(1.1%)	29(10.8%)	15(5.6%)	4(1.5%)	51(19.0%)
	Total	17(6.3%)	168(62.7%)	61(22.8%)	22(8.2%)	268(100.0%)

Table 5 shows that, 217(81.0%) of the respondents were male while 51(19.0%) were female. This finding is in agreement with data from TVET institutions that engineering trades are male dominated with female trainees enrolling in business related courses (GoK, 2005; Ibrahim & Bakar, 2015; Omukhulu, Ogbanicael, & Kimamo, 2016). It seems there is no much change due to the fact that Africa traditions and customs still perceive women to be more suitable for 'women traditional courses', such as secretarial, hospitality, clothing technology nursing and foods technology while engineering trades are meant for men (Ngerechi, 2003; Omukhulu et al., 2016). This attitude has contributed to limiting female students to access and pursue engineering programs (Capobianco, Ji, & French, 2015; Starobin, Smith, & Santos Laanan, 2016). Likewise, there is a belief that engineering related field value physical strength and extended hours of work which female cannot cope with as they are tied at home by domestic responsibilities (Esa & Kannapiran, 2014; Shreeve, Gibb, & Ribeiro, 2013; Sulaiman, Salleh, Mohamad, & Sern, 2015).

Female students are more inclined towards life skills and commercial courses, which are referred to as less demanding (Jayaram & Engmann, 2017; Selesho, 2014). With such skills one can easily engage in self-employment with little start-up capital. The advantage of these programs to female is that it can easily lead to self-employment. In contrast, males students are more inclined towards sciences, mathematics, technical or "masculine subjects" and industrial subjects which many females are reluctant in taking them (Buser, Peter, & Wolter, 2017; Gove, 2017).

The findings also agree with the study by Gordon (2006), that female students pursuing engineering and technology courses are perceived to be misplaced hence they end up developing low self-esteem and low confidence. Also in agreement to this study male student and teachers are said dominate engineering and science related programs, as a result female students feel intimidated and feel shy in class participation, handling of equipment and machines during class projects (Conger, Krauss, & Simuja, 2017; Madara & Cherotich, 2016).

In terms of age, Table 5 shows that, 17(6.3%) of the respondents were 23 years and below, 168(62.7%) who were majority were aged between 25 and 27, 61(22.8%) were aged between 28 and 32, 22(8.2%) were aged 33 years and above. This indicates that majority of the diploma graduates who transits to the world of work are aged between 25 and 32 years after completing three year diploma program. This implies that TVET graduates have invested time and resources in schooling therefore they are ready for any

form of employment rather than remaining unemployed (AM et al., 2014; King, 2014; Mwangi, 2015). The finding was confirmed by FGD with trainees.

> I am aware of limited chances of employment even university graduates find it difficult to secure employment. I chose Building and Construction because I knew upon graduating I could get job in construction industry which with time I would run my own construction company. (FGD with trainees in Eldoret Town)

4.2.4 Distribution of Graduates According to their Area of Specialization

This item sought to find out distribution of 2012 graduates according to their areas of specialisation. The finding is summarized in Table 6.

Table 6: Distribution of graduates according to the area specialization studied

Variables	Specialization				
	E & E	B & C	Automotive	Mechanical	TOTAL
Male	83(31.0%)	53(19.8%)	48(17.9%)	33(12.3%)	**217(81.0%)**
Female	19(7.1%)	09(3.3%)	15(5.6%)	08(3.0%)	**51(19.0%)**
Total	**97(36.2%)**	**72(26.9%)**	**55(20.5%)**	**44(16.4%)**	**268(100**%)

Table 6, shows distribution according to programs where 97(36.2%) did electrical and electronic program, 72(26.9%) in Building and Civil Engineering, 55(20.5%) in Automotive while 44(16.4%) did Mechanical programs. This means that Electrical and building programs attracted majority of the graduates including 19(7.1%) of female graduates.

This means that economic activities taking place in Kenya seemed to have influenced choosing of courses among trainees, programs like Electrical and Electronics and Building are dictated by current growth in the sector. For example in the recent past, Kenya has experience expansion of supply of electricity by ensuring all schools are supplied with electricity (Bamattre, 2014; Megwai, Njie, & Richards, 2016; Mutua & Muriithi, 2015). There is also significant growth in the construction industry, especially of roads in all counties in Kenya. This might have come with employment opportunities to trainees in these fields hence increase in enrolment. Similarly, Building industry is also growing very fast as a result of need to provide shelter to a fast growing population hence opportunity for self-employment in this field (Filmer & Fox, 2014; Martins, 2013). Graduates seemed to indicate that engineering programs offer job opportunities including self-employment upon graduation. The finding is supported by FGD with trainees that:

> I choose electrical engineering because I knew I could engage in self-employment in wiring of building and repairs of electrical devices as wait for formal employment (FGD with trainees in Nakuru Town)

4.2.5 Reasons for Studying in their area of Specialization

This item sought to find out reasons why respondents chose their area of speciality. The findings are tabulated in Table 7. When graduates were asked why they studied in their area of specialization, 207(77.2%) stated that they did so in preparation for formal employment, 34(12.7%) mentioned that they chose their specialisation because they lacked alternatives, 15(5.6%) indicated that they acquired skills to further education in

future, 13(4.9%) indicated that they took specialisation because of family influence and 10(0.7%) indicated that they took their specialisation as a preparation for self-employment.

Table 7: Reasons for studying in the specialty

Variables	Frequency rating					
	Male		Female		Total	
	f	%	f	%	f	%
Acquire skills for self-employment	2	(0.9%)	08	(02%)	**10**	**(0.7%)**
Acquire skills for formal employment	169	(77.9%)	38	(74.5%)	**207**	**(77.2%)**
To access further education in future	11	(4.1%)	4	(07.8%)	**15**	**(05.6%)**
Influenced by my family	07	(5.1%)	3	(05.9%)	**13**	**(04.9%)**
Lack of alternatives	28	(12.9%)	6	(11.8%)	**34**	**(12.7%)**
Total	**217**	**(100%)**	**51**	**(100%)**	**268**	**(100%)**

The findings agree with the studies done that indicates that trainees study in their area of specialization with expectation that they will eventually be employed in the formal sector (Mwangi, 2015; Tan & Nam, 2012). This implies that formal training in TVET institutions prepare trainees for formal employment even with the high rate of unemployment in Kenya. The FGD supports the finding that:

> We thought that upon completion of our programs we would be employed by the government. Actually, we have spent resources in training and therefore government should provide us with jobs so that what we have spent should not go to waste (FGD with trainees Nakuru Town)

4.2.6 Transition of Graduates into the Labour Market after Graduation in 2011

This item sought to find out yearly employment rate of graduates since 2011 when they graduated. The findings are summarised in Table 8.

Table 8: Transition rate of graduates into the Labour Market

	Variables (Four years after graduation)				
	2013 and below	2013 – 14	2014 – 15	2015 – 16	Total
Employed (Formal)	5(1.9%)	12(4.5%)	14(5.2%)	13(4.9%)	**44(16.4%)**
Employed (Informal)	13(4.9%)	21(7.8%)	27(10.1%)	38(14.2%)	**99(36.6%)**
Self-employed	5(1.9%)	7(2.6%)	10(4.1%)	15(3.3%)	**37(13.8%)**
Further studies	0(0.0%)	7(2.6 %%)	2(0.7%)	0(0.0%)	**9(3.4%)**
Unemployed	243(90.7%)	195(72.8%)	138(51.5%)	70(29.5%)	**79(26.1%)**

Table 8 shows mode of employment of TVET engineering graduates, five years after graduation in 2011. Within the first year after graduation only 5(1.9%) were employed in formal sector, 13(4.9%) in the informal sector, 5(1.9%) were in self-employment and majority 243(90.7%) were unemployed. Between the first and second year (2013 – 2014) after graduation, 12(4.5%) were employed in the formal sector, 21(7.8%) were employed in the informal sector and 7(2.6%) were self-employed. Between 3 to 4 year (2014 – 2015) after graduation, 14(5.2%) were employed in formal sector, 27(10.1%) were employed in informal sector and 11(4.1%) were in unemployment.

Those who were employed four years (2015 – 2016) after graduation, 13(4.9%) were employed in formal sector, 38(14.2%) were in informal sector and 9(3.3%) were in self-employment. Overall, four years after graduation in 2011, 44(16.4%) were employed in formal sector, 99(36.6%) were engaged in informal sector, 32(11.9%) were in self-employment, 79(29.5%) were yet to be employed and only 9(3.4%) were on further studies.

The findings agree with a case study in Tunisia where 46% of graduates of the 2004 class were still unemployed eighteen months after graduation (Jamoussi, Said, & Gassab; Teyssier & Nawal, 2015). In an attempt to deal with unemployment, Tunisia started reforms aimed to promote employability or self-employment among graduates. Among them is new entrepreneurship track introduced into the undergraduate curriculum in 2009 where graduates enrol for one year program of studying entrepreneurship education. Those who produced good business plans attracted funds from private organisations for self-employment start-ups and many success stories have been realised (Premand, Brodmann, Almeida, Grun, & Barouni, 2016; Valerio, Parton, & Robb, 2014).

General education is said to have advantage of flexibility in labour market and, therefore, the possibility of its graduate moving from one job to another. In contrast, TVET education provides specific skills which have graduates fixated to their area of study with expectation of getting absorbed in formal employment (Handel, Valerio, & Puerta, 2016; Maclean & Pavlova, 2013). In this regard, many people consider general education as a

suitable type of education that is capable of responding to economic and labour market in the modern society (Dasmani, 2011; Marope et al., 2015; Pugatch, 2014).

Currently, in Kenya there is high growth of service industry which in most cases may not require specific skills. Graduates of general education find themselves thriving in self-employment as service providers while diploma in engineering graduates are still waiting to get employment in their field of study (Chiazor & Udume, 2017; Munishi, 2016). This implies that engineering related skills are not portable across occupations hence graduates end up dropping their technical skills and taking up informal job not related to their field of study or engaging in service industry. The finding is supported by FGD with trainees in Eldoret town.

> I did diploma in mechanical engineering and I graduated with pass. I have not been employed despite having technical skills, I am now engaged in self-employment by subscribing to some music downloading, writing on compact disk and selling to college students (FGD No. 1 Eldoret Town).

TVET graduates who are engaged in the informal sector as last option for employment find their skills not applicable. This is an indicator that majority of graduates find themselves in the informal sector since they have nowhere else to secure employment (Jayaram & Engmann, 2017; Ndegwa, De Groote, & Gitonga, 2015; Ramírez et al., 2016). This group of unemployed graduates cannot be dismissed of being unemployable on the basis of skills acquired but on inability to identify opportunities for self-employment (Mahinda, 2004; Omondi, 2013; Rori, Bunei, & Mwenzwa, 2011). Indeed, it has been argued that there is no partial-automatic connection between vocational skills

and reductions in unemployment rates (Aikman, Robinson-Pant, McGrath, Jere, Cheffy, Themelis, & Rogers, 2016; DeGhetto, Gray, & Kiggundu, 2016; Ismail, 2016).

4.2.7 Level of Satisfaction in Ones Occupation

This research item sought to find the level of satisfaction in one's occupation, the summary of findings is as shown in Table 9.

Table 9: Level of satisfaction in one's occupation

Variables	Mode of Employment		
	Satisfied	Not sure	Not satisfied
Formal employment	40(90.9%)	0(0.0%)	04(9.1%)
Informal employment	4(4.0%)	1(1.0%)	94(95.0%)
Self-employed	5(1.9%)	0(0.0%)	32(86.5%)
Unemployed	0(0.0%)	2(2.5%)	86(97.7%)
Total	**50(18.3%)**	**3(1.1%)**	**216(80.6%)**

On the level of satisfaction in one's occupation the findings is as follows: for those in formal employment 40(90.9%) were satisfied and 4(9.1%) were not satisfied, for those in informal employment on 4(7.8%) were satisfied and 94(95.0%) were not satisfied, for the one in self-employment only 5(1.9%) were satisfied and 32(86.5%) were not satisfied and those who were unemployed almost all of them 86(97.7%) were not satisfied. In overall 216(80.6%) were not satisfied, 50(18.3%) were satisfied and 3(1.1%) were not sure.

What is interesting to note is that, 94(95.0%) of those engaged in informal employment were not satisfied. This means that graduates who are engaged in informal employment are not satisfied and they still expect the government to provide them with jobs in the formal sector. The finding agrees with the study by Powell (2012) that as unemployment persist and without forthcoming formal employment, TVET graduates find themselves in informal sector which do not require specific skills. That is why in Kenya most of graduates are employed as vendors in M-PESA shops and outlets, mobile phone vendors, supermarket and pump attendants among others where they earn little to keep them going looking for better jobs. The qualitative finding through interview with trainers that:

> I have diploma in production (Mechanical Engineering) where I struggled to pass with difficult stuff I did not know I will end up what I am doing. I have not seen an advert that requires my qualifications. I am here as pump attendant waiting for government job or a better job. (FGD with trainees Eldoret Town)

4.2.8 Application of the Program Studied to One Occupation

This research item sought to find out whether the graduates apply what they actually acquired from in TVET institutions. The findings summary is as shown in Table 10.

In Table 10, 137(51.1%) indicated that the skills received in TVET institutions are rarely applicable and 82(30.6%) states that the skills acquired are never applicable in their area of occupations. The 28(54.9%) of female who participated in the study indicates that the skills acquired in TVET institutions are rarely applicable and 109(50.2%) of the male seemed to agree with ladies that the skills are rarely applicable.

Table 10: Application of the Received Skills to one's Occupation

Variable	Application of the Program Studied to Current Work/Job					
	Always Applicable	Sometimes Applicable	I Don't Know	Rarely Applicable	Never Applicable	Total
Male	11(5.1%)	23(10.6%)	7(3.2%)	109(50.2%)	67(30.9%)	217(81.0%)
Female	3(05.8%)	4(07.8%)	1(02.0%)	28(54.4%)	15(29.4%)	51(19.0%)
Total	14(5.2%)	27(10.1%)	8(3.0%)	137(51.1%)	82(30.6%)	268(100.0%)

This means that despite having trained in their specific areas of specialisation majority of them in informal employment where their learnt skills are not required. In this case, the learnt technical skills are temporarily irrelevant to the informal labour market until when are put into use formal or self-employment. This finding is supported by qualitative data through FGD with trainees that:

> I have a diploma in mechanical engineering but I have never applied skills I acquired in my former college, now I am employed in M-pesa kiosk instead of staying at home. Majority of my colleagues are all over doing all sorts of jobs as they wait for better employment. (FGD with Trainees in Eldoret Town)

4.3 Demographic Characteristics of the TVET Trainers

The demographic characteristics that were studied include; gender of the respondent, highest level of qualification in engineering field, training in teaching profession and teaching experience.

4.3.1 Distribution of TVET Trainers by Gender and Level of Qualification

This study sought to find the level of qualification of trainers so as to understand their capacity of to deliver the Diploma in Engineering TVET programs. The finding is as shown in Table 11.

Table 11: Gender and Level of Qualification Distribution of TVET Trainers

Variables	Highest Qualification of Trainers				
	Masters	Graduate	HND	Diploma	TOTAL
Male	4(11.4%)	22(62.6%)	5(14.3%)	1(2.9%)	**32(89.8%)**
Female	0(00.0%)	01(2.9%)	2(5.7%)	0(00.0)	**3(10.2%)**
Total	**4(11.4%)**	**23(65.7%)**	**7(20.0%)**	**1(2.9%)**	**35(100%)**

In terms of highest qualification of the trainers, the study found that: 4(11.4%) had masters' degree, 23(65.7%) had bachelor's degree in engineering related field, 7(20.0%) had higher national diploma and 1(2.9%) had diploma holders. The study found that majority of the trainers held bachelor's degrees in engineering related field which seemed to be in disagreement with a study by Adamu (2016) where majority of trainers had diploma and high diploma certificates while teaching diploma trainees. This means recommendation made by Adamu that only a trainer with higher national diploma and above should be allowed to train diploma level programs in TVET institutions seemed to have been realised.

This means that TVET trainers had the requisite minimum qualifications of higher diploma and above as a trainer of diploma program in TVET institutions in Kenya. On gender, the study found that 32(89.8%) of the respondents were male and 3(10.2%) were female. Among the trainers majority are male which means engineering field is male dominated and portrays negative indicator to female trainees (Vreyens & Anderas, 2016). Apart from gender disparity among trainers, the finding implies that graduates of 2011 were taught by qualified trainers who majority had bachelors' degree certificates in engineering fields. The finding is supported by interview with trainers that:

> We have low enrolment of female trainers, this tell you that this programs have not yet attracted female trainees. This field is practical intensive and require extra time and commitment which may be difficult to female who opt to join business studies which are more of theory. (Interview with Trainer No.1 RVST)

4.3.2 Distribution of Trainers by Pedagogical Training

The study sought to find out whether the respondents were trained or untrained in pedagogical skills. The findings are tabulated in Table 12.

Table 12: Gender and Training Pedagogy by Trainers

Variables	Training as a Technical Teacher		
	Trained	Untrained	TOTAL
Male	30(85.7%)	2(5.7%)	**32(91.4%)**
Female	3(8.6%)	0(0.00%)	**3(8.6%)**
Total	**33(94.3%)**	**2(5.7%)**	**35(100%)**

It was found out that 2(5.7%) were untrained teachers while 33(94.3%) were trained teachers as shown by Table 12. This shows that a good number of trainers were trained in pedagogical skills which agrees with finding by Ferej, Kitainge, and Ooko (2012), that TVET trainers had been trained on teaching methods to handle TVET programs. This means that trainees are being taught by persons trained on pedagogic content knowledge used for formulating and representing the subject to make it comprehensible trainees (Audu, Musta'amal, Kamin, & Saud, 2013; Gamble, 2013; Gamble, 2016). This implies that graduates were trained by trainers who had pedagogical skills to make technical and soft content graspable to them. This is confirmed by qualitative finding through interview with trainers that:

> I have no problem in handling my diploma class, especially theoretical lessons. The only challenge I sometimes encounter is carrying out workshop practice which sometimes I am faced with lack of consumable materials which are expensive to be purchased now and then. But I am happy trainees performs well without being referred in my course (Interview with Trainer No.1 KTTI)

4.3.3 Distribution of Trainers by Gender and Teaching Experience

The study sought information on TVET trainers teaching experience. The finding is shown in Table 13.

Table 13: Gender and Trainers' Teaching Experience

Variable	Training as a Technical Teacher					
	0-5	5 - 10	10 - 15	15 – 20	21 and above	TOTAL
Male	3(8.6%)	13(37.1%)	8(22.9%)	6(17.1%)	2(5.7%)	**32(91.4%)**
Female	1(2.9)	2(5.7)	0(0%)	0(0%)	0(0%)	**3(8.6%)**
Total	**4(11.4%)**	**15(42.6%)**	**8(22.6%)**	**6(17.1%)**	**2(5.7%)**	**35(100%)**

The study revealed that 4(11.4%) had experience of 5 years and below, **1**5(42.6%) had 5 to 10 years, 8(22.6%) had 10 to 15 years, 6(17.1%) had a teaching experience ranging between 16 to 20 years, while 2(5.7%) of the trainers had an experience of 21 years and above. In overall, 21(60%) of trainers had work experience between 5 and 15 years indicating that this is an active age group. The finding agrees with the study by Ferej et al. (2012) that majority of trainers in TVET had 5 years teaching experience and above. This implies that majority of trainers had gained enough experience over the years to train work force for the world of work especially self-employment.

4.4 Tools and Equipment used to prepare Graduates for Self-Employment

The purpose of research question one was to find how diploma in engineering TVET graduates rate the training facilities used in their former Technical colleges to prepare them for the world of work. The response to this question was based five items as; usage of available tools and equipment for practical training, frequency of attending workshop

practice, frequency of using reference materials, usage of computers and internet connectivity. TVET graduates were asked to rate these on five (5) items on a five point Likert scale. To some items the range scale was as follows: “Very Good”, “Good”, “I don’t know”, “Poor” and “Very Poor”. The five items in the rating scale added up to the variable on training facilities used to prepare TVET graduates for the world of work.

4.4.1 Usage of Training tools and Equipment for Workshop Practice

In this item the respondents were asked to rate the usage of machines and equipment by TVET institutions in preparing them for the world of work. The findings are as shown in Table 14.

Table 14: Rating on Usage of Training Tools and Equipment

Rating	Frequency	Percentage
Very Good	39	14.6
Good	47	17.5
I don’t know	07	02.6
Poor	93	34.7
Very Poor	82	30.6
	268	100.0

As evident in Table 14, the respondents’ ratings were as follows: 39(14.6%) rated facilities as very good, 47(17.5%) good 07(02.6%) fair, 93(34.7%) poor and 82(30.6%) very poor. In overall 175(65.3%) respondents seemed not have been satisfied with the usage of available machines and equipment for training them for the world of work.

The study agrees with findings by Mbugua, Muthaa, and Sang (2012) and (Yangben, 2014), that there is usage of inferior equipment in TVET institutions as compared to what is found in the world of work, hence graduates acquire compromised skills. As a result, lack of adequate practical training in TVET have caused emerging trend of students to shift from Engineering and Applied Sciences and Technology to Business-related programmes (Boahin & Hofman, 2012; Thuranira, 2010).

This implies that training in TVET institutions is done using inadequate, obsolete tools and equipment hence trainees trained using them do not have confidence to engage in self-employment which require hands on skills. This finding is supported by interview with trainers that:

> Machines acquired recently, is an indication of the government seriousness to equip TVET institutions, but the challenge is that, trainers do not have specific skills to operate these machines. Another challenge is that, no one is trained to service them and in case of malfunctioning it is difficult to get servicing within Kenya unless from suppliers all the way from China (Interview with Trainer No.1 RVVTI)

In addition the FGD with graduates in Nakuru supports the finding that:

> ..We were not given enough practical training in most cases we were trained by use of models and outdated machines. Recently acquired machines like numerical machines are being operated by trainers who are still under training on the same. Given modern or the out-dated technologies we may not machine to operate effectively. (FGD with graduates in Nakuru Town)

4.4.2 Frequency of Carrying Out Workshop Practice

The respondents were asked to rate how frequent they conducted workshop practice in their former TVET institution as preparation for the world of work. The findings are summarized on Table 15.

Table 15: Rating on Frequency of Practical Lessons

Rating	Frequency	Percentage
When training materials are availed	121	45.1
When preparation for KNEC	60	22.4
After a Theory Lesson	47	17.6
As per the time table	21	7.8
When we demand	19	7.1
	268	100.0

On frequency of conducting practical lesson study found that 121(45.1%) indicated that when materials are availed by the institution, 60(22.4%) when being prepared for KNEC examination, 47(17.6%) after a theory lesson, 21(7.8%) as per teaching time table and 19(7.1%) when demanded by trainees. In general, the finding seemed to indicate that the workshop practice was only conducted when training materials which are mainly consumables are availed by the institutions.

The findings is in agreement with studies that indicates that workshop practice is inadequately conducted in TVET institutions due to fact that training materials are expensive to purchase with limited funds allocated by many governments in Africa

(Chinonso, 2014; Killian, Tendayi, & Augustine, 2009; Palmer, 2007). Indeed, training facilities which are consumable actually increases training in engineering programs. This implies that TVET institutions find it difficult to run engineering related programs fully because of the expenses it involves. Consequently graduates are not fully prepared as they transit to the world of work. This is supported by qualitative finding through interview with trainers that:

> I rarely carry out practical lessons because there are no enough training materials. It takes time for institutions to purchase training materials hence you end up starting another topic which still requires new list of materials to be purchased. Consequently you are forced to teach theories even if you were willing to carry out practical lessons. The only advantage to me is that diploma programs in engineering are intensively theoretical in nature. (Trainer No.1 RVTTI)

TVET institutions are not well equipped with training materials hence training remain theoretical (Anane, 2013; Dasmani, 2011). As a result the graduates produced are not well equipped with practical skills that enable them to confidently put into use their. Qualitative findings confirm that graduates were not adequately prepared on practical as indicated by FGD in Eldoret town.

> ..It difficult for us to venture into self-employment with practical skills we acquired in our former institutions we were prepared inadequately. Apart from machines and tools being expensive for one to acquire, we are not confident enough to be self-employed in engineering field. (FGD with graduates in Eldoret)

4.4.3 Frequency of Usage of Reference Materials

The respondents were asked to rate how frequent they use of reference materials during their studies. The finding summary is presented in Table 16.

Table 16: Rating of Availability of Reference Materials

	Frequency	Percentage
Engineering books	179	66.8
Business studies and Entrepreneurship	33	11.6
Communication skills materials	21	7.8
Online books	19	7.1
Online reading materials from trainers	16	6.0
	268	100.0

The findings given in Table 16 shows that 179(66.8%) of the respondents indicated that engineering books were frequently referred to, 33(11.6%) showed business studies and entrepreneurship were used, 21(7.8%) indicated frequently used communication skills materials, 19(7.1%) indicated that they frequently used on line books and 16(6%) indicated that they frequently accessed to online materials from trainers. In general this showed that engineering books were mostly referred as to when compared to other reference materials.

The finding is in agreement with studies that indicated that TVET graduates lack soft skills like communication and management skills which apart from specific these are required in the world of work (Anindo et al., 2016; Montague, 2013; Munishi, 2016). This implies that TVET training concentrated on engineering section materials which prepare trainees for passing examination only. This means graduates had no time for other reference materials which provided them with soft skills which is majorly acquired

through extra curriculum. The finding is supported by FGD with engineering graduates in Nakuru town that:

> ..We had modern library which was completed and well stocked with engineering books. Each section of engineering was well stocked with variety of books covering each area in engineering. The problem were tied to the engineering section such that we had no time to look for books in other sections like management, motivational books among others. (FGD with graduates in Nakuru town)

4.4.4 Usage of Computers in Training

The respondents were further asked to rate application of computers in design and related courses. The summary of their ratings is provided in Table 17. Table 17 shows that 113(42.2%) rated the usage of computers as poor and 68(25.4%) as very poor. The rest of the respondents 34(12.7%) rated them as very good and 57(21.3%) as good respectively. In overall 181(67.6%) believed that there was inadequate usage of ICT facilities in TVET institutions. This shows that TVET institution have not taken advantage of computers for simulations and application to engineering design programs.

Table 17: Rating on Usage Computers in Training

Rating	Frequency	Percentage
Very Good	34	12.7
Good	57	21.3
I don't know	7	2.6
Poor	113	42.2
Very Poor	68	25.4
	268	100.0

Through simulation by use of computers trainees can actualise the operations of machines and so that it would be easier when it comes to real application skills and manipulation of real machines. The finding is in agreement with studies which indicate that there is minimal usage of computers in TVET institution for delivering engineering concepts through simulations, YouTube and videos among others (Akom, Asante, & Adjei-Frimpong, 2016; Kingombe, 2012; Nneka Eke, 2010).

The finding implies that TVET institutions have not utilised advantages brought by ICT as an enabler of training process. The qualitative data collected through FGD agrees with this finding that:

> ..Computers are mostly used by trainees taking ICT programs; hence in most cases computer laboratories are occupied. As a result they are not accessible to engineering students. We have only two projectors in the Institution which are shared by eight departments so teaching using computers and projectors is not possible in most cases. (Trainer No.1 OTTI)

4.4.5 Use of Internet Connectivity

On this item the respondents were asked to rate the connectivity of internet as an item of training facilities. The finding is as shown on Table 18. The rating on usage of internet connectivity was rated poor by 101(37.7%) and very poor by 67(25.0%) of the respondents respectively as indicated in Table 18. The rest of the respondents 54(22.8%) indicated as good and 37(13.8%) as very poor respectively. In overall 168(62.7%) indicated that the usage of internet connectivity is poor in TVET institutions.

Table 18: Rating on Usage of Internet Connectivity

Rating	Frequency	Percentage
Very Good	37	13.8
Good	54	22.8
I don't know	09	3.4
Poor	101	37.7
Very Poor	67	25.0
	268	100.0

The finding is in agreement with studies which indicates that there is minimal usage of internet in TVET institutions due to high cost of installations and purchase of internet bundles (Bello, Shu'aibu, Saud, & Buntat, 2013; Kotsik, Tokareva, Boutin, & Chinien, 2009; Olabiyi, 2014; Richardson, 2012). This means the cost of internet limits TVET institutions from accessing latest technologies available on internet which might not be physically affordable to them. It also implies that the graduates might not be aware of latest technologies in market and solution brought by same technologies. The finding is supported by interview of trainees that:

> ..It is hard to embrace these approaches without internet connectivity; internet connectivity usually enables teachers to research on teaching content to be delivered in class. Once a teacher has enough teaching content, he/she will plan his work properly and adopt flexible and blended approaches in his teaching and presentation. In our institution in most cases we stay without internet since purchasing in expensive for the institution. (Trainers No. 1 RVST)

The FGD with graduates in Edoret town seemed to agree that:

> ..Latest technologies such as engine diagnostic devices in modern automotive garage, telescope for building industry are expensive for one to purchase. These

> technologies also fades very fast since new and improved technologies come into market frequently. We cannot venture into self-employment since one cannot operate in current world without these technologies which expensive. Customers nowadays are becoming knowledgeable they want their cars' problem to be diagnosed first before one getting spanners and working on them (FGD with graduates in Eldoret town)

4.5 Training Strategies Used to Prepare Graduates for Self-employment

Research question two sought to find out effectiveness of learning and training strategies applied by trainers on preparation of trainees for self-employment. The questionnaire was used to seek answers on five (5) items covering research question two namely: delivery of practical lesson, theory lesson, teaching methods used by trainers, readiness for consultation, industrial attachment. TVET diploma in engineering graduates were asked to rate these strategies on a 5 point scale on how trainers applied training strategies on preparing them for the world of work. The scale range and weighting was as follows: Very Good, Good, I don't know, Poor and Very Poor.

4.5.1 Rating on Practical Lesson Received from TVET Institutions

When respondents were asked to rate practical lesson received in TVET by trainers in preparing them for self-employment, the finding is as shown in Table 19. Table 19 shows the findings on delivery of practical lesson by trainers as follows, 76 (28.4%) as very poor, 87(32.5%) as poor, 57(21.2%) as good, 29(10.8%) as very good and 19(7.1%) as fair.

Table 19: Rating on Practical Lessons Received by Graduates

Rating	Frequency	Percentage
Very Good	29	10.8
Good	57	22.8
I don't know	19	7.1
Poor	87	32.5
Very Poor	76	28.4
	268	100.0

In overall 163(60.9%) of the respondents seemed to indicated practical lessons received from TVET institutions was inclined towards poor. This can be concluded that graduates were not satisfied with practical lesson they received from TVET institutions.

The findings is in agreement with a study Musyimi (2016) and (Oketch, 2007) that TVET institutions practical lessons are not carried out because of expenses incurred on acquisition of training equipment which sometimes considered "wastage" by administration. Indeed, it is very expensive to run big machines such as lathe machines, drilling machines, and welding machines among others of TVET institution account. In most cases practical classes are preserved for examinations only and no practical for normal classes (Akanbi, 2017; Baba, 2014; Makwinja, 2017). This implies that trainees are not adequately prepared in practical skills hence they are not confident enough to engage in self-employment with acquired technical skills. The qualitative findings through interview seemed to be in agreement that:

> I rarely carry out practical lessons since diploma training is geared towards passing written examinations and have a good certificate which is a prerequisite to Kenyan labour market. Indeed practical classes are not taken seriously in TVET institutions. (Trainers No. 3 KTTI)

4.5.2 Rating on Theory Lessons Received from TVET Institution

The respondents were asked to rate delivery of practical lessons by trainers in preparing them for self-employment. Ability to deliver a theory lessons effectively was rated as shown on Table 20.

Table 20: Rating on Theory Lessons Received from TVET Institution

Rating	Frequency	Percentage
Very Good	71	26.5
Good	98	36.6
I don't know	17	6.4
Poor	52	19.4
Very Poor	30	11.2
	268	100.0

Table 20 shows rating of theory lessons received from TVET institutions by graduates, 98(36.6%) of the respondent rated as good, 71(26.5%) as very good, 17(6.4%) as fair, 52(19.4%) as poor and 30(11.2%) as very poor. In overall, 169(63.1%) of respondents seemed to indicate that the theory lesson received trainees was good.

The finding of this item of study is in agreement with studies that indicate that trainees in TVET institutions are more comfortable with theory lesson which prepares for passing

examinations (Habib & Nsibambi, 2017; Musobo & Gaga, 2012; Musyimi, 2016). This implies that diploma trainees are more comfortable with a theory lesson which is geared towards passing of examinations and award of certificate which eventually would lead to formal employment. This finding is supported by interview carried out on trainers that:

> I am comfortable teaching theory lesson because my focus is to have students to pass in examination. Diploma program is largely theoretical and my work as a trainer is measured by the number of students who have scored good results which earns me respect and subsequently promotion. (Trainers No. 2, OTTI).

In addition FGD with trainers in Nakuru supported the finding by indicating that:

> What is more important is to acquire good certificate which differentiate from the others when it comes to employment opportunities. Now there are no jobs we cannot anything but when opportunities for employment comes those with good certificates will be lucky. (Trainers No. 2, OTTI).

4.5.3 Learning and Training Strategies Employed by Trainers

In order to establish the effectiveness of teaching methods employed by trainers, graduates were asked to rate the training strategies that made them acquire skills required in their current occupation. This is shown on Table 21.

On Adequate teaching methods used (lecture, discussion, guided discovery etc) the respondents rated 94(35.1%) as good, 116(43.3%) as good, 33(12.3%) as poor and 22(8.2%) as very poor. The leaning of the findings is toward the approval of teaching method employed by trainers. The graduates seemed to have been satisfied with the way the training was delivered by trainers in TVET institutions.

Table 21: Rating on Teaching Methods Used by Trainers

Rating	Frequency	Percentage
Very Good	94	35.1
Good	116	43.3
I don't know	03	1.1
Poor	33	12.3
Very Poor	22	8.2
	268	100.0

This is in agreement with the study by Oster-Levinz and Klieger (2010), that a trainer influences change in students thinking and thus application of skills learnt through integration of different methods relevant to students needs/level and can enhance creativity skills. This implies that trainer utilised different methods which trainees believed that it enabled them acquire skills adequately. The qualitative that through interview supports the finding that:

> I have a good certificate where I passed with credit, I do not blame my trainers they did their part. There are limited job opportunities available and few are lucky. Having a good certificate is not a guarantee to securing a job and trainers cannot be blamed on that. (FGD with trainer No. 1 Eldoret)

4.5.4 Readiness of Trainees for Consultation

This item sought to find out readiness of trainers for consultation when required by trainees. The summary of the finding is tabulated in Table 22. On readiness for consultation when required by trainees, the respondents rated 67(25.0%) as very good, 106(39.6%) as good, 40(14.9%) as poor and 34(12.7%) as very poor. In overall

173(64.6%) were in agreement that trainers were ready for consultation whenever trainers require them.

Table 22: Rating on Readiness for Consultation When Required by Trainees

Rating	Frequency	Percentage
Very Good	67	25.0
Good	106	39.6
I don't know	21	7.8
Poor	40	14.9
Very Poor	34	12.7
	268	100.0

The finding is in agreement with studies that the trainers were ready assist trainees as they went through challenges of operating machines (Koirala, Shrestha, Gurung, & Bajracharya, 2016). The finding is also in agreement with FGD conducted in Eldoret town

> Our trainers were very much committed to their work, since they were always ready to solve our problems or fix time if they were busy. In some cases they use team teaching if there is one who is good in a certain topic. (FGD with graduates in Eldoret)

4.5.5 Application of Industrial Attachment Experience to Current Position

When respondents were asked to rate application of industrial attachment experience to their current position in the world of work their response is as shown in Table 23. Table 23 shows the rating on industrial attachment of training to relevant institutions. The

finding is inclined towards disapproval as 103(38.4%) indicated being poor and 79(29.5%) very poor, while the others indicated 34(12.7%) as poor and 79(29.5%) as very poor.

Table 23: Rating of Application of Industrial Attachment Experience

Rating	Frequency	Percentage
Very Good	34	12.7
Good	47	17.5
I don't know	05	1.7
Poor	103	38.4
Very Poor	79	29.5
	268	100.0

In overall industrial attached was rated poor by 182(67.9%) as poor. The finding is in agreement with FGD done in Nakuru town:

> ...Experiences we got from industries is not applicable to our current occupation in fact most of our colleagues went back to industries to sought for employment and they were turned away. Actually when we were there on attachment we were treatment well we never thought that we were being miss used as free labourers. (FGD with trainer No. 1 Nakuru)

4.6 Technical Content used to prepare graduates for Self-Employment

Research question three sought to find out appropriateness of technical content used in TVET institutions to prepare graduates for self-employment. The questionnaire sought answers to this question using three (3) items on various rating scales.

4.6.1 Technical Content Received by Graduates

This research item sought to find rating of graduates on the technical content they received from TVET institutions. The summary of the findings is as shown in Table 24. When asked to rate the area which they perceived to have been adequately prepared, their response was as follows: 163(60.8%) admitted that they were adequately prepared on theory content, 78(29.1%) agreed that they were adequately prepared in practical content and 27(10.1%) stated that they were adequately prepared in both theoretical and practical content.

In terms of gender 72.5% of the female respondents believed that they were adequately prepared in theory content compared to 58.1% of the male respondents. The finding agrees with a study by Ferej et al. (2012) that showed that 67% of TVET teachers were more comfortable teaching theory content than practical to trainees. On practical content 19.6% of the female respondents believed that they were adequately prepared compared to 25.4% of the male respondents. This means that female respondents were adequately prepared on theoretical content than male respondents and on practical content male respondents were better prepared.

Table 24: Graduates' Responses on Technical Content Received

Variables	Frequency Rating					
	Male		Female		Total	
	f	%	f	%	f	%
Which area were you adequately prepared?						
Theoretical content	126	58.1	37	72.5	163	60.8
Practical content	68	25.4	10	19.6	78	29.1
Both theoretical and practical training	23	8.6	4	7.8	27	10.1
Reasons for Adequate Preparation in Theoretical Training						
Adequate delivery by trainers	50	23.0	14	27.5	64	23.9
More time allocated to theory	108	49.8	22	43.1	130	48.5
Linkage to secondary school work	37	17.1	8	15.7	45	16.8
Enough references	22	10.1	7	13.7	29	10.8
Reasons for Adequate Preparation in Practical Training						
Intensive practical sessions	32	14.7	7	13.7	39	14.6
Demonstration was thoroughly done	40	18.4	17	33.3	57	21.3
Industrial attachment provided practical skills	145	66.8	27	52.9	172	64.2

On the reasons of adequate preparation on theoretical content 130(48.5%) stated that more time was allocated to theory lesson, 64(23.9%) stated adequate delivery by trainers, 45(16.8%) stated there was linkage to what learnt previously in secondary school work and 29(10.8%) stated that there was enough references for engineering courses.

On the reasons for inadequate preparation on practical content 172(64.2%) of the respondents believed industrial attachment provided practical skills more, 57(21.3%) stated practical demonstration was thoroughly done in class and 39(14.6%) believed

intensive practical sessions was carried out in TVET institutions. In terms of gender both male and female respondents at 145(66.8%) and 27(52.9%) respectively believed that though practical were inadequate, industrial attachment gave them practical skills more than what was offered in TVET institutions.

> It is true we were prepared more on theory than on practical lessons. Workshops in our institutions were few and in most cases were being occupied by artisan students where their training is more of practical. Teaching time tables allocated much of the time to theory lessons than practical. Indeed we got much of practical skills during industrial attachment. (FGD No. 1 Eldoret)

4.6.2 Usefulness of Technical Content to Graduates

This research item sought to find rating of usefulness of technical content received by graduates to their application to their current position. The summary of the findings is as shown in Table 25.

Table 25: Rating of Usefulness of Technical Content Received by Graduates

Rating	Frequency	Percent
Good	86	32.1
Fair	124	46.3
Poor	58	21.6
Total	**268**	**100**

When asked to rate usefulness of technical content received from TVET institution to their occupation. A large number indicated that the training they received was fair 124(46.3%) and 86(32.1%) of the respondent believed that the technical content they

received was good. This can be concluded that majority of the graduates have technical skills which have not been tested to know whether it can lead them to self-employment because a good number of them are still unemployed as shown in Table 8.

The finding is supported by Anane (2013), that training materials are important in developing required competencies to be achieved in a trainer and should be designed in a way it encourages the learner to work as independently as possible both out of class and while in class. This implies that the technical content received by graduates has not been put into use in self-employment. The finding is supported by FGD with trainers that:

> I do not complain of Technical Content I received from my former school because I am yet to put into use when I got employment. What I am doing now does not require skills I have but instead of staying idle I got employed as salesperson in informal sector. Self-employment requires tools, machines and premises which I cannot afford so it is difficult for me to venture into self-employment with skills I acquired in college. (FGD with graduates in Eldoret town)

4.6.3 Flexibility of Technical Content

In this study flexibility of technical content refers to how engineering curriculum is accommodative to new technologies. Normally in Kenya, curriculum review takes place after a long period of time a new technology may miss being included in a curriculum and cohort of trainees may miss learning it completely. The respondents were asked to rate flexibility of technical content and summary of findings is presented in Table 26. When the respondents were asked to rate the flexibility of technical content to

accommodate new technologies 129(48.1%) rated as poor, 86(32.1%) very poor, 11(4.1%) very good and 42(15.7%) as good.

Table 26: Rating on Flexibility of Technical Content

Rating	Frequency	Percentage
Very Good	11	04.1
Good	42	15.7
I don't know	00	00.0
Poor	129	48.1
Very Poor	86	32.1
TOTAL	**268**	**100**

The finding seemed to indicate that the technical content was inflexible and was not accommodative to new technologies. This finding is in agreement with study by Anindo et al. (2016), where in the 100.0% the respondents revealed that TVET institutions are faced with a challenge of rigid and exam-oriented curriculum that does not allow new changes in the market and limited industrial attachment for trainees. This findings is also in agreement with a study by Ogbunaya and Udoudo (2015) that most of TVET institutions in Nigeria use rigid curriculum where entry qualifications to applicants is also fixed. This implies that TVET institutions produced graduates who do not fit dynamic labour market where flexible skills are on demand. This finding is also supported by qualitative data generated from FGD with trainees that:

> We are training using outdated curriculum which does not have input of industry or experts in private sector. Most of our graduates end up being employed in

> informal market hence they need to be trained in innovative skills where they can be resourceful in informal sector and self-employment. (FGD with trainees in Eldoret town)

4.7 Use of Soft Skills Content Used to Prepare Trainees for Self-Employment

Research question four sought to find out suitability of soft skills content received by graduates in preparation for self-employment. The questionnaire sought answers to research question four on acquisition of soft skills content using eight (8) items on a five point scale. The engineering graduates were asked to rate acquisition of soft skills content on a 5 point scale. The scale range and weighting was as follows: "Very Good", "Good", "I Don't Know", "Poor" and "Very Poor". It may be noted that, apart from technical content, soft skills are values that enables graduates to transit from classroom or workshop to place to the world of work.

The eight (8) items sought by this study that represent soft skills content include: time management, ability to solve problems, ability to work autonomously, interpersonal skills, communication skills, decision making, creativity and innovative skills and adaptability skills.

4.7.1Ability to Practice Time Management

As evident in Table 27, ability to practice time management was indicated by 98(36.6%) of respondents as good, 68(25.4%) as very good, 54(20.1%) as poor, 41(15.3%) as very poor and of the respondents. In overall time management was rated good by 166(62.0%) of the respondents. The finding is in agreement with study by Boahin, Eggink, and Hofman (2014) that

time management can be developed through intensive study schedule and commitment in different extra-curricular activities and normal classes in TVET institution. Since all the programs TVET offered in institutions are time bound, graduates expected to complete tasks or assignment within a given time schedule.

Table 27: Graduates' Responses on Soft Skills Content

Acquired Rating of Generic Content					
	Very Good	Good	I don't Know	Poor	Very Poor
Time management	68(25.4%)	98(36.6%)	07(2.6%)	54(20.1%)	41(15.3%)
Ability to solve problems	59(22.0%)	97(36.2%)	09(3.4%)	60(22.4%)	43(16.0%)
Ability to work autonomously	51(19.0%)	92(34.3%)	09(03.4%)	63(23.5%)	53(19.8%)
Interpersonal skills	47(17.5%)	89(33.2%)	08(03.0%)	68(25.4%)	56(20.9%)
Communication skills	45(16.8%)	77(28.7%)	02(0.7%)	86(32.1%)	58(21.6%)
Decision making	38(14.2%)	72(26.9%)	06(02.2%)	89(33.2%)	63(23.5%)
Creativity and innovative skills	35(13.1%)	66(24.6%)	05(01.9%)	92(34.3%)	70(26.1%)
Adaptability and flexibility	29(10.8%)	64(23.9%)	7(02.6%)	97(36.2%)	71(26.5%)

This implies that in the TVET institutions time management skill is acquired through following time table, study schedule and submissions of assignment within stipulated time. These are activities that prepare trainees for the world of work in TVET institutions. The finding is supported by finding through FGD that:

> We closely monitor study schedules adherence by our trainees through attendance list and submission list of assignments. Failure to attend classes leads to one being disqualified from sitting for both internal and external examinations. (Interview with trainer No. 1 OTTI)

4.7.2 Ability to Solve Problems

The second highly rated soft skill is ability to solve problems which was rated good by 97(36.2%) of the respondents, very good by 59(22.0%), do not know by 09(3.4%), very poor by 60(22.4%) and poor by 43(16.0%) of the respondents. In overall 156(58.2%) of the respondents indicated that the ability to solve problem was good. The finding is in agreement with studies that indicated that TVET graduates lacked problem solving techniques since training is spoon-feeding students with fundamental theories and scientific facts for passing examinations only (Daud, 2013; Hadi, Hassan, Razzaq, & Mustafa, 2015; Montague, 2013). This finding is supported by interview with trainers that:

> We train our learners to solve problems by giving challenging tasks and assignment to be solved in groups or individually. This is done through learners centred methods such guided discovery and problem solving methods. These skills we expect learners to go with as they engage in new environment of world of work. (Interview with trainer No. 1 OTTI)

4.7.3 Ability to Work independently

The third rated skill is the ability to work autonomously which was rated good by 92(34.3%) of the respondents very good by 51(19.0%), do not know by 09(03.4%), somewhat good by 63(23.5%) and not good by 53(19.8%) of the respondents. In overall

143(53.3%) believed that they acquired ability to work independently from their former independently. The finding is in agreement with studies that indicate that graduates lacks ability to work independently without supervision (Sira, 2016) This skill is developed when trainees work independent while doing assignment and tasks given where individual acquisition of skills is measured (Wass & Golding, 2014). This implies that TVET graduates cannot work independently without assistance from experts hence they lack confidence to engage in self-employment. The finding is supported by FGD with trainees that:

> Working independently out here is totally different from what acquired from working independently in TVET institutions. The skill we acquired as working independently is when we were on industrial attachment although we were always under supervisors watch. Advantage is that we were operating in the real world of work. (FGD with graduates in Eldoret town)

4.7.4 Interpersonal Skills

The fourth rated is the interpersonal skills which was rated good by 89(33.2%) of the respondents, very good by 47(17.5%), do not by 08(03.0%), somewhat good by 68(25.4%) and not good 56(20.9%) of the respondents. In overall 136(50.7%) of the respondents showed that interpersonal skill was acquired by graduates in TVET institutions was good. This finding in agreement with studies that indicate that there is shortage of interpersonal skills amongst engineering TVET graduates due to traditional methods which do not use learners based approach (Leung & McGrath, 2010; Wheelahan & Carter, 2001). Interpersonal skill is acquired when trainees go through daily activities in group work,

sports competitions among others and it is said that the workforce is well versed in technical skills but lack the interpersonal skills (Cheruvelil, Soranno, Weathers, Hanson, Goring, Filstrup, & Read, 2014; Kozlowski & Ilgen, 2006). This implies graduates transit to the world of work while they are not fully equipped with interpersonal skill which is important as graduates interact with new work environment.

> Training in TVET institutions are individualistic that encourage competitions and those who emerged with good certificates means they struggled on their own. We train to struggle as an individual but here sharing ideas is crucial since this is where can stumble on business opportunities. (FGD with graduates in Eldoret town)

4.7.5 Communication skills

The fifth rated is communication skills which was rated good by 77(28.7%) of the respondents, very good by 45(16.8%), do not know by 2(0.7%), poor 86(32.1%) and very poor by 58(21.6%) of the respondents. In general 122(45.5%) of the respondents indicated that communication skills acquired by graduates was good which means it is inclined towards poor. This finding is in agreement with studies that indicates that communication skills is inadequately imparted to TVET trainees and negatively affects other fundamental skills such as teamwork, problem solving and leadership skills (Hui & Cheung, 2015; Ismail & Mohammed, 2015). This implies that communication skill is poorly developed in TVET institutions, where concentration seemed to be majorly given to technical skills as required for passing examinations.

> We in the engineering field had no time to improve our communication skills by reading story books and English literature. Our field of study come with new concepts and wider coverage with require serious reading that is why we are poor in communication skills. (FGD with graduates in Eldoret town)

4.7.6 Decision Making Skills

Decision making was ranked sixth highest by respondents as follows: very good by 38(14.2%), good by 72(26.9%), do not know by 06(02.2%), somewhat good by 89(33.2%) and not good by 63(23.5%) of the respondents. In general 110(41.1%) of the respondents believed that decision making was good, indicating that it is inclined towards poor. The reason is that the trainees are only learning through demonstrations since the materials are limited and expensive to allow trainees practice on their own (Hampton, 2002; Ongaro, 2015). This implies that TVET institutions graduates may fear making decision of venturing into unknown or engaging in self-employment. The finding is in supported by FGD with trainees that:

> ...first of all taking decision to engage in self-employment is not easy for us. TVET training is hands on or practical but we never got enough practical skills since concentration was on passing examinations. Even with good certificate engaging in self-employment with limited practical skills is difficult. (FGD with graduates in Eldoret town)

4.7.7 Creativity and Innovations

When respondents were asked to rate creativity and innovative skills they acquired in TVET institutions their response were as follows: very good by 35(13.1%), good by 66(24.6%), do not know by 05(01.9%), somewhat good by 92(34.3%) and not good by

70(26.1%) of the respondents. In overall 101(37.7%) of the respondents indicated that creativity and innovations was good. This percentage is below average which means that graduates were not given adequate skills on creativity and innovations. This finding is in agreement with studies that indicated that current TVET training do not support generation, development and implementation of creative ideas and innovative approaches (Cachia, Ferrari, Ala-Mutka, & Punie, 2010; Ismail & Mohammed, 2015; Mutua & Muriithi, 2015). This implies that TVET institutions concentrate on technical skills and ignore other skills like creativity and innovations that are acquired through learning environments that stimulate creativity and innovations. The finding is supported by qualitative finding through FGD with trainees that:

> We never caught enough practical training where challenging problems can be offered. We also rarely participated in exhibitions competitions were creativity and innovations can be nurtured. (FGD with graduates in Eldoret town)

4.7.8 Adaptability

Adaptability skills was ranked lowest at very good by 29(10.8%), good by 64(23.9%), 07(02.6%), poor by 97(36.2%) and very poor by 71(26.5%). In overall 93(34.7%) of the respondents indicated that adaptability training was good. This means a large number of the respondents believed that adaptability training was poorly imparted to trainees. The finding is in agreement with studies that indicated that adaptability is a skill that has not been adequately exhibited TVET graduates at place of work (Di Fabio, 2014; Jayaram & Engmann, 2017; Mwangi, 2015). This implies that adaptability as a soft content was not adequately imparted into graduates.

> ..From classroom to world of work is not easy for us. TVET institutions cannot provide environment equivalent to the world of work. We encounter a lot of challenges as we sought for jobs which are not found. Becoming self-employed is equally a difficult task that why most of us are unemployed. (FGD with graduates in Eldoret town)

In summary, TVET institutions did not inculcate soft skills content required for survival in self-employment. The time management was highly rated as a skill which was developed in TVET institutions more than the other skills. This could be attributed to the fact that in formal TVET institutions everything is done under time limits clearly pronounced. Time management and problem solving is well developed due to the fact that they are being practiced on daily activities in training institutions also transferable to other areas of operations.

> After graduation each one of us is out looking for employment individually and so survival skills are necessary. Working independently, time management, creativity and adaptability to new environment are survival tactics required in especially in self-employment, these skills are never taught in our institutions. (FGD with trainer No. 1 Eldoret)

4.8 Support Systems that Enabled graduates Transit into Self-Employment

Research question five sought to find out existence of support systems that enabled graduates of TVET institutions transit to self-employment. The questionnaire sought answers to research question four using five (5) items on a five point scale, the graduates were asked to rate existence of support systems on a 5 point scale. The scale range and weighting was as follows: “Very Good”, “Good”, “I don’t know”, “Poor” and “Very

Poor". It may be noted that existence of support system determines the graduates' placement to labour market.

Table 28: Support Systems Provided in TVET Institutions

	Rating of Support Systems				
	Very Good	Good	I don't Know	Poor	Very Poor
Entrepreneurship Education	43(16.0%)	58(21.6%)	08(03.0%)	82(30.6%)	77(28.7%)
Career & Guidance	37(13.8%)	55(20.5%)	07(02.6%)	95(35.4%)	74(27.6%)
Tracking of Graduates	35(13.1%)	50(18.7%)	08(03.0%)	96(35.8%)	79(29.5%)
Links to professional Networks	23(08.6%)	37(13.8%)	09(03.4%)	108(40.2%)	91(34.4%)
Business Incubation	19(07.1%)	27(10.1%)	06(02.2%)	119(44.4%)	97(36.2%)

4.8.1 Entrepreneurship Education Learnt in TVET Institutions

The acquisition of entrepreneurship education in TVET institutions was rated poor by 82(30.6%) of the respondents, very poor by 77(28.7%), good by 58(21.6%) and very poor by 43(16.0%) as shown in Table 28. In overall, 159(59.3%) of the respondents indicated that entrepreneurship education is poorly practiced in TVET institutions. The finding is in agreement with studies that indicate that entrepreneurship education acquired in TVET institution is only for passing examinations and not assisting graduates while they face real world of self-employment (Jotia & Sithole, 2016; Maiyo, Rono, Rael, & Tubey, 2016). In addition self-employment especially for new entrants needs practical skills on how so start up and run a business. This implies that entrepreneurship education given to

trainees in TVET institution is for passing examination and has never assisted unemployed graduates be self-employed.

Entrepreneurship is important in enabling TVET graduates to become involved in the mainstream of the economy. Technical content combined with entrepreneurial skills are very important for business startup or self-employment. The finding is further supported by FGD with trainers held in Eldoret town showed that:

> Engaging in self-employment is not easy especially for new a beginner without mentors to offer support even if he or she has starting capital. One needs to be introduced into business network that exist to reach clients and suppliers. Tracking of former trainees to know where they are can assist new graduates to get hooked to those who have already succeeded in engaging in self-employment. (FGD with trainees in Eldoret Town)

4.8.2 Provision of Career Guidance and Counselling in TVET institutions

When asked to rate provision of career guidance and counselling 95(35.4%) of the respondents rated it as poor, 74(27.6%) as very poor, 55(20.5%) as good and 37(13.8%) as very good as shown in Table 28. In overall 169(63.0%) of the respondents indicated that career guidance and counselling was poorly carried in TVET institutions. The finding is in agreement with studies that indicate that a career-oriented learning environment is lacking in TVET institutions hence trainees are not effectively guided in their career choice (Arshad, Tahir, Khan, & Basit, 2018; Munishi, 2016). In addition TVET institutions is said to lack effective career guidance and counselling that assist trainees planning and implementing informed educational and occupational choices

(Munishi, 2016; Zelloth, 2014). This implies TVET institutions do not take serious career guidance and counselling programs which assist trainees who need to be mentored and guided as they walk alone in their career path. The finding is supported by qualitative finding through FGD with trainees.

> I never sought for guidance and counselling in my former institution since I thought it was meant for those with social problems like over indulgence in alcohol. I never believed that counsellors had capacity to give guidance and counselling across all programs since in most cases the department is headed by individual grounded in particular program (FGD with graduates Eldoret town).

4.8.3 Tracking Graduates to know their Whereabouts

When asked to rate tracking of graduates by their former institutions to know their whereabouts as follows: poor by 98(36.6%), very poor by 81(30.2%), 09(03.4%), I don't know, good by 47(17.5%) and very poor by 33(12.3%) as shown in Table 28. In general 179(66.8%) of the respondents believed that tracking of TVET graduates by former institutions is poorly practiced. This is in agreement with studies that indicate that training institutions do not track the employment destination of their graduates hence lacks feedback from past trainees on how to improve their curricula and training packages (Acakpovi & Nutassey, 2015; Leong, 2011; Mulugeta & Mekonen, 2016; Yusuff & Soyemi, 2012). This implies that graduates are a forgotten lot once they have graduated; even retrieving their records in their former institutions was difficult because they were of no use as they prepare newer groups for examination and graduation. The finding is supported by qualitative finding through interview with trainers that:

> We do not know the whereabouts of our graduates in the world of work once they have graduated that linkage is disconnected. Ours is training; searching for a job is the graduates' responsibility, but we are happy when one hears that they have excelled out there. (Trainer No. 1 OTTI)

4.8.4 Linkage to Business Network

Linkage to professional network was ranked very poor by 91(34.0%) of the respondents, poor by 108(40.2%), fair by 09(03.4%), good by 37(13.8%) and very good by only 23(08.6%) as summarised in Table 28. In overall 199(74.2%) of the respondents indicated that linkage to existing business network was poorly practiced in TVET institutions. This means that TVET linkage of graduates to business community as a support system is very minimal. The finding is in agreement with studies that indicate TVET institutions failed to connect graduates to business community that supports self-employment (Kingombe, 2012; Nyerere, 2009b; Ogbuanya & Izuoba, 2015). This implies that fresh graduates from TVET institutions struggle on their own in starting and running a business without support they are in need of. This eventually may discourage those who fail even in first attempt since it is difficult for them to sail through in a competitive business environment. Many get discouraged and return to informal employment where they are paid little without job security. Support system is very important for new entrants into labour market especially for those with specific technical skills. The finding is supported by qualitative finding through FGD with trainees in Nakuru town that:

> We come to realise the importance of business network while we play part in the world of work. Business network is like club composed of producers and clients and one need to be introduced or connected to this portal where you can access clients for your products. No one knows you and your product, it requires introduction to existing supplies and opportunities offered by established market. (FGD No. 1 Nakuru town)

4.8.5 Business Incubation in TVET Institutions

When asked to rate how TVET institutions prepare trainees for business operations through business incubation set up, 119(44.4%) of the respondents rated poor, 97(36.2%) very poor, 06(02.2%) fair, 27(10.1%) good and 19(07.1%) rated very good. In overall 216(80.6%) of the respondents believed that business incubation was poorly practiced in TVET institutions. The finding seemed to rate business incubation as being poorly practiced in TVET institutions. The finding is in agreement with studies that indicate TVET institutions do not impart their graduates with sufficient entrepreneurship skills because they lack business incubation facilities (Holmes, 2009; Libombo & Dinis, 2015; Musobo & Gaga, 2012). This implies that TVET institutions lack capacity in terms of human capital and funds to set up and operate business incubations.

> Although it is well documented in Vision 2030 for TVET institutions to initiate and implement business incubations it has never taken off due to lack of funding and capacity building of trainers by concern ministries. we can categorically say it has not been practised in TVET institutions. (Trainer No.1 KTTI)

4.9 Chapter Summary

The chapter has presented the data, interpretation and discussion of the findings as per the research questions. Quantitative data collected through questionnaires have been presented in form of frequencies and percentages on tables and analysed accordingly. The qualitative findings have been used accordingly to confirm quantitative findings. Graduates consider their training as an avenue to paid employment in public formal sector and self-employment is a second option. Nevertheless TVET graduates rated training process as poor since it does not prepare graduates for self-employment.

The respondents considered training facilities in TVET institutions did not give enough practical skills to graduates hence are not confident to engage in self-employment. The training in TVET institutions was offered through demonstrations because of high cost of having equipped workshop to cater for each individual trainee. This means that graduates were inadequately prepared in hands on skills required in self-employment. Similarly, the graduates considered soft skills and support system more important since these are skills that enable one to identify opportunities and turn them into self-employment. Major issues discussed during interviews which included mentoring of graduates into self-employment through guidance and counselling, connecting to existing business network and making entrepreneurship education practical. The study found out that the skills learnt in TVET can be applied in self-employment.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary, conclusion and recommendations based on the key findings from the study as described in chapter four. The summary of key findings, conclusion and recommendations are drawn from the study and presented as per research questions.

5.2 Summary

The study addressed five research questions in an attempt to find out how engineering diploma graduates are prepared in TVET institution for self-employment in the face of diminishing formal employment opportunities in Kenya. Indeed, the labour market today faces challenges of globalisation and technological changes that TVET institutions need to catch up with in order to churn out graduates with relevant skills. The study sought views of diploma graduates in engineering who graduated in 2011 on how the training they received in TVET institutions assisted them to engage in self-employment. The study intended to provide reliable and credible information that will serve as a basis of repackaging engineering TVET programs in response to challenges brought by labour market dynamics characterised by limited jobs in formal employment, globalisation and use modern technology. In a way of addressing the research questions human capital

theory was adopted together with pull and push theory as basis of the theoretical framework.

Research question one was used to address how diploma in engineering graduates rate the training facilities used to prepare them for self-employment. The study found out that the graduates' perceived tools and equipment used in preparing them for their occupation as inclined towards poor. Spot check on the institutions under this study shows that most of machines are obsolete and broken down, and lacks experts to repair them hence confirm inadequacy of workshop practice conducted in TVET institutions.

The challenge is that technology changes very fast and it is difficult for institutions to cope with the changes. The newly acquired machines like numerical machines were complex to operate and lack experts to service. On training materials, it was rated poor, and this is attributed to high cost of carrying out practical lessons. The study found that the training materials are majorly consumables that are expensive to acquire. As a result training is limited to examinations only, in some cases at the cost of trainee.

On internet usage it was rated poor by 49.3% of the respondent. This indicates that the usage of internet connectivity in TVET institution was poor this could be attributed to high cost of internet bundles. Internet is important especially in simulation where training machines in terms of latest technology are out of reach in TVET institutions. The study found that there were enough reference books in TVET institutions this is attributed to governments renewed effort to establish and equip libraries in all TVET institutions.

On usage of ICT the study found that it is inclined towards poor, this seemed to suggest that there is poor application of computers in design and other related courses. In conclusion research question one found that nearly all items were rated poor. This means that training tools and equipment do not prepare trainees for self-employment, or the respondents not require them as they engage in informal employments which do not require specific skills.

Research question two sought to find out how learning and training strategies were applied by trainers in TVET to prepare graduates for self-employment. The study showed that the findings on ability to deliver practical lesson inclined towards poor. This means that graduates were not contented with practical skills received in TVET institutions and not does prepare them enough to be self-employed. The findings on theory lesson showed that it was highly rated as good; this indicates that there was no problem with the delivery of theory lessons in TVET institutions by trainers.

Lack of training materials and obsolete equipment renders practical skills acquisition in TVET institutions inadequate while on the other hand trainees shift their effort towards theory lesson which make them pass examinations. The graduates approved teaching methods employed by trainers as being good. This could be attributed concentration on theory with focus of making trainees pass written examination other that testing of practical skills. On readiness of trainers for consultation when required it was rated good.

The respondents tend to give thumbs up to the trainers since they are available and ready for consultation when required by trainees.

On whether industrial attachment prepares one for self-employment the findings tend to be inclined towards disapproval. TVET institutions seemed to have left trainees to be on their own in sourcing for places for industrial attachment and in some cases they are not assessed. This could be attributed to some situations where trainees are being exploited as free labourers by irrelevant firms they attached themselves to. In this research question two, the items tested point towards approval or good. This means that the respondents have got no problem with learning and training strategies applied by trainers in TVET institutions to prepare them for self-employment apart from practical lesson and industrial attachment which were rated poor.

Research question three sought to find out the perception of graduates on how technical content in TVET institution prepare them for self-employment. From the finding it can be concluded that majority of trainees did not believe that the technical content acquired can lead them to self-employment. When the respondents were asked to rate the flexibility of technical content to accommodate new technologies it was highly rated as poor. This confirms earlier findings that the curriculum is rigid and does not offer an opportunity for addition of new technologies and knowledge.

On application of technical content to ones area of occupation the respondents were non-committal. This could be attributed to the fact that most of them were employed in

informal sector where they do not require technical skills but more of general education. Due to the fact that majority remain unemployed without being sure of employment in near future they find skills or technical content they acquired in TVET institutions being irrelevant. Indeed as they graduate, they joined a long queue of unemployment or in informal employment associated with low pay.

Research question four sought to find out how acquisitions of generic skills content in TVET institutions prepare trainees for self-employment. The generic skills tested were ranked from highly perceived as good to the least good: time management, ability to solve problems, ability to work autonomously, interpersonal skills, communication skills, decision making, creativity and innovative skills, and adaptability. These skills are not taught in classroom but acquired in TVET institutions through extra curriculum programs which are basically voluntary. For example, one is not forced to participate in games or competition where generic skills are being exercised. On the other hand, during interaction or through time tabled activities where deadline is required for submission of tasks one would unconsciously learn how to manage time.

The study found time management as a generic skill which graduates acquired most, this is attributed to the fact that most activities in TVET are based on time lines or deadlines. During daily activities in TVET institution the graduates exercised time management which is also requirement for self-employment. The study found adaptability ranked lowest due to the fact that informal environment or survival in self-employment is totally different from the institution set up. Therefore the graduates felt that they were not well

prepared on adaptability skills by TVET institutions where they encounter unkind reception in the informal sector and self-employment.

Research question five sought to find out how existence of support systems enables trainees to transit into self-employment. Provision of career guidance and counselling was highly rated as poor in preparation of TVET trainees for self-employment. TVET institution lacks an expert to guide trainees on opportunities which exist out there to assist them as they venture in to self-employment. Therefore in most cases they fail because of wrong moves they made in the first attempt.

On business incubation, the findings indicated highly inclined towards poor. The idea behind business incubation was to train trainees on how to start up and operate a business when successfully handed over to graduates. The study found out that business incubation does not exist in TVET institution despite being mentioned in government policies as strategies to assist unemployed youth start their own business. Spot checks on TVET institutions showed that business incubation was never funded by the government and it remains a good idea yet to be implemented.

Linkage to professional network was also rated very poor by the respondents. This means that as a way of preparation of trainees, TVET institution do not assist or connect them to existing professional bodies. In this case fresh graduates from TVET institutions struggle on their own in looking, starting and running a business without support needed at the infant stage. Without networking with professionals, graduates find it difficult to venture

into self-employment hence they turn to informal employment where they are paid little without job security.

Tracking of graduates by TVET institutions to tell how they perform in the labour market was also rated poor by the respondents. This shows that TVET institutions do not care to get feedback about their graduates' performance in the labour market. From the finding it can be concluded that graduates are a forgotten lot once they graduate from TVET institutions. Retrieving their records in the institutions sometimes is difficult because they are of no use to such institutions as they struggle to churn another cohort into labour market. Knowing those who have ventured into self-employment can be a motivation story to those aspiring especially in the face of limited employment opportunities.

The acquisition of entrepreneurship education in TVET institutions was highly rated poor. This means that entrepreneurship education taught in TVET institution is only for passing examinations and it is not assisting them as they face real world of self-employment. Self-employment especially for new entrants requires practical skills on how to start-up and run a business. Engineering curriculum is difficult to the trainees compared to business related studies, therefore engineering trainees spend most of time solving scientific problem. In the end they lack entrepreneurship skills to unlock those innovations into business ventures.

Those who graduated in engineering are somehow lucky since they can be self-employed but as per the statistics very few venture in self-employment. Interestingly, those into

self-employment still hope that, one day they will secure paid jobs in public sector where there is job security.

5.3 Conclusion

Demographic characteristics of graduates indicated that majority of respondents were male, indicating that engineering is still a male dominated field. It also indicated that there is no direct employment after completion of a three Diploma year programme. Indeed, five years down the line after graduation in 2011 a significant number of graduates are yet to secure paid employment. Majority seemed to have joined informal employment as a last resort after waiting for too long to secure employment in formal employment. It can be concluded that graduates have been pushed by lack of employment in the formal sector into self-employment. Indeed this is confirmed by qualitative finding majority by stating that they joined training as a path of securing formal employment. In addition majority were not satisfied with their current occupation this could be attributed to high rate of unemployment and employment in informal sector.

From research question one it can be concluded that the training equipment and tools used for training in TVET institutions were defective and out-dated which do not fit in modern technologies in the present world of work. In case of new one qualitative data through interview agreed that that training equipment were inadequate and newly acquired advanced technologies lacked experts to operate or service them. Practical lessons were rarely administered because training materials which are basically

consumable are expensive hence limits practical lessons. There are no enough computers to growing number of trainees hence few that are there, are being shared by all departments in the institutions without funds to replace those that are damaged.

Research question two indicated that respondents were fairly happy with training strategies employed by trainers. Indeed, they attested that they were available and ready for consultation. They had an issue with the fact that they were taught theory lessons more that practical lessons. This could be attributed to the fact that carrying out practical is rarely done due to expenses that go with practical lessons. Indeed, qualitative findings supported that, trainers sometimes are frustrated by lack of materials to conduct practical lessons.

Research question three showed that graduates were fairly prepared on technical. In fact finding through FGD seemed to suggest that graduates are not complaining since majority are unemployed or employed in informal sector which do not require their technical skills. This this implies that the technical skills acquired were not useless but they are still on the queue waiting for their opportunity to secure employment in the formal sector.

Research question four pointed out that graduates were inadequately prepared on soft skills since most of the items on research question four were poorly prepared on soft skills since most of the items on research question four were poorly rated by the respondents. Soft content in not included in the core curriculum and trainees are expected

to acquire these skills from extra curriculum activities which in most cases are voluntary in TVET institutions. These skills are important particularly for self-employed which one must survive on their own while identifying an opportunity before applying innovative skills and creativity. Soft skills are acquired through exposure over time even during engagement in self-employment.

On research question five it can be concluded that graduates lack support as they transit to self-employment. The findings indicated that, the graduates were not given enough supported since most of them were still employed in informal sector and others are still seeking for formal employment. The items on research question five were: guidance and counselling, entrepreneurship education, business incubation and tracking of graduates which all were indicated to be poorly practiced in TVET. This means that concentration is given to technical content which is difficult for graduates to utilise these skills without support or mentorship in self-employment.

Given the above conclusion on each research question, it can be concluded that TVET institutions do not prepare their trainees for self-employment despite lack of formal employment in the labour market. It is true that most of them have been pushed by circumstances into self-employment while still most of them have been forced by into informal sector as they wait to be employed in paid and secure employment. There is therefore a need of a policy to start an institution that target graduates in order to nurture and incubate their innovations until such a time where they can run and manage on their own as self-employment.

5.4 Recommendations

Based on key research findings and conclusion this study recommends the following:

1) As a way of enhancing self-employment, innovations of trainees should be developed with assistance of professionals in self-employment. This means private-public partnership should be more engaged in TVET training with aim of assisting trainees nurture their innovations and develop into real self-employment or employment firm. As, such there is need for an institution which TVET graduates with their innovations or projects can meet professionals who can finance and incubate their innovations into real businesses.

2) There should be strategic policies by the government so that during exhibitions, examinations projects and during competitions technical innovations trainees can be identified and supported. Some of innovations and ideas developed by trainees in group work in TVET would die once they separate after graduation as they seek employment individually. Therefore it is difficult to bring together these graduates again to carry on with their innovations which can lead to self-employment.

3) Technology is changing very fast and it is difficult for TVET institutions to acquire latest technologies as teaching equipment. Availability of internet can help download videos such as You Tube and such like videos to be used in training even when latest technologies are expensive and out of reach in TVET institutions.

4) Soft skills need to be imparted more to trainees through core curriculum especially in the current situation of lack of formal employment. Currently, in TVET institutions soft skills are left to extra curriculum activities were they are not taken seriously. Technical skills alone handicap trainees, they require soft skills to unlock their potential so that they can act creatively in a competitive labour market.

5) The entrepreneurship education acquired in TVET institutions is basically for passing written examinations. There is need of making it more practical by turning it into business venture with support through funding. This can be done by engaging the support of the business community.

5.5 Further Research

The current study found out that TVET institutions have not adequately prepared engineering diploma trainees for self-employment. It can be concluded that those who have ventured in self-employment have been pushed by circumstances and not necessarily training programs.

Further research can be carried out to investigate graduates who have deviated from their specific acquired skills and are applying different skills which they never acquired in school while engaging in the world of work.

Further study can also investigate the role of modern apprenticeship education in reducing unemployment through self-employment.

Further research can also take a comparative approach on graduates of diploma in business studies and those that graduated from diploma in engineering.

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APPENDICES

Appendix I: TVET Graduates' Questionnaire

Part A: Introduction

My name is **Titus Murgor** and I am doctoral student at the University of Eldoret. I am conducting a study on the *Dynamism of Labour Market: Implications for Training Diploma in Engineering Graduates for Self-employment in Kenya*. The study is intended to give an insight understanding of self-employment of the TVET graduates who completed their training in Technical Training Colleges.

I kindly request your support in providing information required in the research. All information provided will be confidential and no response shall be specifically and personally identified. I truly appreciate the help you will give me by taking part in this survey. This is not a test and therefore there are neither 'right' nor 'wrong' answers. Ask for clarification if anything that is not clear. Let me know if you need to stop participating for any reason.

Consent of Respondent

Can we proceed?

Yes [ ]

No [ ]

If No, the researcher will thank the respondent and terminate the process.

Part B: Demographic Information of the Graduates

This section seeks to gather your background information in relation to the college where you studied. Please provide as accurate information as possible by ticking (/) the best response where appropriate.

1. Gender: Male ( ) Female ( )

2. Age range in years: 16-20 ( ) 21-25 ( ) 26-30 ( ) 31 and above ( )

3. Program you studied: Electrical ( ) Mechanical ( ) Automotive () Building and Construction ( )

4. Where are you currently working? Formal employment ( ) 2. Informal employment ( ) 3. Self-employment ( ) 4. unemployed ( )

5. When did u get your first employment after graduation? Within the 1 years ( ) 2. Between 1 – 3 ( ) 3. Between 3 – 5 ( ) 4. Above 5years ( )

6. Are you satisfied with your current employment? 1. Satisfied ( ) 2. Not sure ( ) 3. Not satisfied ( )

7. Are you applying the skills you acquired in Technical Training College? 1. Always ( ) 2. Sometimes ( ) 3. I don't Know ( ) 4. Rarely ( ) 5. Never ( ), ANY OTHER STATE.....

Section B: Training Equipment Used

The following training facilities are important for acquisition of skills required in the labour market. Tick (□) the choice that best describes your opinion on the degree to which you agree that the training facilities used in your former institution enabled you to acquire skills you are currently using.

Training facilities	**Very good**	**Good**	**I don't know**	**Poor**	**Very poor**
Availability and usage of machines and equipment by TVET institutions					
Availability of raw materials for practical training					
Adequate usage of ICT					
Availability of internet connectivity					
Availability of Computers to undertake a simulation, Auto-CAD or Archi-CAD					
Availability of library for personal study					

Section C: Training Strategies and Learning Employed by Trainers

Tick (□) the choice that best describes your opinion on the degree to which you agree with **Training Strategies Employed by Trainers** in your former institution that enabled you to acquire skills you are currently using.

	Strongly Agree	**Agree**	**I don't know**	**Disagree**	**Strongly Disagree**
Ability to deliver practical lessons effectively					
Ability to deliver theory lessons effectively					
Adequate teaching methods used (lecture, discussion, guided discovery etc)					
Ability to use teaching and learning resources (such as visual aids, real Objects)					
Available for consultation by trainees					
Trainers' have positive attitudes towards the course					
Ability to guide and develop creativity in trainees					
Adequate use teaching & learning resources					
Attachment of trainees to relevant industries					

Effective use field visits					
Use of resource persons/ inviting guest speakers					

Section D: Technical Content Acquired

Put a tick (□) in the choices that best describes your opinion on the degree to which you agree with **Technical Content Delivered** in your former institution that enabled you to acquire skills you are currently using.

1 Which of technical content that you think you were adequately prepared?

1. Theoretical content. ( ) 2. Practical content. ( ) 3. Both theoretical and practical training ( )

2 What are the reasons for being adequately prepared on theoretical content?

1. Adequate delivery by trainers ( )
2. More time allocated to theory ( )
3. Linkage to secondary school work ( )
4. Enough references ( )

3 What are the reasons for being adequately prepared on practical content?

1. Intensive practical sessions ( )
2. Demonstration was thoroughly done ( )
3. Industrial attachment provided practical skills ( )

Put a tick (□) in the choices below that best describes your opinion on the degree to which you agree with **Technical content delivered** in your former institution that enabled you to acquire skills you are currently using.

	Very good	**Good**	**I don't know**	**Poor**	**Very poor**
Technical content received by graduates					
The content provide technical skills required for self-employment					
The technical content has been adequately reviewed					
Technical content is applicable to my occupation practice					
The technical flexible it accommodate new technologies					

Section E: Generic Content Acquired

Put a tick (□) in the choices below that best describes your opinion on the degree to which you agree with **generic content delivered** in your former institution that enabled you to acquire skills you are currently using.

	Very good	**Good**	**I don't know**	**Poor**	**Very poor**
Ability to solve problems					
Ability to work autonomously					
Time management					
Interpersonal skills					
Communication skills					
Creativity and innovative skills					
Decision making					
Creativity and innovative skills					
Adaptability and flexibility					

Section F: Existence of Support Systems

Put a tick (□) in the choices below that best describes your opinion on the degree to which you agree with **existence of support systems** enabled you to secure or operate in the self-employment that you are currently engaged.

	Very good	**Good**	**I don't know**	**Poor**	**Very poor**
Technical colleges support former graduates with networks					
Career guidance is done in Technical Colleges					
Institutions track learners to know their whereabouts					
TVET institutions follow graduates to encourage them start their own business					
TVET institutions expose students to available financial support that exist					
There is funding provided by government and NGOs to boost youth					

Appendix II: Interview Guide for Trainers in TVET

Introduction

My name is **Titus Murgor** and I am doctoral student at the University of Eldoret. . I am conducting a study on the Dynamism of Labour Market: Implications for Training Diploma in Engineering Graduates for Self-employment in Kenya. The study is intended to give insight understanding of self-employment of the TVET graduates who completed their training in Technical Training Colleges.

I kindly request your support in providing information required in the research. All information provided will be confidential and no respond shall be specifically and personally identified. I truly appreciate the help you are giving me by taking part in this survey. This is not a test and therefore there are neither 'right' nor 'wrong' answers. Ask if there is anything that is not clear, and let me know if you need to stop for any reason.

Consent of Respondent

Can we proceed?

Yes [ ]

No [ ]

If No, the researcher will thank the respondent and terminate the process.

How do Existing Training Facilities in TVET Institutions Prepare Trainees for Self-employment?

1) What do say about adequacy of training facilities (e.g machines, text books, tools etc) that you are using for training in your institution for preparing trainees for self-employment

2) Comment on training facilities in relation to self-employment

3) In situation where there are no training facilities what to you do

4) Comment on practical content acquired by your trainees as a preparation for self-employment

How do Learning and Training Strategies Applied by Trainers Prepare Graduates for Self-employment?

1) What are the challenges you experience in teaching of practical lesson

2) Compare between teaching a theory and a practical lesson

3) Comment on the recent training undertaken to improve learning and training strategies and consequently lead to self-employment.

4) Comment on the competency of your graduates in the labour market

5) What do you think are the challenges faced by your graduates in the labour market

6) What are the learning strategies you think can be implemented to successfully prepare graduates for self-employment

How Do Acquisitions of Technical Content in TVET Institutions Prepare Trainees For Self-employment?

1) What is the relationship between technical content in the training institution and the technical skills required by the labour market

2) What is missing that you think need to be added to make technical content relevant

3) How do you find flexibility of technical content in terms of accommodation of new technologies required in the labour market

4) What do you think need to be improved on technical content to match labour market

How Do Acquisitions of Generic Content in TVET Institutions Prepare Trainees for Self-employment?

1) What is the relationship between the generic content in the institution and generic skills required in the job market

2) What kind of generic skills do you think they are required in labour market

3) What is missing that you think need to be added to make technical content relevant

4) What are the generic content you have acquire in TVET and you find applicable in daily operations of your business

5) How adequate were you prepared on business management skills

6) Which generic skills you think are most required in your operations

7) Which skills between technical or generic content do you consider most applicable for self-employment and why

What are the Existing Support Systems that Enable TVET Trainees to Transit into Self-employment in a Dynamic Labour Market?

1) What are some of the challenges facing TVET graduates in the labour market

2) What support systems exist for graduates transiting into labour market

3) What kind of support were you given by the institution/ government etc to transit into self-employment

4) What are the support system do you think they exist which graduates are not aware of

5) How were you supported to engage in self-employment

Appendix III: Focus Group Discussion Guide

My name is **Titus Murgor** and I am doctoral student at the University of Eldoret. . I am conducting a study on the Dynamism of Labour Market: Implications for Training Diploma in Engineering Graduates for Self-employment in Kenya. The study is intended to give insight understanding of self-employment of the TVET graduates who completed their training in Technical Training Colleges.

I kindly request your support in providing information required in the research. All information provided will be confidential and no respond shall be specifically and personally identified. I truly appreciate the help you are giving me by taking part in this survey. This is not a test and therefore there are neither 'right' nor 'wrong' answers. Ask if there is anything that is not clear, and let me know if you need to stop for any reason.

Consent of Respondent

Can we proceed?

Yes [ ]

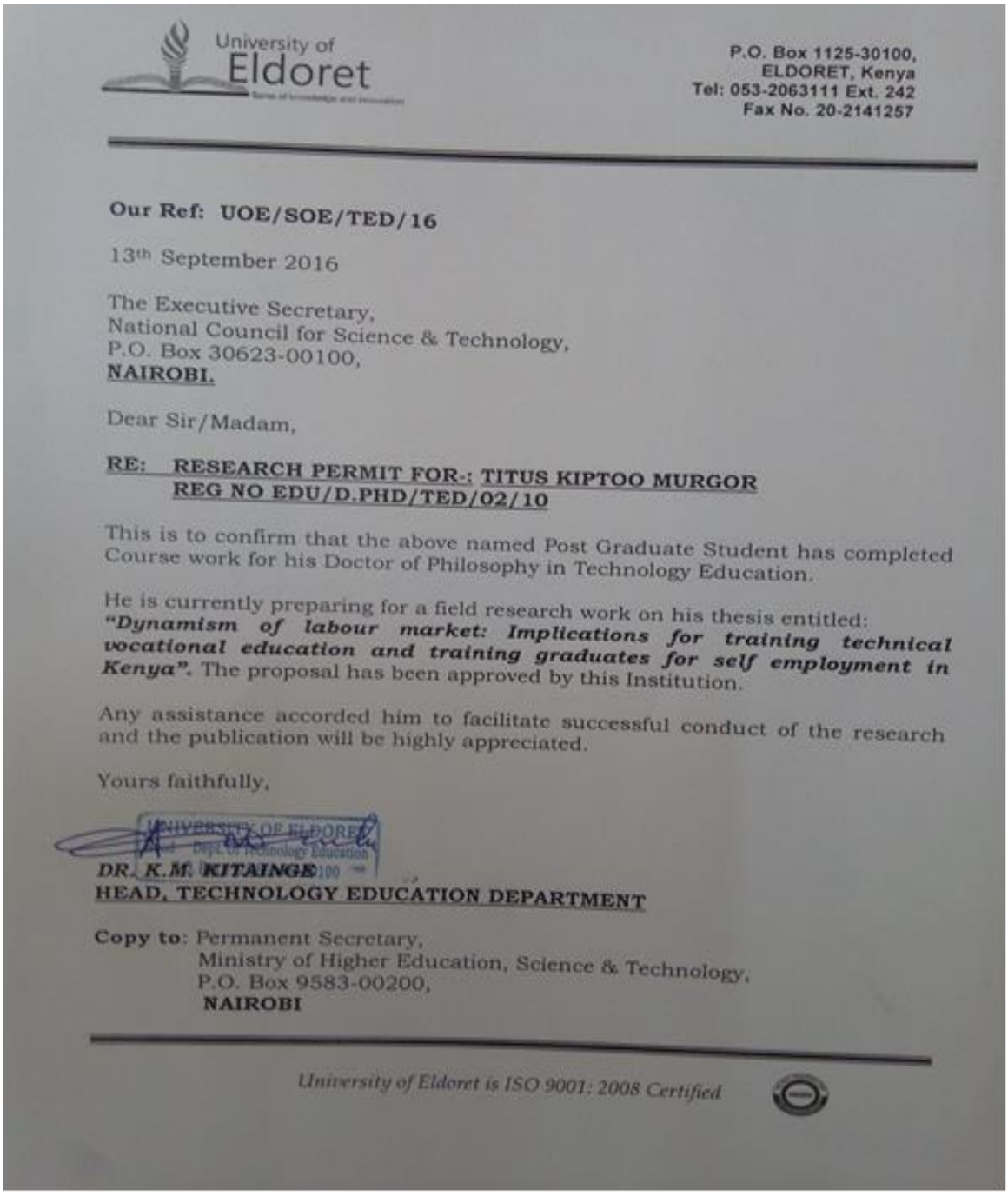
No [ ]

If No, the researcher will thank the respondent and terminate the process.

1) Comment on training facilities in relation to what in required for self-employment in ones area of specialisation

2) What are the challenges in starting a business in relation to facilities used in training in your institution
3) What are training strategies that can lead trainees in engaging in self-employment
4) How to graduates use technical content received in TVET institution in self-employment
5) What are soft/ generic skill required for survival in self-employment
6) What support system to graduates require in order to survive in self-employment

Appendix IV: Research Permit from UoE



University of Eldoret

P.O. Box 1125-30100,
ELDORET, Kenya
Tel: 053-2063111 Ext. 242
Fax No. 20-2141257

Our Ref: UOE/SOE/TED/16

13th September 2016

The Executive Secretary,
National Council for Science & Technology,
P.O. Box 30623-00100,
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH PERMIT FOR-: TITUS KIPTOO MURGOR
REG NO EDU/D.PHD/TED/02/10

This is to confirm that the above named Post Graduate Student has completed Course work for his Doctor of Philosophy in Technology Education.

He is currently preparing for a field research work on his thesis entitled: ***"Dynamism of labour market: Implications for training technical vocational education and training graduates for self employment in Kenya".*** The proposal has been approved by this Institution.

Any assistance accorded him to facilitate successful conduct of the research and the publication will be highly appreciated.

Yours faithfully,

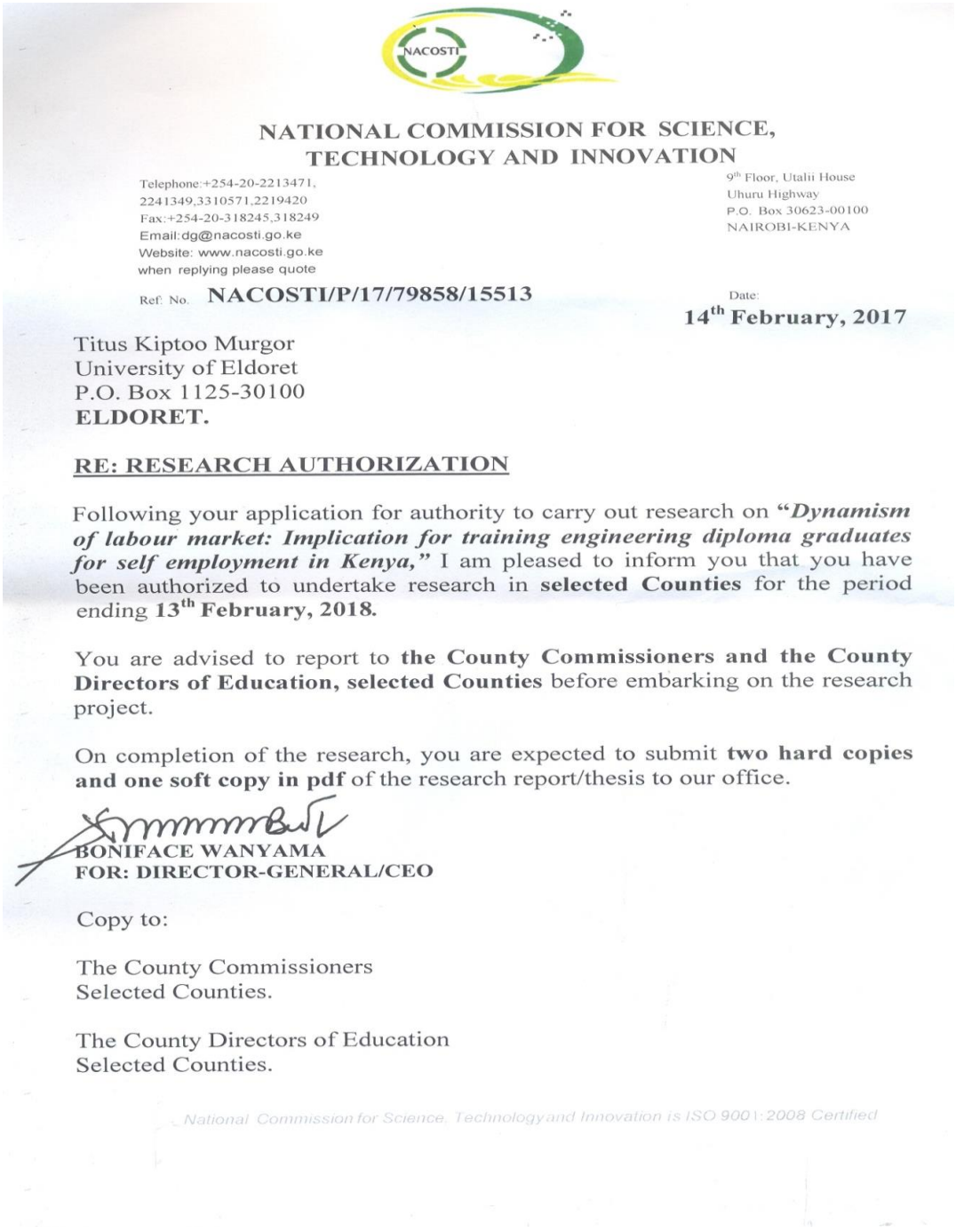
UNIVERSITY OF ELDORET
Dept. of Technology Education

DR. K.M. KITAINGE
HEAD, TECHNOLOGY EDUCATION DEPARTMENT

Copy to: Permanent Secretary,
Ministry of Higher Education, Science & Technology,
P.O. Box 9583-00200,
NAIROBI

University of Eldoret is ISO 9001: 2008 Certified

Appendix V: Research Authorisation from NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471, 2241349,3310571,2219420
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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/17/79858/15513**

Date: **14th February, 2017**

Titus Kiptoo Murgor
University of Eldoret
P.O. Box 1125-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Dynamism of labour market: Implication for training engineering diploma graduates for self employment in Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **selected Counties** for the period ending **13th February, 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.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

Appendix VI: Research Permit No. NCSTI/P/17/79858/15513

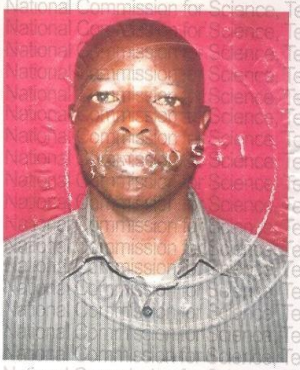
THIS IS TO CERTIFY THAT:
MR. TITUS KIPTOO MURGOR
of UNIVERSITY OF ELDORET, 0-30100
ELDORET,has been permitted to conduct
research in *Nakuru , Nandi ,*
Transnzoia , Uasin-Gishu Counties

on the topic: *DYNAMISM OF LABOUR MARKET: IMPLICATION FOR TRAINING ENGINEERING DIPLOMA GRADUATES FOR SELF EMPLOYMENT IN KENYA*

for the period ending:
13th February,2018

.....
Applicant's Signature

Permit No : NACOSTI/P/17/79858/15513
Date Of Issue : 14th February,2017
Fee Recieved :Ksh 2000



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

Appendix VII: Rift Valley Region of Kenya