AN ANALYSIS OF COMPETENCIES IN AGRICULTURAL ORGANIZATIONS IN SELECTED TECHNICAL AND VOCATIONAL COLLEGES IN NORTH RIFT REGION, KENYA.

BY

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DECLARATION

DECLARATION BY THE CANDIDATE

This thesis is my original work and has not been presented for examination in any institution. No part of this thesis may be produced without prior permission from the Author and/or University of Eldoret.

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DEDICATION

This thesis was dedicated to staff in the Ministry of Agriculture, Ministry of Education, Agricultural Organizations and Industries and Agro based Non-Governmental Organizations.

ABSTRACT

Globally, the Agricultural industry is frustrated by chronic mismatch between competencies and work, often leading to economic downturn and youth unemployment. This study therefore, investigated the relationship between agricultural training and the competencies needed in agricultural organizations in selected technical and vocational colleges in north rift region, Kenya. The first objective was to assess the extent to which the capacity of trainers influences the quality of teaching of agriculture in selected TVET colleges. The second objective was to examine the current agricultural curriculum in TVET colleges. The third objective was to assess the extent to which training infrastructure for Agriculture in TVET colleges influences competencies acquired by trainees and the fourth objective was to establish the market needs for Agricultural trainees in TVET colleges. Training infrastructure, ATVET curriculum, Market needs and capacity of trainers were the indicators of quality training in TVET colleges in North-Region, Kenya. The study adopted descriptive design. A sampling frame of 5 TVET colleges was purposively selected. Simple random sampling was used to select 384 students studying agriculture in TVET institutions, 16 teaching staff (principals & lecturers) and 14 human resource personnel were purposively selected. Structured questionnaires and interview schedules were employed in collecting the research data from students and human resource personnel. Focus Group Discussions and Key Informants were used to collect data from TVET trainers and TVET principals respectively. Cronbach Alpha was used to determine the reliability of the questionnaires and a reliability co-efficient of 0.7 was adopted. Collected data was coded, entered, cleaned and analyzed using SPSS Version 20. Frequency tables and percentages were used to present data and hypothesis testing was done by use of chi square at 95% confidence level. Experiential Learning theory and Human capital theory provided theoretical basis for the study. The study showed that there was a mismatch in agricultural training and requisite competencies needed in agricultural organizations. This study therefore concluded that agricultural training should be matched with the competencies required by the agricultural organizations. This study served as a road map to spawn information from which recommendations were made that would be of advantage to the Ministry of Agriculture, Ministry of Education, Agricultural organizations and Industries and agro based Non-Governmental Organizations.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION AND ACRONYMS

ATVET	Agricultural Technical and Vocational Education and Training
CBT	Competency Based Training
CTE	Career and Technical Education
FAO	Food Agricultural Organization
FGD	Focused Group Discussion
GoK	Government of Kenya
ICT	Information and Communication Technology
ILO	International Labour Organization
KIs	Key Informants
KICD	Kenya Institute of Curriculum Development
NRR	North Rift Region
OECD	Organization for Economic Cooperation and Development
RVIST	Rift Valley Institute of Science and Technology
SDGs	Sustainable Development Goals
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific & Cultural Organization
UNSCO	United Nations Special Coordinator for the Middle East Peace Process.
US	United States

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter gives the background to the study. It addresses issues which form the basis for the research problem, objectives of the study, research questions, hypothesis, assumptions of the study, justification, significance of the study, scope of the study, limitations, theoretical framework, conceptual framework, operational definition of terms and lastly summary of the chapter.

1.2 Background Information

Training on hands-on competencies has been part of human history from medieval times. Students have been training for specific vocations for thousands of years (Maeko & Makgato, 2014). Women learned domestic competencies from their mothers, and young men trained for specific trades under skilled professionals (Brush, 2016).

Technical and Vocational Education and Training (TVET) programs and institutions have played a consistent role in agricultural development and economic growth in developing countries over the past 50 years (Jonnes, 2012). Regardless of its true origin, some believe that Vocational education began in 626 BC with the Neo-Babylonian Empire and its knack for apprenticeship-run education (Brush, 2016).

Notably, vocational education development began in United States (US) in the early 20th century before the great depression. Society was industrializing, and Agriculture was less lucrative.

According to American Radio works, on paper (Brush, 2016)., the creation of Vocational Education programs solved major problems like overcrowded classrooms and demand for a skilled workforce.

Vocational Education today is a well-developed schooling system which balances class time and work experience. It increases inclusivity, innovation and prosperity (Jonnes, 2018).

The world is becoming more aware that an innovative and knowledgeable workforce is truly a competitive advantage in the global market-place (Okorafor & Okorafor, 2011).

Technical and Vocational Education Training (TVET) have been widely recognized as a vital driving force for the socio-economic growth and technological development of nations (Ayonmike, Okwelle & Okeke, 2015). However, TVET programs must be demand-driven and context-specific, and investments at the institutional level must promote flexibility and innovative programming in order to maximize the impacts of agricultural vocational training (Jones, 2012).

The flock of human capital resources needed to transform a nation to economic super-power need be sufficiently informed via functional education. Ankara (2018), noted that individuals having appropriate competencies are the key basic requirements of today for sustainable social and economic development of the countries, TVET has been identified as the bedrock to national development (Ayonmike, Okwelle & Okeke, 2015)

Thus, most nations, developed and developing, are increasingly laying emphasis on improving the capacity of TVET systems in recognition of the vital role it plays in equipping individuals with relevant competencies (Okorafor & Okorafor,2011).

Globally, the rate of youth unemployment is estimated at 12.6%, with about 73 million young people being unemployed (ILO,2013; Eima, 2015). Countries such as Hong Kong, Korea, Singapore, and Taiwan have achieved unprecedented rates of economic growth while making large investment in education, (Almendarez,2011).

The federal TVET mission is to promote education about work for work, or education through work. TVET is known in United States as Career and Technical Education (CTE). The US Vocational improvement strategy promotes links between secondary and post-secondary vocational programs to better prepare students for their transition from school to careers (UNESCO & UNSCO,2014).

Technical and Vocational Education and Training (TVET) in China aims to enhance the employability of its labour force and to contribute to China's social and economic development (UNESCO, 2018).

The Sub-Saharan Africa region accounts for more than 950 million people, approximately 13% of the global population. By 2050, this share is projected to increase to almost 22% or 2.1 billion. (OECD & FAO, 2016).

A major challenge in TVET training in Sub-Saharan Africa is posed by quality in teaching which is characterized by a significant lack of practical relevance and responsiveness to labour market needs, insufficient infrastructure and equipment and extremely low through puts (Eicker, Haseloff, & Lennartz, 2017). A major rising concern in many developing countries is linking of private sector and the education institutions.

In Kenya, the government set the target of achieving newly industrialized status by the year 2020. (Obwoge, Mwangi & Nyongesa, 2013). Technical education is necessary if Kenya is to industrialize by the year 2030. Relevant competencies have to be given in Technical Training Institutions.

The training in Technical Training Institutes should therefore, be market driven. According to Sang, Muthaa, & Mbugua, (2012). The major reason why form four graduates joined Technical Training Institutes in Kenya was to secure competencies for employment.

Given the reason, training institutions should endeavor to produce graduates who are marketable to industries and business organizations (Ngure, 2013). Agriculture as a career need to be equipped with requisite competencies for employability considering that the key purpose of agriculture is to enhance food security, environmental sustainability as well as reduction of poverty through rural development.

The dynamics of poverty within Kenya are changing and directly influencing the country's agriculture sector (FAO, 2014). Since the philosophical foundation of Agriculture Education programme and the teaching of agriculture are the centrality of food in life and technological requirement of modern agriculture, Competency Based Training (CBT) can be used to ensure that the teachers have the necessary competencies to achieve this philosophy (GoK, 2017).

Competency is a combination of knowledge, skills and attitude that enable an individual to perform an activity successfully on a given job.

This study looked at competencies gained from infrastructure by the learners; nature of infrastructure, adequacy, functionality and availability. Competencies gained from the curriculum; curriculum content, number of review, benchmarking and learning activities. Competencies gained from trainers; trainer competency, experience, training level and in-service training. Competency required by the industry; industry needs, competencies required and aspiration of the graduates to join industry for work.

According to GoK website, the following TVET Colleges in North-Rift Region in Kenya, offer Agriculture course;

1. Baringo Technical College;
2. Emining Technical Training Institute;
3. The Kitale Technical Training Institute;
4. Rift Valley Institute of Science and Technology (RVIST-Nakuru);
5. The Kitale National Polytechnic;
6. Tropical College of Management, Eldoret;
7. Eldoret Technical Training Institute, Eldoret;
8. Rift Valley, Technical Training Institute, Eldoret
9. Manor House Agricultural College
10. Baraka Institute of Organic farming

The agricultural related courses offered in these institutions are:

1. Certificate and Diploma in General Agriculture;
2. Agricultural and Mechanical Engineering;
3. Diploma in Animal Health
4. Diploma in Animal Production and Health Management and;
5. Diploma in Bio intensive agriculture

This study analyzed the competencies in agriculture organizations in selected Technical and Vocational Colleges in North Rift Region, Kenya. It involved examining curriculum content, capacity of trainers, infrastructure for training and the competencies required by the labour market.

1.3 Statement of the problem

Developed and developing countries are confronted by most of the problems that could limit the capacity of expansion in education to stimulate growth and development. Some of these problems are underemployment, low absorption capacity, shortage of professionalism, regional imbalances, and brain drain. (Brown & Slater, 2018).

In spite of the various policy formulations in TVET colleges, there is persistence of many problems in the field which require more focused, responsive, functional and qualitative education system (Friedhelm, Gesine & Bernd, 2017).

A proper TVET curriculum formulation and implementation would increase employability and marketability of TVET graduates (Kenya News Agency,2019).

Kenya's vision 2030 document noted that there was a mismatch between training and the competencies desired in the industry (Ngure, 2013). Ligami, 2018 observed that TVET institutions in Kenya are still too theoretical and are not providing the real competencies needed by the agricultural sector.

The mismatch of the training in TVET colleges is in the context of increasingly commercial and technical 21st century agricultural system which demands for retraining of ATVET graduates immediately after employment (Kirui & Marta, 2018). Hence, there was need to analyze the competencies in agricultural organizations in selected technical and vocational colleges in North Rift Region, Kenya.

1.4 Purpose of the study

The purpose of the study was to analyze the competencies in agricultural organizations in selected technical and vocational colleges in north rift region, Kenya.

The study analyzed the indicators of quality training for the required competencies in TVET colleges that is: capacity of trainers, curriculum used, training infrastructure and labour market needs.

1.5 Broad Objective

To analyze the competencies in agricultural organizations in the selected technical and vocational colleges in North Rift Region, Kenya.

The specific objectives of the study were:

1. To analyze the extent to which the current agricultural curriculum influence the competencies acquired by trainees in selected TVET colleges in the North-Rift;
2. To assess the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges the North Rift Region;
3. To assess the extent to which training infrastructure for Agriculture in TVET colleges' influences competencies acquired by trainees in the North Rift Region and;
4. To establish the market needs for Agricultural trainees in TVET colleges.

1.6 Research Hypotheses

The research was guided by the following null hypotheses**;**

1. $H_{o1:}$ There is no significant difference on the current agricultural curriculum to the competencies acquired by trainees in selected TVET colleges in the North-Rift;

2. $H_{o2:}$ There is no significant difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges;
3. $H_{o3:}$ There is no significant difference in the training infrastructure for Agriculture in TVET colleges and the competencies acquired by the trainees.
4. $H_{o4:}$ There is no significant difference on the extent to which the market needs of stakeholders differ from the competencies offered in selected TVET colleges.

1.7 Justification of the research

Kenya like any other country in the world is striving to improve its food security and general wellbeing of its population, agriculture holds key to the attainment of this.

Despite efforts to increase enrolment of trainees in TVET colleges and particularly those in agriculture also complaints have been raised against these graduates for instance; research has shown that there are many contributions of TVET on nation's economy, but employers have however, not been satisfied with the contribution of TVET for sustainable development of a nation (Bappah & Medugu, 2013; Bhurtel, 2015).

Kenya is offering financial support to students joining TVET colleges as well as equipping TVET colleges in terms of infrastructure but TVET graduates lack the requisite competency required in the labour market.

This study therefore sought to analyze the competencies in agricultural organizations in selected technical and vocational colleges in north rift region, Kenya with a view of examining the current ATVET agriculture curriculum, the capacity of trainers, the training infrastructure and the market needs.

The study would give the insight of the competencies required by the stakeholders and that would enhance the quality of training of Agriculture in TVETs colleges hence promotion of competencies for sustainable development which would enable the country to achieve both the Big Four Agenda on food security and Kenya's vision 2030.

The findings will help to fill the existing gaps between TVETs and the employer.

1.8 Significance of the study

It was hoped that the findings and recommendations would lead to competent graduates who would contribute to the improvement of the country's food production and food security, a key goal in Kenya's vision 2030 and attainment of SDGs.

The study would assist TVET policy makers to develop better policies, curriculum developers would be better informed on the kind of curriculum together with the necessary resources that would result in more competent graduates. Trainers also would get knowledge on better strategies of teaching the programme.

The study would establish the pitfalls in ATVET training; increase meaningful academic learning and facilitates, social and emotional growth and decrease negative behaviour as well as increase time on task.

It was also hoped that the study would assist TVETs and potential employers to work more closely in addressing quality concerns on graduates coming out of the schools to find relevant work or be self-employed. Thus, the findings would hopefully improve the employability of the TVET graduates.

1.9 Assumptions

The study was based on the assumption that TVET institutions in North-Rift Region are expected to influence production of middle-level workforce. Therefore, their continuous establishment was well understood by all the relevant stakeholders. The study also assumed that the respondents would give true and correct responses as they respond to the questionnaire and interview schedule.

1.10 The Scope

This study was conducted on the human resource personnel in agro-based industries, student trainees pursuing Agriculture related courses and trained staff in TVETs colleges in North-Rift Region, Kenya in the year 2021.

The study also analyzed the curriculum, trainers who implement the curriculum, infrastructure that may impact on the training programme and the employers of agro-based industries.

1.11 Limitations of the study

Although this study may increase quality in TVET training, it is limited in the following respects:

It is limited to learners pursuing agriculture and agriculture related courses, therefore the findings may not be generalized to all TVET graduates.

It was limited in finding the sample size and the researcher had to seek more respondents from Bukura Agricultural college in Western, Kenya.

1.12 Theoretical Framework

The study was based on Experiential Learning Theory as advanced by Allen Kolb in 1939 and Human Capital Theory by Theodore, 1960.

The work of Zhou & Brown D. (2017), David Allen Kolb (1939), America ‘’Organization’’ sociologist and educational theorist, elaborates the research on experiential learning and learning styles.

Kolb, argued that experiential learning is a philosophy of learning through experience; it is the process where knowledge results from making meaning of direct experiences. The theory is a holistic or ‘’meta-view’’ of learning, it is a combination of experience, perception, cognition and behavior.

Career and technical education programs have embraced experiential learning as a true learning methodology for students to obtain occupational competencies valued by employers, (Clark, Threeton & Ewing, 2010).

Human Capital Theory; Theodore, (1960) in Laura, (2016) proposes to treat education as an investment in man and to treat its consequences as a form of capital.

The human capital theorists argued that an educated population is productive in the general population (Almendarez, 2011).

Therefore, for quality training in TVETs colleges the curriculum must be designed in such a way that the learner gains competencies at a particular level in relation to the Experiential Learning Cycle and Basic Learning Styles (Kolb, 1984).

Consequently, capacity of trainers, training infrastructure and market needs should aim at quality education which is relevant to the job market as explained by Human Capital Theorists. This would yield returns inform of income for individual and economic growth for the society (Yewah,2015).

The Theoretical Framework is summarized in Figure 1.1.

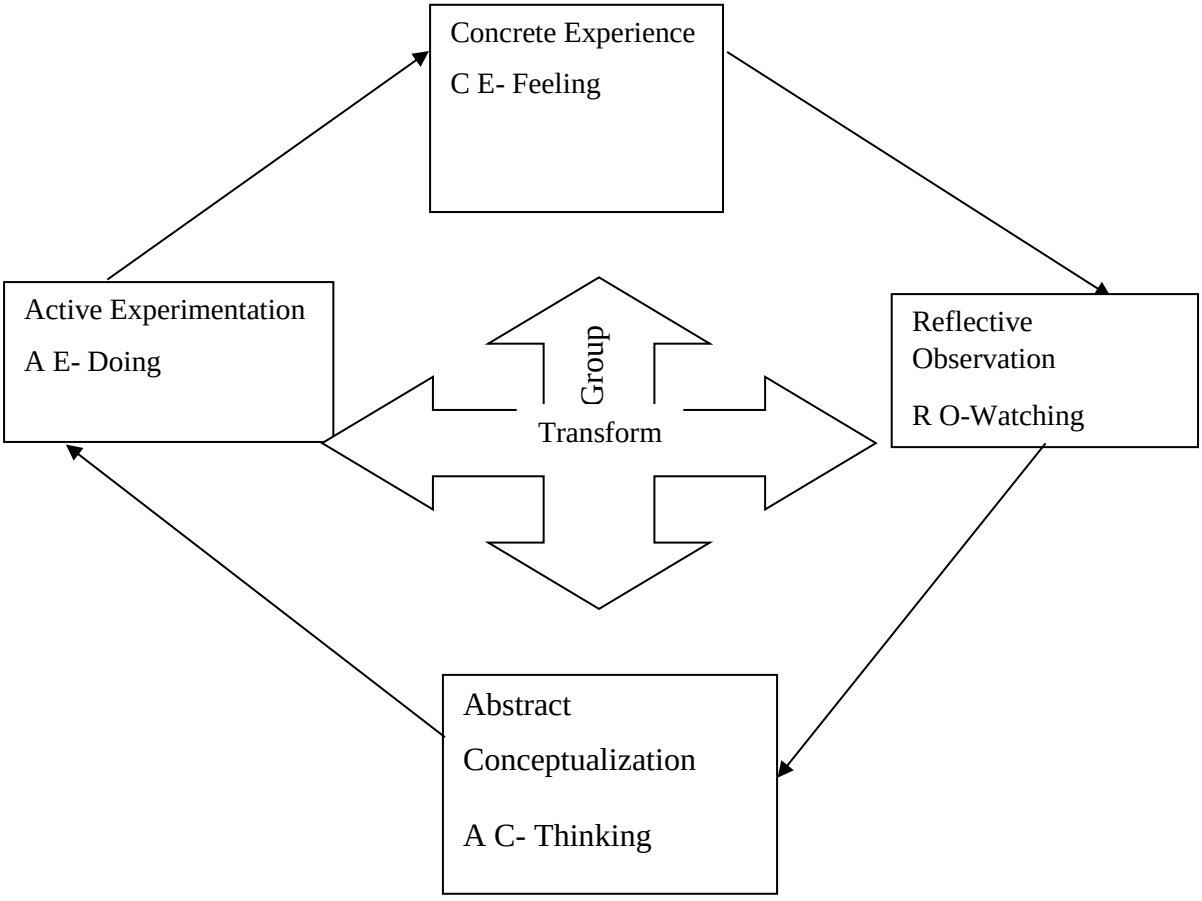

Figure 1.1: The four modes of Kolb's experiential learning cycle
(adopted from, Kolb & fry 1975)

The learner must go through the entire cycle for effective learning to transpire. The cycle explains the process of constructing knowledge that involves a creative tension among the four learning abilities (McCarthy, 2016). From the learning circle the learner should be able to construct competencies; knowledge, skills and attitude at a certain circle that pertains the career taken in the training.

Human beings are the active agencies that accumulate capital, exploit natural resources, build social, economic and political organizations and carry forward national development, (Almendarez, 2011).

1.13. Conceptual Framework

The study was based on the conceptual relationship between the independent variable and the dependent variable.

In this conceptual framework, it was conceptualized that quality training for employment opportunities was influenced by a combination of various variables, namely: Training infrastructure, Curriculum, Market Needs and Capacity of Trainers.

The focus was on Agricultural training which was the central independent variable. Attaining quality competencies needed for employment depends on training offered to the learners in TVET colleges.

The study sought to establish how training infrastructure, curriculum content and implementation, Market needs and capacity of trainers affected the achievement of quality agricultural training in TVET colleges in North-Region in Kenya. This conceptual model is represented by figure 1.2

The researcher manipulated the independent variables during the research in order to determine its effect on the dependent variable.

The extraneous variable could influence the independent and dependent variables by either the researcher not being aware of their existence or if aware she has no control over them (Flannely, Flannely & Jankowski, 2014).

Agricultural training was measured by capacity of trainers, curriculum, training infrastructure and market needs.

Capacity of trainers was measured by their current and up to date and continuous training. Curriculum was measured using the Number of reviews, Number of practical competencies, Variety of practical competencies, benchmarking and individual partnership. Training infrastructure was measured using farm, laboratory, ICT and library. Market needs was measured using Industry needs and competencies acquired.

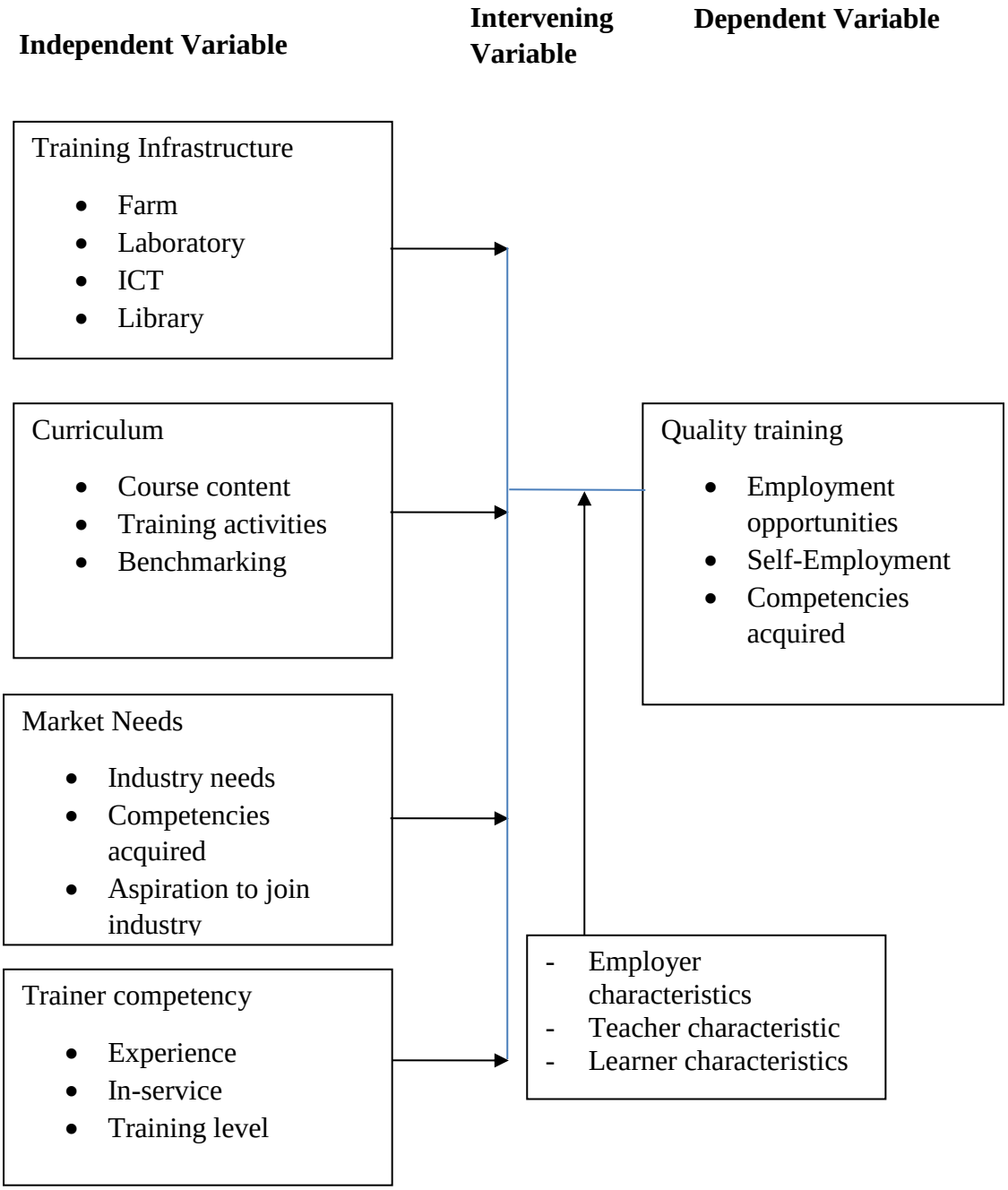

Figure 1.2:Conceptual Framework for ATVET Programme implementation

(Source: Author, 2020)

1.14 Research Variables

Independent Variables–The independent variables were training infrastructure, curriculum content and application, market needs and capacity of trainers. The variables were operationalized as follows:

Training infrastructure involved; Farm, Laboratory, ICT and Library. It was used to check whether it is adequate, modern and available so as to instill the right competencies to the learner.

Curriculum involved; course content, number of reviews, training activities, benchmarking and individual partnership. The role of the curriculum was to identify the competencies gained by the trainer in TVET college.

Market needs involved; industry needs, competencies acquired and aspiration to join industry. This was used to identify the competencies required by the industry.

Capacity of trainers involved; experience, training level current and up to date and in-service training. This was used to identify the competencies acquired by the trainers.

Dependent Variables–The dependent variable was quality training that was required by agricultural organizations measured by available employment opportunities, self-employment and learner competencies

Intervening variables-The intervening variable were; Employer characteristics, teacher characteristics and learner characteristics.

1.15 Operational Definition of Terms

1. Capacity of Trainers; the process by which individuals obtain, improve, and retain the competencies, knowledge, tools, equipment and other resources needed to do their job competently (Maruta, 2014). In this study capacity of

trainers was considered by frequency, quality and participation of trainers in relevant short courses after qualification.

2. Curriculum; refers to the knowledge and competencies students are expected to learn, which includes the learning standards or learning objectives they are expected to meet; the units and lessons that teachers teach; the assignments and projects given to students; the books, materials, videos, presentations and readings used in a course, and the test, assessments, and other methods used to evaluate student learning Shao-wen (2012). In this study, the number of curriculum reviews, number of practical competencies, variety of practical competencies, benchmarking and individual partnership were investigated.
3. Market needs; these are the desires of a target market Camilleri, (2017). In this study market needs refer to the relevant knowledge and competencies needed to practice Agriculture. These were competencies required by the industry and competencies acquired by the learners.
4. Middle Level Work force; these are jobs that require more than a high school certificate but less than a Bachelor's degree (Santhanam-Martin & Cowan 2018). Therefore, middle level work force are the graduates from TVET institutions. This study focused only on vocational training which aims at equipping learners with the pre-requisite competencies needed to perform a task.
5. Training Infrastructure; these are the teaching and learning resources that may affect learners' level of competencies in performing a task (Kane & Tomer 2016). In this study training infrastructure in TVET colleges will include teaching farm used for training in TVET colleges, ICT equipment; space in the ICT rooms, laboratory (in terms of availability, space, and equipment in the

laboratory), and library (in terms of, available reference material, library space, modern library) among others. These resources will be investigated since they play very important role in shaping learner competencies.

6. TVET; refers to aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical competencies, attitudes, understanding and knowledge relating to occupation various sectors of economic and social life (ILO, 2016), it differs with Vocational Technical Training (VTC) in that; VTC, takes a more hands on approach to teaching the competencies needed to do the job successfully. This study therefore, focused on TVET colleges to investigate the competencies gained by learners pursuing agricultural related courses.

1.16 Chapter Summary

This chapter has dealt with introduction to the study, Tvet training has been addressed in the background information, statement of the problem has given a prove that there are gaps in ATVET training, purpose of the study was to analyze the competencies in agricultural organizations in selected technical and vocational colleges in North Rift region, Kenya. Research objectives were used to guide the study, research hypotheses were used to test the relationship of the variables, justification of the study, significance of the study was used to highlight the beneficiaries of the results, assumptions underlying the study, the scope of the study, limitations of the study, theoretical framework based on the quality training of the ATVET trainers, conceptual framework showed how variables influences each other, research variables, operational definition of terms and organizations of the rest of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction to the chapter

This chapter presents a review of related literature to the research problem. The literature was reviewed under the following sub-headings: Teaching and Learning of Agriculture in Technical and Vocational Education and Training (TVET) Colleges, Quality of Agricultural training in TVET Colleges, TVET Curriculum on Agricultural training for production of middle-level work force, influence of training infrastructure on agricultural competencies and organizational needs on agricultural training in TVET colleges.

Quality of education in TVET Institutions has been accredited by the enactment of TVET Act, 2013 through registration of TVET institutions (Education Sector Report, 2016).

The field of Agriculture in TVET colleges in Kenya is lagging behind in terms of growth and technology (Heti, 2013)).

Teachers in TVET colleges have not been taken for in-service courses and workshops organized outside the college to help them benchmark with other colleges and create awareness on the need to take precedence of the written examination (Yewah, 2015).

Evidence to show consultation between TVET colleges and the stakeholders (public and private sectors) is not available. Hence, education in TVET colleges is highly supply-driven and training subjects are defined with little or no consultation on the needs of labour market (Milio, Garnizova & Shkreli 2014).

According to Education Sector Report (2016) the perception and recognition of TVET colleges by the community was negative and TVET education was viewed as the last resort.

The information obtained shed light on the analysis of competencies in agricultural organizations in selected Technical and Vocational Colleges in North Rift Region, Kenya. Summary was done to show the uniqueness of the study.

2.2 Teaching and Learning of Agriculture in TVET Colleges

Globally, Vocational and Technical Education has been known as `` Education for work.'' TVET is a key to economic prosperity in developed countries while in developing countries it is seen as a key to economic self-sufficiency (Zirkle, 2017).

Generally, the mandate of the TVET is to train learners for work the graduates from TVET should be able to use their competencies in the industry hence contribute to the country's' economy.

Agricultural Technical and Vocational Education and Training (ATVET) in many Sub-Saharan African countries are often based on colonial systems where few individuals benefit (Walker, & Hofstetter, 2016).

The people who had an opportunity to join colleges only benefited to be trained. Consensus to provide ATVET in different educational approaches such as formal, non-formal and informal has been put in place, to reach the diverse target groups and to make a wide skill set encompassing technical, soft, entrepreneurial and analytical competencies provision more innovative and up-to-date (FAO, 2014).

Training opportunities for young people in Sub-Saharan Africa is few, and the training offered does not match the needs of the private sector and local administration i.e. they focus much on production competencies than practical competencies.

Production competencies include; communication, self-reliance, thoroughness, sharing knowledge, experience, team work and collaboration while practical

competencies are those competencies required by employees to perform their duties efficiently, it includes interpersonal, physical, creative, hard or soft skill; it is the way one can be able to construct knowledge to perform a task.

According to Kirui & Kozicka, (2014). Agriculture is a graying sector in Africa given that the average age of farmers is about 60 years, despite the fact that 60 per cent of Africa's population is under 24 years of age,

This study expects the youth to be training in TVET colleges. Therefore, it is hoped that they will be able to practice the competencies gained during training in the industry.

According to Walker & Hofstetter (2016) ATVET plays a consistent if limited role in approaches to Agricultural development and economic growth over the past 50 years.

Jeremy R. J & Aluoch (2021). Revealed that trainees' competencies do not match the industry competencies; trainers were few, training rooms and facilities were inadequate in TVET institutions. Graduates were not adequately prepared for work.

This study looked at the specific competencies lacking in learners and the trainers. This study analyzes the competencies of the TVET trainers and those required by the labour market.

2.3 Quality of Agricultural Training in TVET Colleges

Globally, TVETs remains the ‘‘poor relative’’ of education. (ILO-UNESCO, 2018). Due to the existing issues of quality training and lack of help to raise the status of TVET personnel which are very crucial in order to attain quality training and the desired competencies needed in the industry.

TVETs programs in sub-Saharan Africa are affected by the following factors in attaining quality: lack of the required TVET facilities, poor funding, poor teaching

methods employed by trainers and poor assessment of TVET students' competency. (Shirley. C. A., Chijioke. P.O. & Chukwumaijem. B., 2015).

Therefore, adequate funding, training and retraining of TVET trainers, provision of required TVET facilities, public and private partnership would be the improvement strategies for quality TVET programs.

Apart from failure to meet students' specific needs from different demographic types, the service quality in TVET colleges is poor due to inadequate systems, or inadequate management or staff training, (Mason &Pillay, 2018).

Through quality training agriculture as a profession should be made attractive to youth. The trainers should be exposed to the right competencies which are required in the work place.

TVET system lacked quality labour impact evaluation for the final labour market outcomes of the graduates. Quality labour is a product of training, i.e. poor training leads to poor labour and this leads to poor products, (Yegon, 2016).

Unintended consequences of educational change and the national vision of competencies development for country's economic benefits exist (Zanele, 2018).

ATVET agricultural competencies and competencies along the food value chain should shift from traditional courses to those relating to marketing, distribution, processing, packaging and regulation, (Katherina & Sonja, 2016).

TVET institutions and industries in Kenya are still far below the expectations in their collaborations as compared to the developed countries. Therefore, there is need to analyze those competencies acquired by the learners and the competencies required by the labour market.

According to Philip K. (2014). Competency based assessment framework for students should be developed in TVET colleges since the assessment framework is more valid to skill development also ensures improvement in the low pass rates of the students.

This study will therefore analyze the competencies acquired by the learners and the competencies required by the labour market so as to identify if there are any gaps to be addressed.

2.4 TVET Curriculum on Agricultural Training for Production of Middle-level Workforce in Kenya

TVET curriculum has not embraced practical competencies, mastery of competencies in mentorship, collaborative learning, creativity, innovation, entrepreneurship, leadership, nurturing of talents and management.

The current Pedagogical approaches used by the trainers are not participatory, experiential and learner centered, KICD. (2016). Practical competencies are very important to TVET graduate since most of their work is hands-on and will require experienced personnel.

This study will analyze the capacity of TVET trainers, training activities and their experience. The TVET trainers need to have the required competencies on the subjects, they need to know how to teach those competencies and how to construct a curriculum.

There is a need to deliver content in modular form to cater for people with different competencies level, (Walker & Hofstetter, 2016). The trainees should be able to acquire the right competencies during training. The modules are based on the areas of specialization.

According to (Ngure, 2013); TVET colleges experience the following challenges: a rigid and unresponsive curriculum; inadequate methods of training and development needs assessment; lack of stakeholder involvement in curriculum design; inadequate numbers of specialized staff at the KICD; poor training methods; obsolete tools and insufficient equipment; political interference and multiple providers.

Industry Training Needs Assessment Report (2017) indicated that agent training is needed in technical competencies, life competencies and safety occupational health.

TVET curriculum requires trainers with industry experience and competences. This places blame squarely on the government since she was directly responsible in reforming the current recruitment and employment of trainers in TVET institutions, (Ministry of Education Sessional Paper No. 1 of 2019).

For the country to attain economic prosperity and industrial development TVET graduates are supposed to acquire requisite scientific and technological education and technical competencies through Competency Based Training (Kwame & Ansah, 2013). Quality training for the right competencies should offered in TVET colleges.

Mmapake, Mdumo & Thokozani (2021) their findings revealed that in order to align with the goals of agriculture as a technical subject, the curriculum should be designed as learner centered approach. This design will allow introduction of competencies such as research and technology.

The study of Olowoyo, Ramaila & Mavutu (2021) revealed that there is a critical need for coherent alignment of the curriculum content and the market needs through periodic reviews; this reviews makes learning to be up to date and adjust to new developments and technologies in the world.

Study of Milio, Garnivoza & Shkreli (2014) mentioned that there is need to change the policy from supply-driven to demand-driven through understanding the needs of

the private sector and involving the private sector in designing the curricula so that there is more balance between theory and practice. Curricula content and learning outcomes should be closer to the labour market needs.

This study analyzed TVET curriculum in terms of curriculum number of review, curriculum benchmarking and curriculum individual partnership with the private sector. Having noted that TVET colleges experience several challenges as outlined above.

2.5 Influence of Training infrastructure on Agriculture Competencies

Globally, TVETs are confronted by so many inadequate and insufficient facilities, especially institutional workshops and laboratories. (TVET Journal, 2021).

Infrastructure should be current and up to date. The practical activities in the institution should be the direct implication to what it is in the industry. Adequacy is also paramount so as each learner should get a chance to interact with the training infrastructures which includes farm tools and equipment, laboratory facilities, library and the institution farm.

Curriculum implementation in TVET colleges is affected by poor funding, obsolete facilities and inadequacy of instructional materials, (Shirley, 2014).

Lack of required TVET facilities, poor funding of TVET programs, Poor teaching methods employed by teachers and poor assessment of TVET student's competency are among the challenges of attaining quality in TVET programs, (Shirley, Chijioke & Chukwumaijem, 2015).

According to (Lanto, 2012)., Inadequate infrastructure can be a significant constraint to growth and productivity; infrastructure like other public investments, raises

agricultural productivity, which in turn induces growth in the rural areas, bringing about higher agricultural wages and improved opportunities for non-farm labor.

Policies to ensure effective management and operations of TVET institutions should be implemented by decentralizing management structures of public TVET institutions in order to give college managers more discretion in allocation of resources. Also enhanced and an equitable funding should be done so as to ensure rural based institutions are at par with urban based TVETs (Kinara, 2014).

To revitalize TVET institutions to be attractive to all the students; adequate infrastructure, payment of allowances and special incentives could be given to deserving students (Adamu & Baru, 2016).

This study analyzed training infrastructure; teaching farm, ICT, Laboratory and Library on how they influenced the competencies of learners pursuing Agriculture in TVET colleges.

2.6 Organizational Needs on Agricultural Training in TVET Colleges

Globally, employers in agricultural organizations do not only depend on whether one is able to fulfill the paper requirements of specific jobs but they also look at how one practically stands relative to others within a group of job seekers (Ugwuoke & Onah, 2015).

The graduates should be able to perform the assigned duties. They should be able to operate machines, handle and utilize farm tools and equipment among others. They should be able to demonstrate the practical competencies acquired during training.

Agricultural organizations require TVET institutions to realize their role as a service provider for the economy in general, and for flourishing businesses in the country (Millo, Garnizova & Shkreli, 2014).

The TVET sector in most Sub- Saharan African countries is characterized by a significant lack of practical relevance and responsiveness to labour market needs, insufficient infrastructure and equipment and extremely low throughputs (Friedhelm, Gesine & Bernd, 2017).

Therefore, ATVET programs must be demand-driven and context-specific, and investments at the institutional level must promote flexibility and innovative programming in order to maximize the impacts of agricultural vocational training (Jones, 2012).

The industry and the TVET college should work together to create opportunities for comprehensive internship programme for learners. This will enhance the activities learned in class.

The findings of (Kipyegon & Jonah R., 2015). Revealed that there is a mismatch between the training acquired and workplace requirements.

This study therefore, analyzed market needs in terms of industry needs and competencies acquired by the TVET graduates.

2.7 Summary of related literature review

From the reviewed literature, it is evident that several aspects of TVET had been addressed by various scholars, government organizations, institutions and other stakeholders.

The reviewed literature revealed that the content requires inputs and the learners require industrial experience.

Also teaching and learning should be re-engineered; curriculum and infrastructure need to be relevant and lastly market needs of the trainers must be identified.

Previous studies established issues such as the percentage of TVET graduates employed and unemployed, the existence of linkages between TVET and industries need to be addressed.

In that regard, TVET plays a major role in the economy especially in the development and production of middle level manpower required for the economy at large.

This study therefore, analyzed the competencies in agricultural organizations in selected Technical and Vocational Colleges in North Rift Region, Kenya in order to address the competencies lacking in ATVET graduates.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter contains the methodology for data gathering and analysis that is used in the study. It described the strategies used in collection and analyzing data. The section was organized along the following subheadings: research design, the study area, target population, sample size, sampling design, data collection instruments: students' self-assessment questionnaires, Human resource self-assessment questionnaire, Focus Group Discussions for lecturers, Key Informants for principals and Observation Schedule. Other topical areas included Pilot study for reliability and validity of the instruments, reliability of the instrument, validity of the instrument, data analysis and interpretation, and ethical considerations.

3.2 Study Area

The study was undertaken in the North Rift Region, Kenya. The region was created after a split in the larger former Rift Valley province which currently houses; North Rift, South and Central Rift regions. North Rift region is composed of Nakuru, Baringo, Uasin-Gishu and Trans-Nzoia Counties. The North Rift is the region that carries counties that are considered grain basket for the country and therefore efforts to train agricultural personnel in the colleges in the area is a matter of concern. The area has several agricultural based concerns that will readily consume the ATVET graduates and whose training can be promoted through planned activities with the farms, industries and related agricultural concerns in the area. The major crops planted in the North Rift region, Kenya include maize and orphan crops (sorghum and finger millet). The communities living in this area are Kalenjin, kikuyu, and luhya.

3.3 Research Design

This research adopted descriptive research design. The research design aimed to accurately and systematically describe a population, situation or phenomenon (McCombes, 2019). Descriptive research design characterizes the world or a phenomenon by identifying patterns in data to answer questions about who, what, where, when, and to what extent (Loeb *et al*., 2017).To improve teaching and learning in education system, in day- to- day and long-term efforts, description plays an important role in identifying both needs and solutions (Nassaji, 2015).The major reason for adopting descriptive research design was because it gave the information about the current status of the research study and describe ‘`what exists’’ with respect to variables in the study. This design was suitable for this study since the researcher described how variables influence quality training in TVET production of middle level workforce. It allowed the researcher to study and describe the distribution of one or more variables, without regard to any causal or other hypotheses. (Aggarwal & Ranganathan, 2019).

3.4 Target Population

The target population is the entire group of individuals to which the researcher is interested in generalizing the conclusions (Asiamah, Mensah & Oteng-Abayie. 2017). Therefore, the target population for the study was 1,010 this included 24 focused group discussion (FGDs) who are the trained technical teaching staff of the selected TVET colleges, 6 key informants(KI) who are the principals of the selected TVET colleges, 960 students of the selected TVET colleges and 20 employers who are the human resource personnel of the agricultural organizations in North rift region.

3.5 Sample Size and Sampling Procedure

The population comprised of student trainees in TVET colleges in the North Rift Region pursuing agriculture related courses at Diploma level in government institutions. Sample respondents for study was purposively drawn from 5 different institutions, one from each County. The institution to be sampled were randomly selected from the list of 10 TVET institutions. Out of the targeted 5 TVET institutions a proportionate number of 40% of the trainees were identified using a table of random numbers, a sample size of 384 trainees from the total population was used in the survey.

Other groups to be interviewed included 10 focused group discussion (FGDs) who are the trained technical teaching staff of the selected TVET colleges, 6 key informants(KI) who are the principals of the selected TVET colleges and 14 employers who are the human resource personnel of the agricultural organizations in North rift region.

Sample size is a group of respondents that were selected from the general population and was considered a representative of the real population for this specific study (Zamboni. 2018). Adequate sample size is a significant feature when drawing conclusions about a population (Taherdoost. 2017). For sample size calculations, formulas should be used with caution since they are sensitive to errors, and small differences in selected parameters can lead to large differences in the sample (Noordzij *et al*., 2010).

Letter ‘n’ which represent the sample population was selected from letter ‘N’ which represents the target population. Table 3.1 gives a summary of the sample size according to Vishwakarma G. (2017).

Table 3. 1:Sample Size

Profession	N	n	Percentage
Key Informants	10	6	60
FGD	24	10	42
Trainees	960	384	40
Employer	20	14	70
Total	1,014	414	

3.6 Research Instruments

To meet the objectives of the study the researcher used questionnaires, FGDs, KI and observation schedule to collect data.

3.6.1 Questionnaires and interview schedules

Two questionnaires were developed to collect data from sampled student trainees. The first questionnaire used to collect data on concepts of students acquired competencies was used for the study. The questionnaire for students comprised three sections namely; background information (which gave the demographic information about the student and section two gave the technical competencies and attitudes in Agriculture training while the third section measured attitudes and perceptions of the students towards their training (see appendix V). An interview schedule was administered to the employer (Human resource personnel) had background section for general information on the employer and section two comprised the current required competencies of the employee in agricultural organizations while the third section measured attitudes and perceptions of the human resource personnel towards the training (see appendix VI). Questionnaires and interview schedules were used to

measure the competencies acquired by the learners and those required by the employer. (Abawi, 2017).

3.6.2 Observation schedule

Observation schedule was used to collect data on the school training infrastructure; training farm, the laboratory, ICT and the library for TVET curriculum; number of review, benchmarking and individual partnership. (See Appendix VII). The researcher developed the instruments and submitted to an expert in TVET from University of Eldoret to check for any ambiguity prior to administration.

3.6.3 Focus Group Discussions (FGD)

Focus group discussions was used to collect data from the lecturers teaching Agriculture related courses who were purposively selected (See Appendix VIII). Focus Group Discussion(s) (FGD) aimed to obtain data from a purposely selected group rather than from a statistically representative sample of a broader population. (Nyumba, Wilson, Derrick & Mukherjee. 2018). The group selected by the researcher were experts in the field of study with experience in teaching and training at TVET level and they provided an in-depth understanding of social issues related to Agricultural training in TVET colleges.

3.6.4 Key Informants (KI)

Key informant schedules were used to collect data from the principals of the selected TVET colleges. (See Appendix IX). Principals have firsthand knowledge about the TVET institutions and in particular Agricultural related courses. These principals, with their particular knowledge and understanding provided insight on the nature of

problems and gave recommendations for solutions on Agricultural related courses. This method of data collection played an important role in streamlining any academic and community related researches (Mumtaz., David, &Ching 2014).

3.7 Data collection procedures

Questionnaires were distributed to the sampled students and the teaching staff in their respective TVET colleges. Sampled Human resource personnel were issued with the questionnaires in their respective offices. The researcher guided the respondents and elaborated on questions to give clear understanding to the respondents as they filled the research tools. Thereafter thanked the participants and collected the tools.

3.8 Validity and reliability of the Instrument

The main reason the researcher used the questionnaire as data collecting instrument was to obtain relevant information in most reliable and valid manner. According to Taherdoost (2016), the accuracy and consistency of the questionnaire forms a very important aspect of research validity and reliability.

3.8.1 Validity of the Instrument

Validity refers to how well an instrument measures the right elements that were needed to be measured in the study in an accurate manner Haradhan (2017). Content validity was used to test the internal validity to ensure that the investigations reached the correct conclusion (Salkind 2010). Content validity; deals with the extent to which the items on a test are fairly representative of the entire domain the test seeks to measure was also used. The researcher sought expert advice from the peers in the school of education before the instruments were administered in order to minimize

instrument error occurring from ambiguity in research instrument during the evaluation of the instrument. Through expert judgment, valid research instrument was developed.

3.8.2 Reliability of the Instrument

The reliability of the instrument was measured using internal consistency reliability which was measured by Cronbach Alpha or alpha coefficient reliability. It is the degree to which research instrument produces stable and consistent results (Ghazali, 2016). Split-half reliability was used to calculate the correlation between the two sets of responses. The items were considered reliable since they yielded a reliability coefficient of 0.7, which was the value respectable and desirable (Rosaroso, 2015).

3.8.3 Pilot Study

To check for the validity and reliability, the instruments was pretested through pilot study which was carried out on a sample from a neighbor private technical training institution. This pretest according to Anesthesiol, (2017) helped to eliminate the errors and improve the quality and efficiency of the main study. It also increased the researchers' experience with the study methods and provides estimates for sample size calculations.

3.9 Data Analysis

Data analysis is the process of cleaning, transforming, and modeling data to get information which was used to make decision of the research study (Peersman, 2014). The study took both quantitative and qualitative analysis. The questionnaires were pre-coded according to the themes or constructs. Pre-coding facilitated data entry and

verification after the data had been collected and collated. The data was then sorted and analyzed using the statistical package for social science (SPSS version 20). The results were presented inform of pie charts, bar graphs, tables, frequencies and percentages

Inferential statistics such as the cross tabulation and use of Chi-square were adopted in order to test the hypothesis stated on the study. Chi-square was used for the test of significance of association and to reflect the strength of the relationship: the greater the chi-square statistic, the stronger the significance (De-Vaus, 2002). On the other hand, qualitative data from the key informants' and FGDs notes were reviewed through content analysis based on particular themes to ensure that relevant information was recorded. The field notes that were collected using unstructured interviews from the key informants and the FGDs were reorganized schematically using word tables. Qualitative data from the FGDs and key informants were used to triangulate the quantitative components in the study where necessary.

3.10 Ethical Considerations

In every study, researchers were required to report on the ethical considerations of their research. Research participants should be given utmost respect for their dignities (Colleny, 2014). The researcher sought full consent of the participants prior to the study. The respondents were not forced to participate in the research study. Identification of the respondents by name was optional i.e. respect for anonymity and confidentiality. Confidentiality on the data collected was paramount. The authors of the published documents were cited in the correct manner. Ethical consideration was applied throughout the research study and after the research study to keep the balance

between the potential risks of research and the likely benefits of the research. (Arifin, 2018). The researcher also kept respect for privacy of the respondents.

3.11 Chapter Summary

Chapter three describes the research methodology used in analyzing competencies in agricultural organizations in selected technical and vocational colleges in North Rift Region, Kenya.

The chapter gives details of the research setting that is the study area, research design in this case descriptive research design was used, the sample size selected from the target population, the research instrument, data collection procedure, data analysis and the ethical issues and considerations.

This chapter is very critical since it generated results which is used to interpreted and generalize the results in the population.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION, PRESENTATION AND DISCUSSIONS OF THE FINDINGS

4.1 Introduction

This chapter presents data analysis, interpretation, presentation and discussion of the findings based on the research objectives and hypothesis of the study. Data collected was presented in form of pie charts, tables and charts. The data was analyzed descriptively: frequencies and percentages as well as inferentially: chi square was used to test the relationship of the hypothesis at 95% confidence level. Findings of the study were organized according to research objectives. Finally, findings of the study were interpreted and discussed in view of the literature related to effect on an Analysis of Competencies in Agricultural organizations in Selected Technical and Vocational Colleges in the North Rift Region, Kenya.

4.2 Demographic characteristics of the Respondents

This section sought to establish background information of the respondents especially those that have a great significance on the interpretation of the objectives of the study. The main demographic characteristics of the respondents presented include: age for students, gender for both key informants and students and work experience for human resource.

4.2.1 Research respondents' composition

The study sample comprised of 414 participants among them 384 TVET students, one FGD comprised of 10 lecturers in TVET, 14 Human Resource officers, 6 Key Informants who were TVET principals.

4.2.2 Gender distribution of participants

Table 4. 1:Gender distribution of participants

Respondents Total	Male		Female		
	Frequency	Percentage	Frequency	Percentage	
Students	181	55.9	143	44.1	384
Key Informants	2	50.0	2	50.0	4

The findings in Table 4.1 showed that 50% of key informants were male and 50% were female. This results indicated gender parity. Among the students who participated in the study, 55.9% were male and 44.1% were female. Students results indicated that there were more male than female training in agriculture.

4.2.3 Age distribution of students

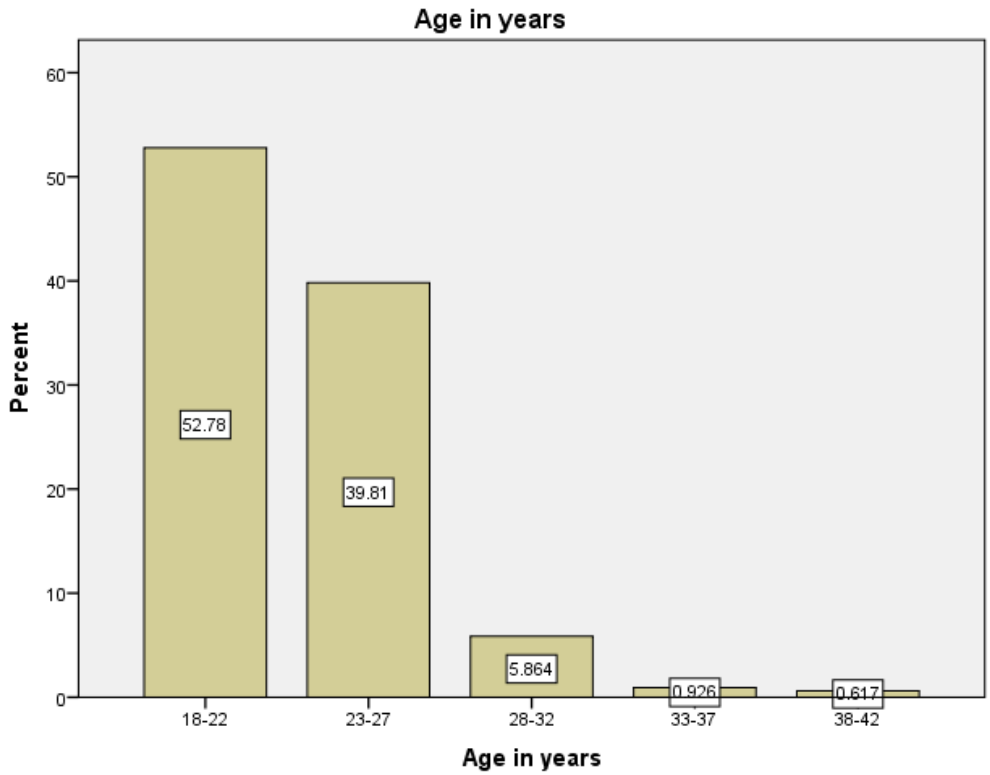

Figure 4. 1:Age distribution for students

As shown in figure 4.1, 52.8% of students were aged between 18-22 years, 39.8% between 23-27 years, 5.9% between 28-32 years, 0.9% between 33-37 years and 0.6% aged 38-42 years. The findings indicated that large proportion of students were aged between 18-22 years joined TVET colleges. According to Karuiki (2012) TVET training had influence on youth employment and that could be the main reason why youth sought for training in TVET colleges prior to employment.

The aim of TVET colleges was to prepare youths to easily enter labour market Milio, Garnizova & Shkreli, (2014). Student enrollment in TVET Colleges in Kenya in the recent past has been increasing steadily. According to the Kenya News Agency (2019), TVET have experienced an increase in student enrollment from 98,000 in 2007 to 181,000 in 2019. The researcher sought to establish age distribution for

students. The institutions have been expanded in terms of manpower and infrastructure in order to meet the demand (Heti, 2013).

4.2.4 Work experience for human resource

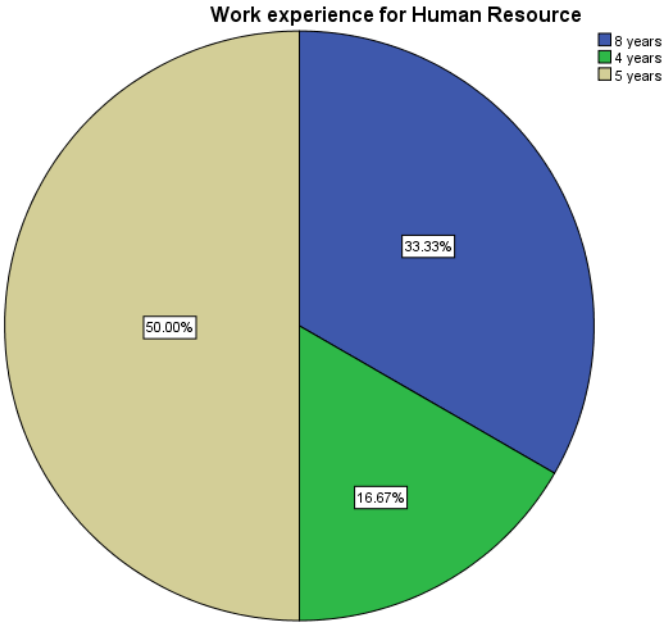

Figure 4. 2:Work experience for Human Resource officers

The findings in figure 4.2 showed that majority of the human resources 50% have worked for five (5) years, 33.3% have worked for eight (8) years while a few 16.7% have worked for four (4) years. The information was very significant in that majority of the human resources officers can be able to tell the competencies lacking in TVET graduates.

The researcher sought to determine the number of years the human resource have worked in the various organizations. Figure 4.2 summarizes the findings of the study. According to Indeed Editorial Team, (2021), The hierarchy of HR jobs titles are categorized from the lower or entry-level HR jobs which is the entry grade for the graduates; their work is mainly administrative and they report to the HR manager,

Mid-level HR jobs is 2-3 years of HR work experience; their work is mainly to oversee a team of lower-level employees or they might specialize in certain areas such as training and development, Senor-level HR jobs is 5-10 years of HR work experience; their work is to executives typically report to the company's CEO; they oversee all HR task, including recruiting, training, payroll, benefits and employee relations, Specialized HR positions are found in large companies, this was not found in TVET institutions.

4.3 To assess the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges

The researcher sought to find out the capacity of trainers whether it was current and up to date and if they were being offered continuous training for capacity building. The results were analyzed and presented using tables and bar charts.

4.3.1 Experience of the trainers in the industry

Figure 4.3: Experience of the trainers in the industry

The researcher sought to determine the experience required in agricultural colleges by comparing the experience of the trainers in the industry. 25% of the trainers had adequate experience in the industry, 50% of the trainers had inadequate experience in the industry and 25% were not adequate in experience in the industry. These findings concurred with the findings of Wisshak & Hochholdinger (2019). Their findings indicated that subject-matter knowledge and communication techniques are considered vital for trainers, alongside content specific instructional knowledge such as specific training methods. Trainers are expected to provide clarity and structure, build relationship with trainees and create a constructive learning environment. The findings therefore revealed that experience of the trainers was very paramount in

ATVET training institution so as to pass the competences to the learners. According to Huang (2019), his findings revealed that well-designed and prepared training activities in a training program will result in job training satisfaction, which influences employees work-related attitudes such as job satisfaction. That would further affect their intentions of turnover and job performance.

4.3.2 Competencies required in training ATVET

Table 4. 2:Competencies required in training ATVET

	Very adequate		Adequate		Very Inadequate		Not adequate	
Competencies	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Hours for competency Acquisition	**153**	**47.2**	**147**	**45.4**	**11**	**3.4**	**13**	**4.0**
Time allocated For practical Lessons	**123**	**38.0**	**121**	**37.3**	**42**	**13.0**	**37**	**11.4**
Qualified Trainers	**162**	**50.0**	**141**	**43.5**	**10**	**3.1**	**11**	**3.4**
Time allocated for course coverage	**124**	**38.3**	**148**	**45.7**	**25**	**7.7**	**27**	**8.3**

The researcher sought to determine competencies on course syllabus coverage: Learning hours for competency acquisition and development, time allocated for practical lessons, qualified trainers and time allocated for coverage of the course. Table 4.2 shows that when student respondents were asked their expectations towards requirement in training ATVET colleges, 50.0% of the respondents mentioned that

trainers were very adequately qualified, 43.5% of the respondents said trainers were adequately qualified, 3.1% of the respondents highlighted that trainers were very inadequately qualified and 3.4% of the respondents commented that trainers were not adequately qualified.

The respondents' point of view revealed that trainers were moderately qualified. This concurred with the study by Wilson, (2021), where he found out that most trainers were unable to use the new equipment that had been acquired by TVETs thus re-skilling exercise was inevitable in order to improve teaching standards and quality training in TVET colleges.

On learning hours for competency development 47.2% of the respondents said learning hours for competency acquisition and development were very adequate, 45.4% of the respondents mentioned that learning hours for competency acquisition and development was adequate, 3.4% of the respondents noted that learning hours for competency acquisition and development was very inadequate and 4.0% of the respondents highlighted that learning hours for competency acquisition and development was not adequate. The study of Ogunniyi & Nwalo, (2016). Recommended that more time should be allocated to practical courses so as to encourage the trainers to develop interest in practical. It was clear that learning hours for competency acquisition and development in this study was below 50.0% in adequacy hence could affect competencies acquired by the learners.

On the time allocated for coverage of the course 38.3% of the respondents said the time allocated for coverage of the course was very adequate, 45.7% of the respondents admitted that time allocated for coverage of the course was adequate, 7.7% of the respondents said time allocated for coverage of the course was very inadequate and 8.3% of the respondents admitted that time allocated for coverage of

the course was not adequate. The study of Said, Friesen & Al-Ezzah (2014). Recommended that more time should be allocated on practical activities and more emphasis to be put on assessment of practical activities. Generally, the expectation of the respondents towards requirements in training ATVET courses was 50.0% or below 50.0% which is worrying in competencies which should be acquired by the trainees.

4.3.3 Influence of teaching and learning of agricultural related courses on competencies of learners

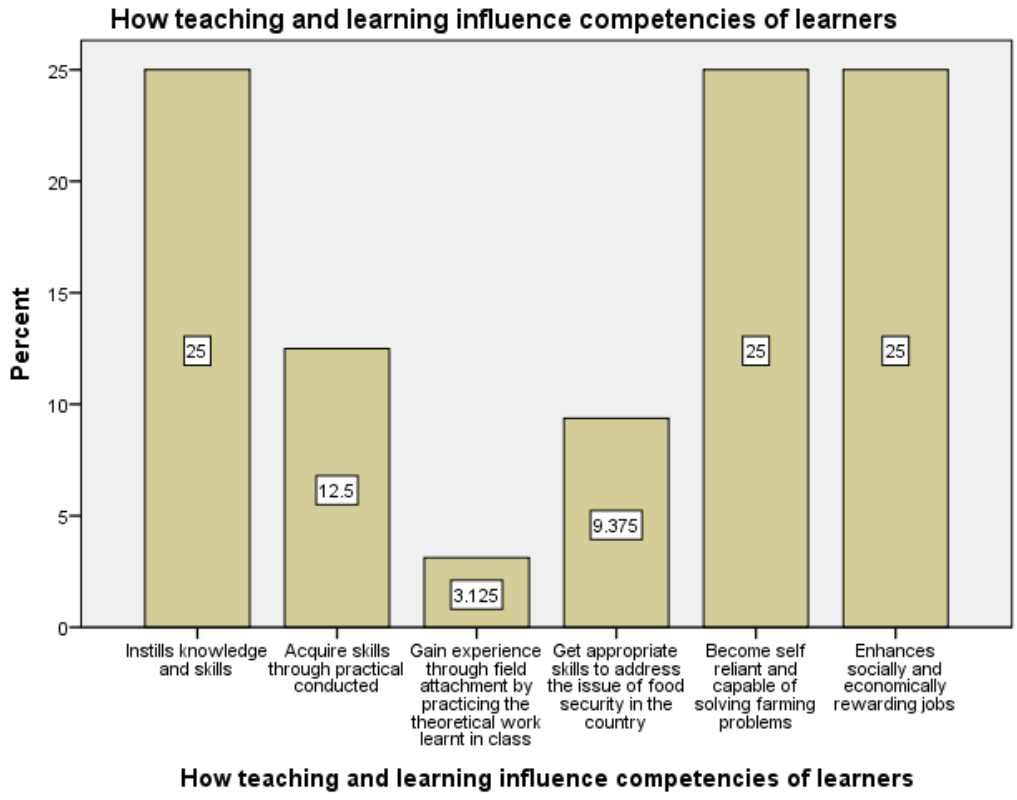

Figure 4. 4:How teaching and learning influence competencies of learners

The study sought to understand the influence of teaching and learning agricultural related courses in TVET colleges. Teaching and learning agriculture in TVET

colleges influenced the competencies of the learners positively. According to the findings of the trainers in TVET colleges, 25% of the trainers' respondents said teaching and learning of agriculture instill competencies to the learners, 25% of the respondents said teaching and learning agriculture make the learners self-reliant and capable of solving farming problems, 25% of the respondents said it enhances socially and economically rewarding jobs, 12.5% of the respondents said it makes the learners acquire competencies through practical conducted, 9.4% of the respondents said teaching and learning agriculture provides appropriate skill to address the issue of food security in the country and 3.1% of the respondents said teaching and learning agriculture helps the trainees to gain experience through field attachment by practicing the theoretical work learnt in class. This study is in agreement with the study of Affero, Hassan, Bakar & Hussin (2018). There outcome revealed that the competencies developed in TVET learners produced graduates who are capable to meet the requirement of industries and professional bodies. The study of Okoye & Isaac (2015) concluded that TVET mode of delivery was to provide the kind of workers needed in the industry and also to prepare individuals for self-employment.

4.3.4 How to improve agriculture training in ATVET colleges to ensure learners are getting the right competencies

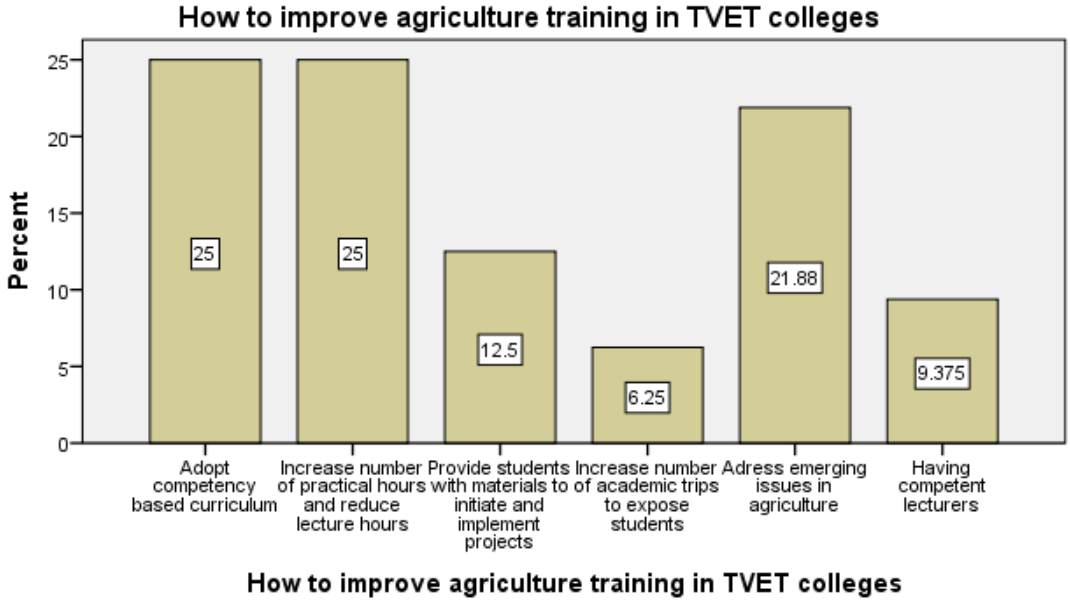

Figure 4.5:How to improve agriculture training in TVET colleges

The study sought how to improve agriculture training in ATVET colleges, 25% of the trainers' said that adoption of competency based curriculum would improve agriculture training, 25% said increasing number of practical hours and reducing lecture hours would improve agriculture training, 21.88% of the trainers said addressing emerging issues in agriculture would improve agriculture training, 12.5% of the trainers said providing students with materials to initiate and implement projects would improve agriculture, 9.38% of the trainers said competent lecturers would improve agriculture training, 6.25% said increasing number of academic trips to expose students would improve agriculture training in TVET colleges. According to Adelabu (2021). His study revealed that trainers should be upgraded especially on hands-on practical activities in order to prepare the students to meet the companies' requirements. Ismail, Razali, Aabu & Habriza (2018), acknowledges that for quality

training to be attained, trainers should develop personal traits and professionalism, teaching and learning and training and technical and innovation were the main components for quality training to be attained. The results revealed that for quality competencies to be attained by the trainers, quality competencies of the trainers were very critical.

4.3.5 Competencies lacked by trainers teaching agriculture in ATVET colleges

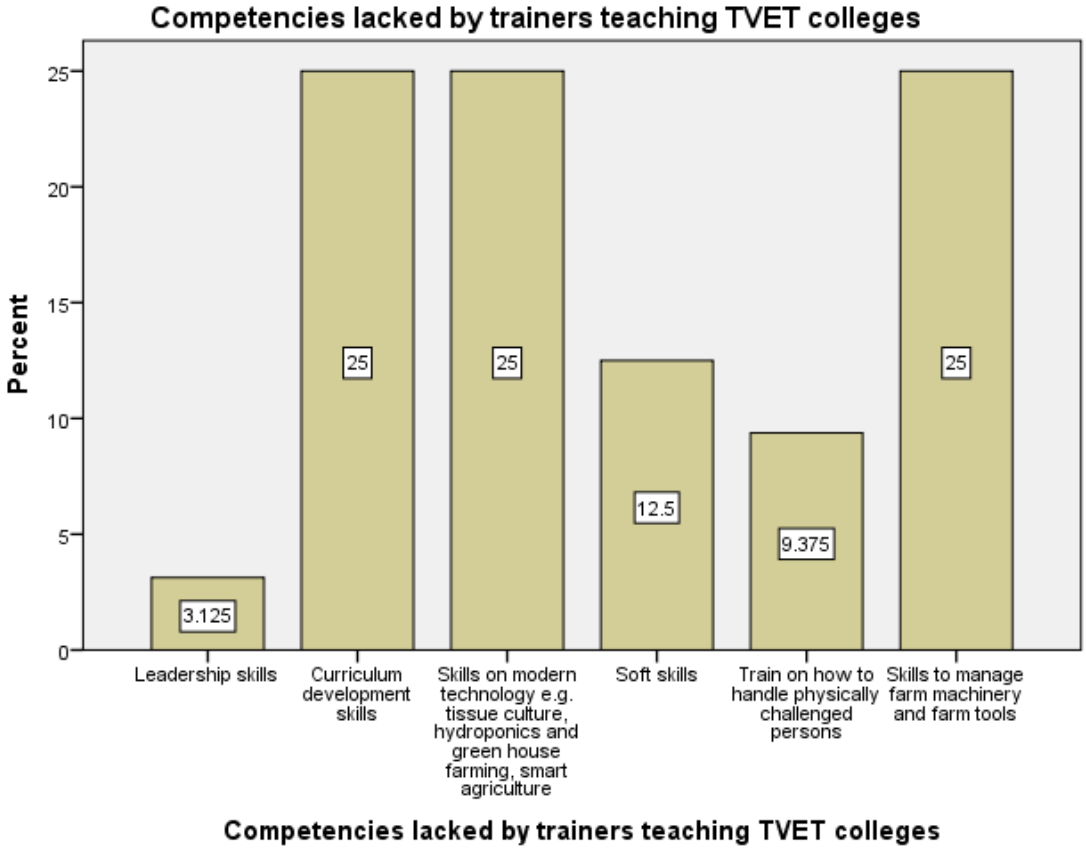

Figure 4. 6:Competencies lacked by trainers teaching TVET colleges

This study sought to find out whether there were competencies lacked by TVET trainers. The trainers said they lacked the following competencies in teaching ATVET colleges: 25% of the trainers said they lack competency on curriculum development competency,25% said they lack competency on modern technology e.g. Tissue

culture, hydroponics, Green house farming and smart agriculture, 25% said they lack competency to handle farm machinery and farm tools, 12.5% said they lack soft skills, 9.38% said they lack competencies to handle physically challenged persons and 3.13% said they lack leadership competencies. Similar research conducted by other studies concurred with this study. Research conducted by Abdurrahman (2021), found out that trainers were facing the following challenges in attaining capacity building in TVET programs: Inadequate funding, poor research attitude, poor training of TVET instructors, poor supervision of teachers, inadequate facilities and poor assessment of TVET students' competency. The study of Kraak & Parterson (2016) found out that to secure TVET programs, adequate quality was vital; the quality in TVET colleges depends so much on competency and commitment of the TVET trainers.

Table 4. 3:Relationship between Qualified Trainers and Quality Teaching

Qualified Trainers	**Value**	**df**	**Approx. Sig**
Learning hours for competency Acquisition and development	85.776	9	.000
Time allocated for practical lessons	118.220	12	.000
Time allocated for coverage of the Course	46.683	9	.000
Moral integrity	34.886	12	.000
Preparedness in terms of competencies Acquired during training	56.262	9	.000
Expectations of the students to job market	56.039	9	.000

The table above shows the inferential statistics of the findings. Chi square was used to test the relationship of the hypothesis at 95% confidence level. H_{01} There is no significance difference on the extent to which capacity of trainers influence the

quality of teaching of Agriculture in selected TVET colleges in the North-Rift region yielded the results on the table above.

On the basis of chi square tests, it was clear that α=0.000 which is a value respected to be very significant, had a statistically significant relationship between the capacity of the trainers and the quality of training of agriculture in TVET colleges. The H_{01} There is no significance difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges was therefore rejected. Therefore, the researcher suggested that for quality training to be achieved there was need to retraining TVET trainers on the competencies they lacked since those competencies could not be passed to the trainees.

4.4 To examine the relevance of the current curriculum to job market in selected TVET colleges in the North Rift

The study sought to find out whether the curriculum used in TVET colleges influenced production of quality middle level work force. Data used to analyze this objective was obtained from institution records on number of review carried out on the curriculum, practical competencies in the curriculum, variety of practical competencies in the curriculum, benchmarking of the curriculum with the other institutions and finally individual partnership in curriculum development. The results were analyzed and presented using tables and bar charts.

Table 4. 4:Curriculum number of review, benchmarking and individual partnership

Curriculum	Fairly adequate		Not adequate	
	F	%	F	%
Number of review	**2**	**66.7**	**1**	**33.3**
Benchmarking	**1**	**33.3**	**2**	**66.7**
Individual partnership			**3**	**100.0**

This study focused on curriculum number of review, benchmarking and individual partnership so as to find out whether ATVET colleges encaged in any collaboration and to which extent do they collaborate. The findings showed that 66.7% of the trainers' respondent said curriculum number of review was fairly adequate, 33.3% said curriculum number of review was not adequate. 33.3% of the respondents said benchmarking was fairly adequate while 66.7% said it was not adequate. According to Kipkosgei (2018). Partnership of TVET colleges with the relevant stakeholders had challenges, however; TVET partnership had considerable contribution to curriculum development, practical training, teacher in service training and equity in access to training. 100.0% of the respondents said individual partnership on the curriculum was not done. From those findings, it was clear that curriculum was not very adequate to produce quality middle level workforce. This study concurred with the study of Clara (2019). Her study found out that the curriculum content had positive influence on TVET trainees. However, she recommended that there was need for TVET institutions to restructure their programs to fit the needs of the market especially the dynamics in the industry through collaborations with the relevant stakeholders.

4.4.1 Hours of practical lessons allocated per week for competency acquisition and development

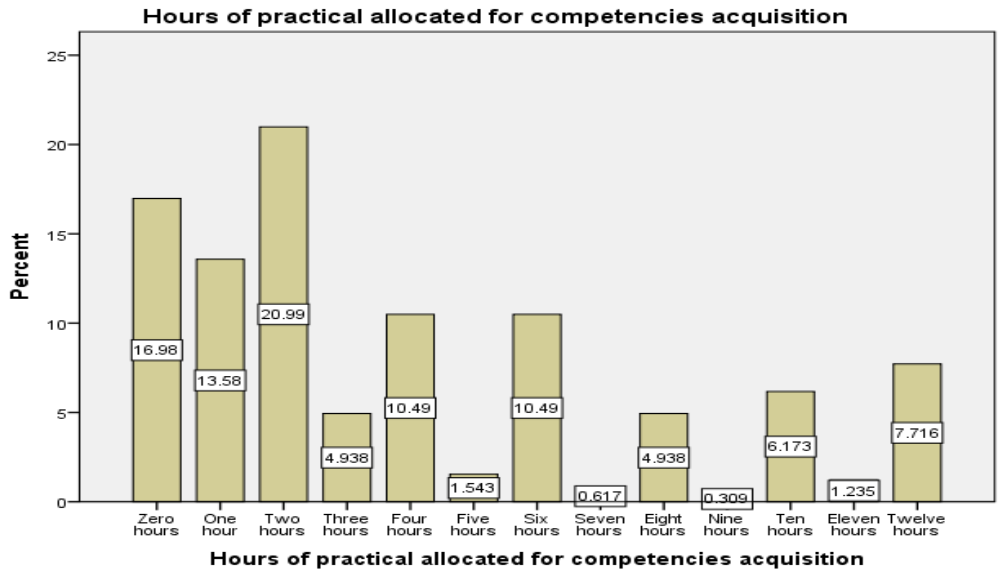

Figure 4. 7:Hours of practical allocated for competency acquisition

The researcher sought to find out the hours allocated to the practical lessons in their instititions. Findings in figure 4.3 revealed that majority, 21.0% of the learners said that they had two hours for practical per week. The least number of the respondents 0.3% said they had nine hours of practical lesson per week. Surprisingly 17.0% of the respondents said they did not have lessons allocated for practical. It is clear that agriculture related courses which is a technical subject which require more time on practical activities was not allocated enough time for practical activities. This study is in agreement with the study of Said, Friesen & Al-Ezzah (2014). Their study found out that more time should be allocated to practical activities also more emphasis should be put on the assessment of practical activities. Research conducted by Adelabu (2021) revealed that the hands-on practical activities that are the true reflection of workplace activities were not presented adequately in the curriculum.

4.4.2 The changes suggested to be made on the current ATVET agriculture curriculum

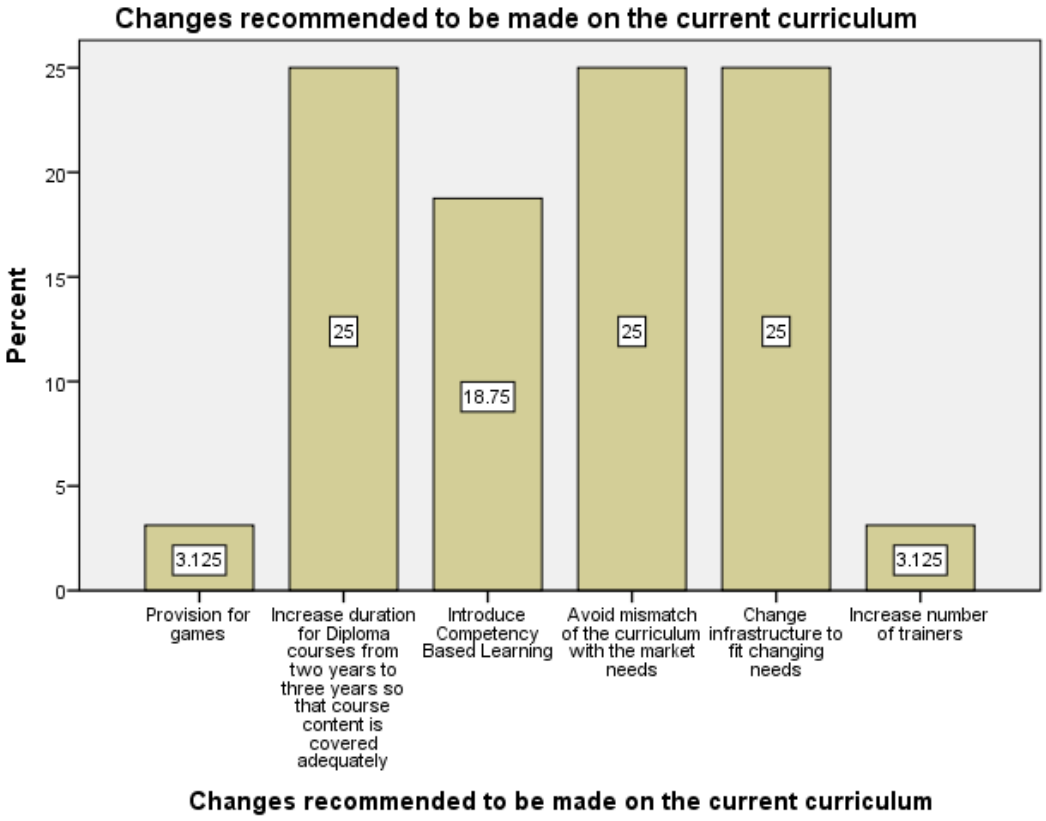

Figure 4. 8:Changes recommended to be made on the current curriculum

The researcher found out whether there were changes to be made in the current TVET curriculum; 25% of the trainers said increasing duration for diploma courses would allow adequate coverage of course content, 25% of the trainers said mismatch of the curriculum with market needs should be avoided, 25% of the trainers said infrastructure should be changed to fit changing needs, 18.75% of the trainers said competency based learning should be introduced, 3.13% said number of trainers should be increased and 3.13% of the trainers said there should be provision for games. The study was in agreement with the findings of Terblanche (2018) whose findings revealed that TVET college curriculum reform was paramount so as to fit into the changing needs in the labour market. This requires competent curriculum

leadership and leadership development which according to Langat, Omboro, Ambuli & Ngeno (2021). They recommended that the government should invest in trainer professional development to improve the effectiveness of trainers in TVET institutions. The TVET trainers are the stakeholders in TVET curriculum review and implementation. Curriculum should be made up to date so as to match the market needs. Eze & Okarafor (2012). Mentioned that for labour productivity to be enhanced, labour force should be equipped with essential competencies for them to function actively in the workplace.

4.4.3 The most common technical competencies which should be introduced in ATVET colleges

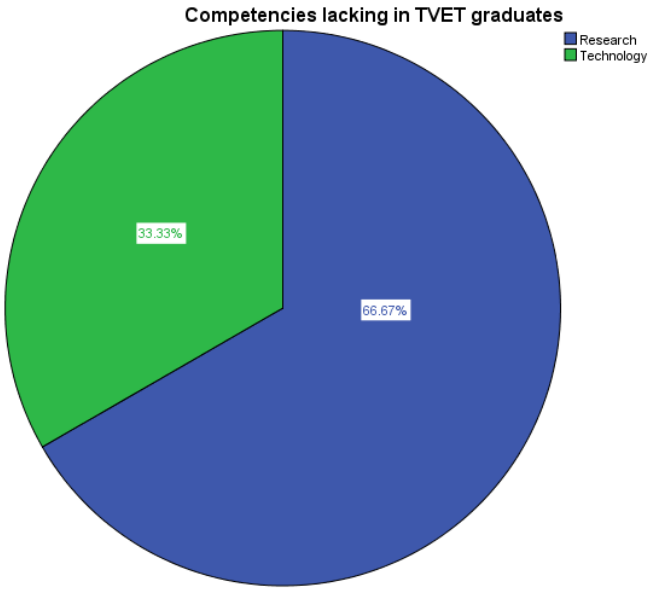

Figure 4. 9:Competencies lacking in TVET graduates

The study sought to find out the competencies which should be introduced in ATVET colleges. The human resource' respondents said 66.67% of the trainers lack knowledge on research and 33.33% of the trainers lack knowledge on technology. Therefore, review of the curriculum is paramount especially considering the dynamics in the universe. Nugraha, Kencanasari & Nuril (2020). Mentioned that employability

competencies needed from TVET graduate include research and technology; The study of Hassan, Hassan, Naseer & Khan (2021). Suggested that TVET research and technology index recommended that much focus was needed on technological induction to all TVET training. According to Rauner & Zhao (2014). Their study revealed that TVET research and technology is a unique education sector which is directly related to the shaping of transition from training to the employment system. Therefore, there is need to incorporate research and technology which is the transition phase to the world of work to TVET curriculum.

Table 4. 5:Relationship between Curriculum and Quality Middle Level Workforce

Curriculum	Value	df	Approx. Sig
Academic trips to industries	19.411	3	.000
Time allocated for practical lesson	127.356	12	.000
Learning hours for competency Acquisition and development	90.088	9	.000
Preparedness in terms of competencies Acquired during training	28.319	9	.000

The table above shows the inferential statistics of the findings. Chi square was used to test the relationship of the hypothesis at 95% confidence level: H_{02} There is no significant difference on the relevance of the current curriculum to the job market in selected TVET colleges in the North-Rift region yielded the results above.

On the basis of chi square tests, it was clear that α=0.000 which is a value respected to be very significant, showed that there was a statistically significant relationship

between the curriculum and quality middle level workforce. The H_{02} There is no significance difference on the relevance of the current curriculum to the job market in selected TVET colleges in the North-Rift was therefore rejected. Therefore, the researcher suggested that for quality training to be attained there was need to restructure TVET curriculum for it to yield quality middle level workforce who fit the job market.

4.5 To assess the extent to which training infrastructure for agriculture in TVET colleges influences competencies acquired by trainees in the North Rift region.

Table 4. 6:Training infrastructure for agriculture in TVET

Infrastructure	Adequate		Fairly adequate		Not adequate	
	F	%	F	%	F	%
Space of school farm	2	66.7	1	33.3		
Nature of equipment			1	33.3	2	66.7
Equipment functionality			1	33.3	2	66.7
Equipment in the lab			1	33.3	2	66.7
Students projects	1	33.3	1	33.3	1	33.3

The researcher sought to find out how infrastructure influenced the competences acquired in agricultural sector in ATVET colleges. The investigated infrastructure in this research were farm, laboratory, ICT and library. The findings showed that 66.7% of the respondents said that the infrastructures were not adequate, 33.3% said they were fairly adequate, 66.7% said space of the school farm was adequate and 33.3% said students' projects were adequate. The study is in agreement with the study of Yeap, Suhaini, Khalid & Nasir (2021) who mentioned that inadequacies of infrastructure resources in TVET are issues that happened in TVET education

throughout the years. It also concurred with the study of Sang & Muthaa (2021) who mentioned that training facilities used in TVET for training were inferior to facilities used in industries and business organizations. Therefore; TVET graduates posses' very irrelevant competencies in relation to competencies needed in industries and business organizations. The study of Anindo, Mugambi & Matula (2016) revealed that availability of modern training equipment had a major influence on acquisition of employable competencies.

4.5.1 Rate the overall training equipment in your course

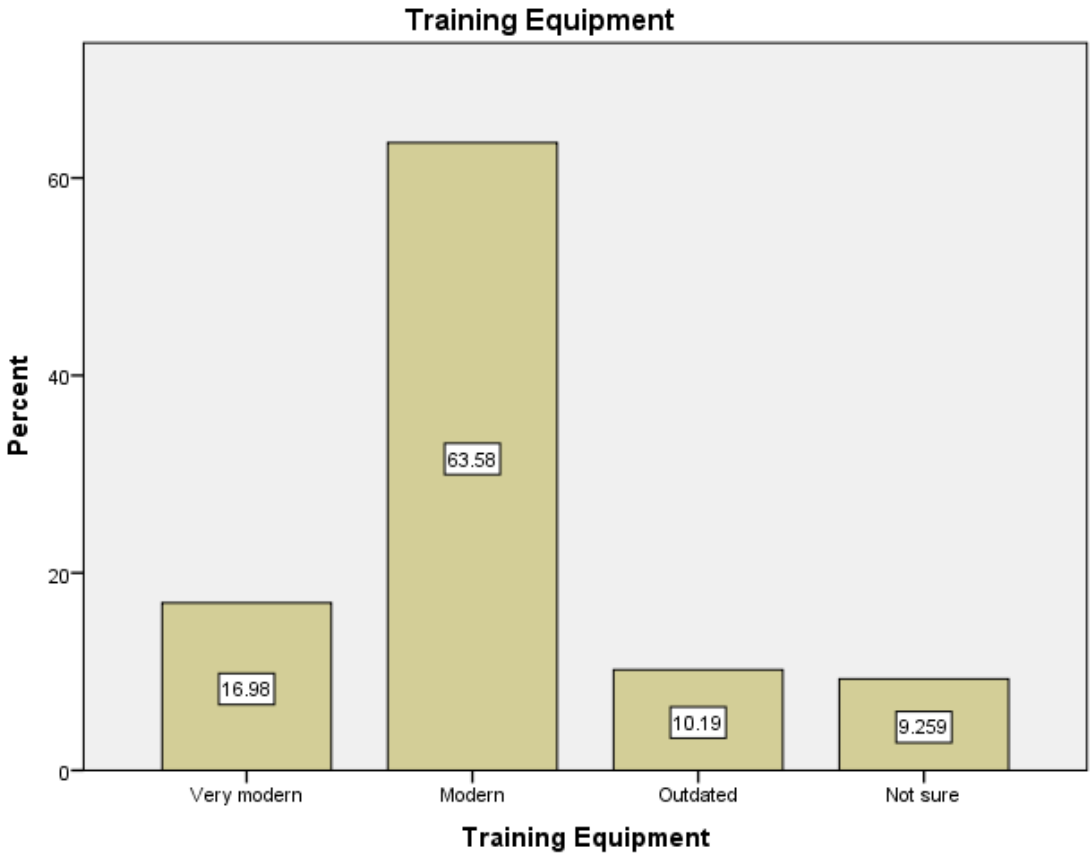

Figure 4. 10:Training Equipment

This study sought to rate the overall training equipment in TVET colleges. The findings showed that 63.6% of the trainees' respondent said that the equipment was modern, 16.96% said it was very modern, 10.2% said it was outdated and 9.3% were not sure about the nature of the equipment. The study of Mtshali & Sylvia (2021) revealed that the working tools and equipment used by TVET colleges were not up to date or showing prospects of outdated tools and equipment.

4.5.2 The average size of the group that shares equipment during practical sessions

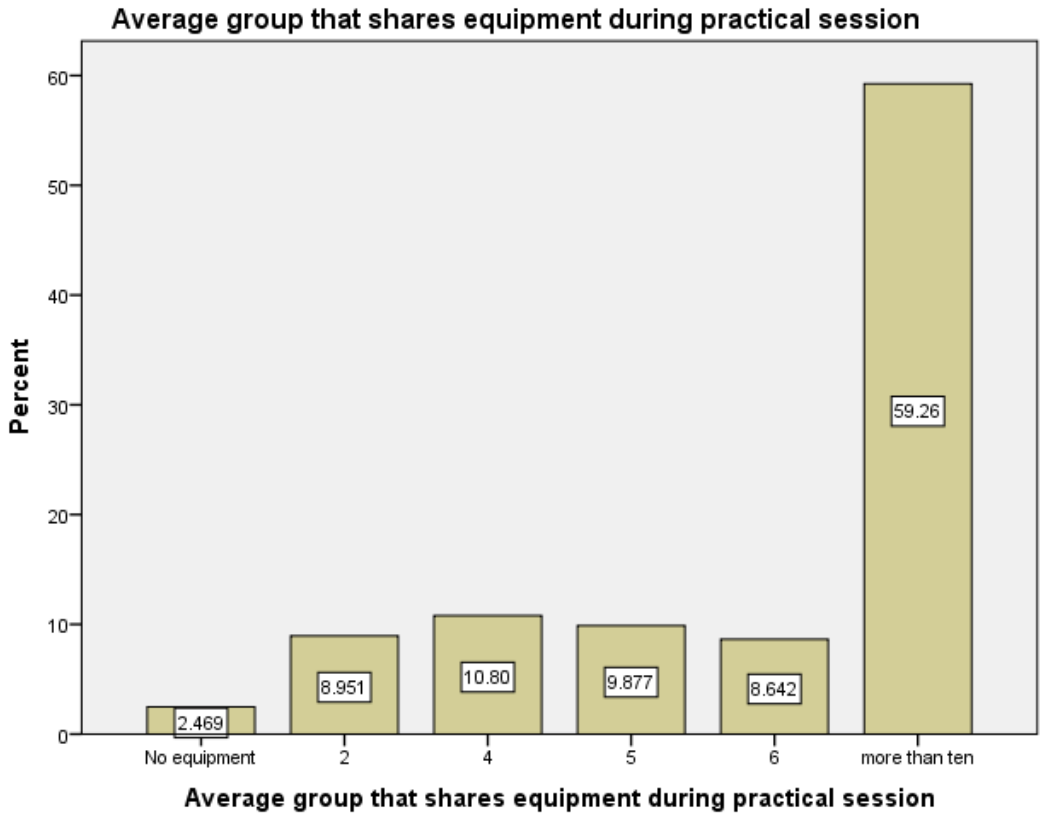

Figure 4. 11:Average group that shares equipment during practical session

The researcher sought to find out the average size of the group that shares the equipment during practical lesson. Findings in figure 4.4 showed that students' respondent said more than ten students (59.3%) shared equipment during practical session, 10.8% said four learners shared the equipment during practical session, 9.9% said five learners shared the equipment during practical session, 9.0%said two learners shared the equipment during practical session, 8.6% said six learners shared the equipment during practical session and 2.5% of the respondents said there was no equipment to be shared among the learners. More than a half (59.3%) of the learners shared the equipment, some of the respondents said there was no equipment to be

shared; these could be the same respondents who were not sure about the nature of the equipment. Mushwana & Chiromo (2020), were in agreement with this study in that they mentioned that there was need for the TVET colleges to have adequate infrastructure in order to create a conducive teaching and learning environment.

4.5.3 Specific issues, concerns or problems which trainers face when using institution infrastructure in teaching agriculture related courses

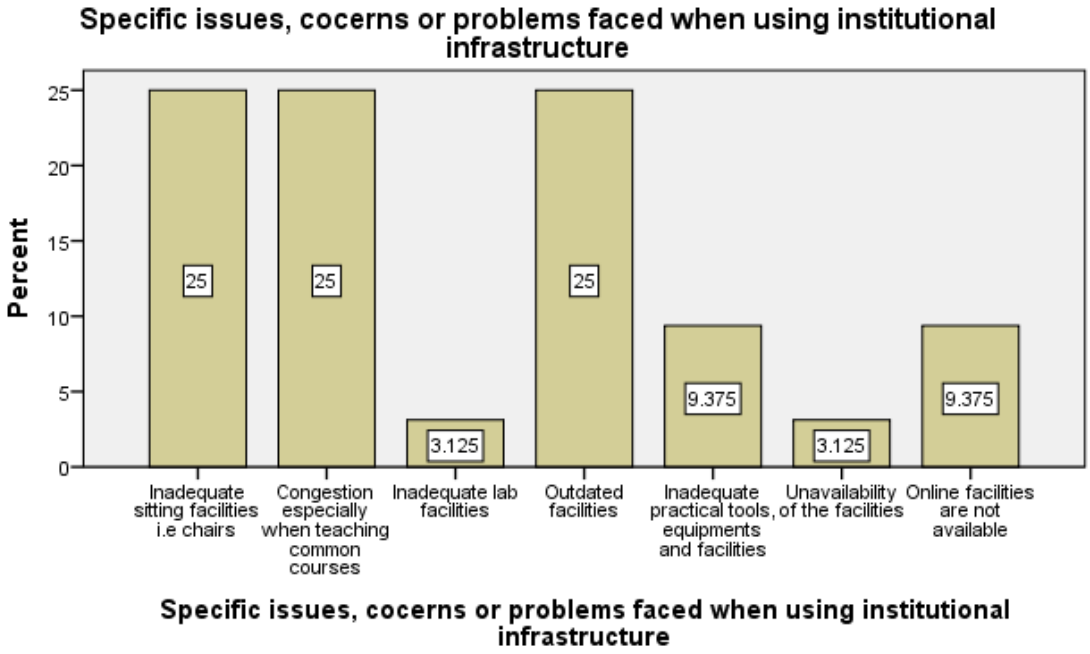

Figure 4.12: Specific issues, problems faced when using institutional infrastructure

The findings showed that 25% of the trainers said sitting facilities i.e chairs were inadequate, 25% said there was congestion in classroom especially when teaching common courses, 25% of the trainers said facilities were outdated, 9.38% of the trainers said practical tools were inadequate, 3.13% of the trainers said equipment and facilities were inadequate, 9.38% of the trainers said online facilities were not available and 3.13% of the trainers said facilities were unavailable. This study is in

agreement with the study of Oviawe (2018). They found that institutional infrastructure was not enough in learners' competency development. They suggested that sharing of tools and equipment between TVET institutions and industries could ensure that learners develop competencies which are required in the world of work.

4.5.4 Significance of the problems or concern to the competencies of the learners

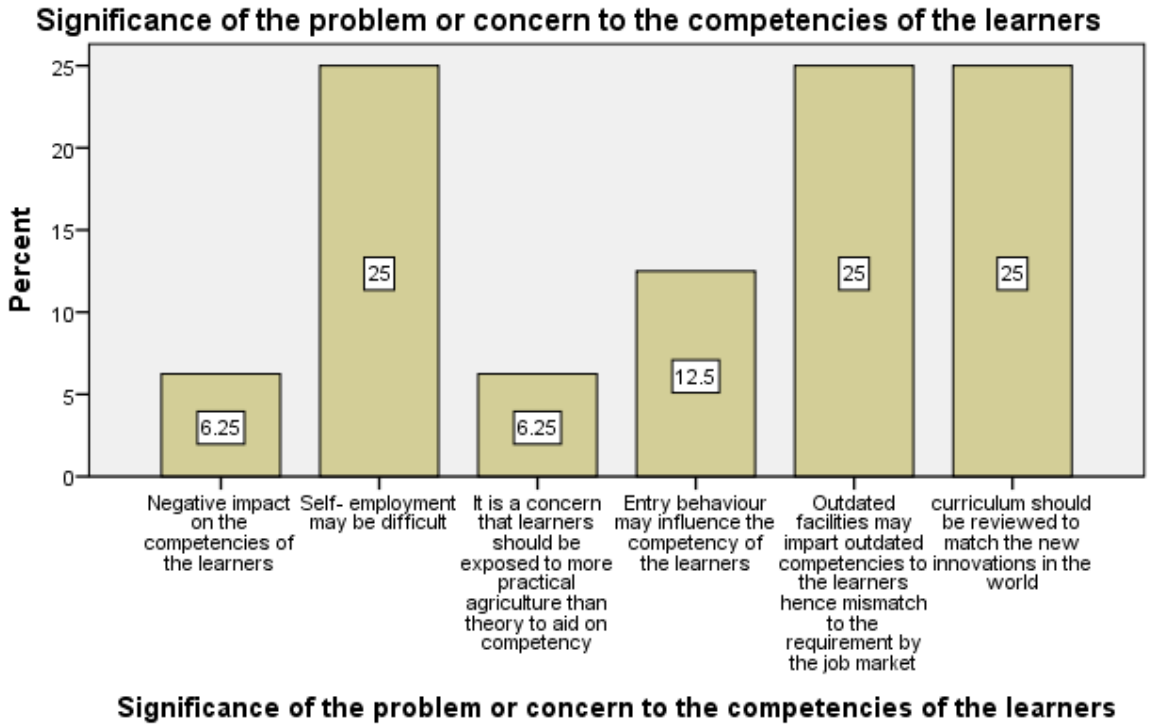

Figure 4.13:Significance of the problem or concern to the competencies of the learners

The findings found that 25% of the trainer said it is a concern that self-employment would be difficult to the learners, 25% of the trainers said outdated facilities would impart outdated competencies to the learners hence mismatch to the requirement by the labour market,25% of the trainers said curriculum should be reviewed to match the new innovations in the world, 12.5 of the trainers said entry behavior may influence the competency of the learners, 6.25% of the trainers said the challenges

faced by the learners may impart negative competencies to the learners and 6.25% of the trainers said learners should be exposed to more practical agriculture than theory to aid on competency. This study is in agreement with the study of Seng (2020). He noted that many countries fail to allocate adequate resources and support to ensure the relevance, quality and attractiveness of their TVET programs.

Table 4.7:Relationship between Training Infrastructure and Competencies acquired in TVET Colleges

Training infrastructure	Value	df	Approx. Sig
Average group that shares equipment During practical session	39.085	15	.001
Preparedness in terms of competencies Acquired during training	64.826	9	.000
Time allocated for competencies	45.963	9	.000
Relevance of the course to employment	33.836	12	.001
Learning hours for competency Acquisition and development	69.003	9	.000
Time allocated for practical lessons	60.735	12	.000

The table above shows the inferential statistics of the findings. Chi square was used to test the relationship of the hypothesis at 95% confidence level. H_{03} There is no significance difference in the training infrastructure for Agriculture in TVET colleges and the competencies acquired by the trainees yielded the results above.

On the basis of chi square tests, it was clear that it was clear that α=0.000 which is a value respected to be very significant, showed statistically significant relationship between the training infrastructure and competencies acquired in TVET Colleges. The $H_{03.}$ There is no significance difference in the training infrastructure for agriculture in TVET colleges and the competencies acquired by the trainees was therefore rejected.

The results implied that for quality training; there was need to acquire adequate and relevant infrastructure in TVET colleges so as to impart the quality competencies required by the labour market to the trainees.

4.6 To establish the market needs for Agriculture Education trainees in TVET colleges

The researcher sought to identify the market needs of the learner in terms of industry needs and competencies acquired by the learners after training.

4.6.1 Acquired competencies of ATVET trainers

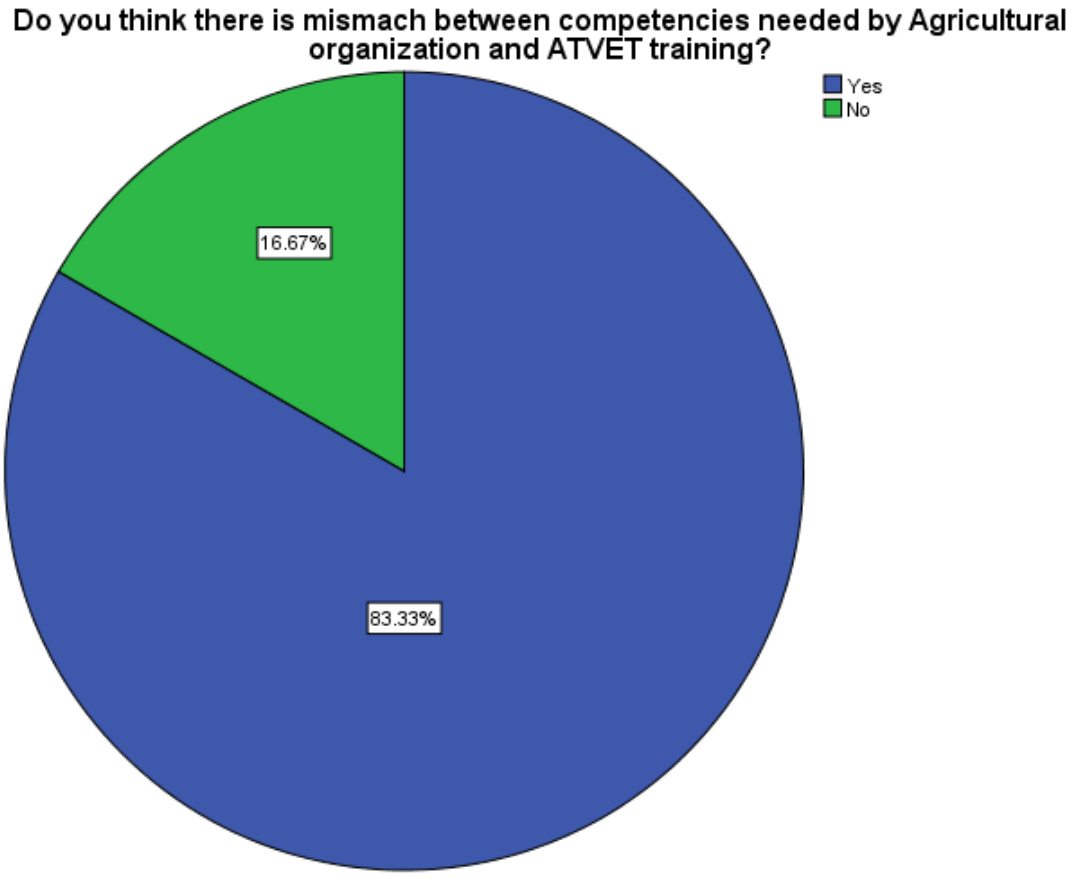

Figure 4. 14: Acquired competencies of ATVET trainers

The findings showed that 83.33% of the human resource respondents' said there was mismatch between the competencies offered in ATVET colleges and competencies required by agricultural organizations, 16.67% of the human resource respondents' said there was no mismatch between the competencies required by the organization and the competencies acquired by the learners during training. According to Mimi, Muhammad & Adnan (2020), their study found that trainers were retrained immediately after employment since they lacked certain competencies needed in the industry; retraining was meant to upgrade the existing competencies or acquire new competencies.

4.6.2 How to achieve quality training in North Rift region, Kenya.

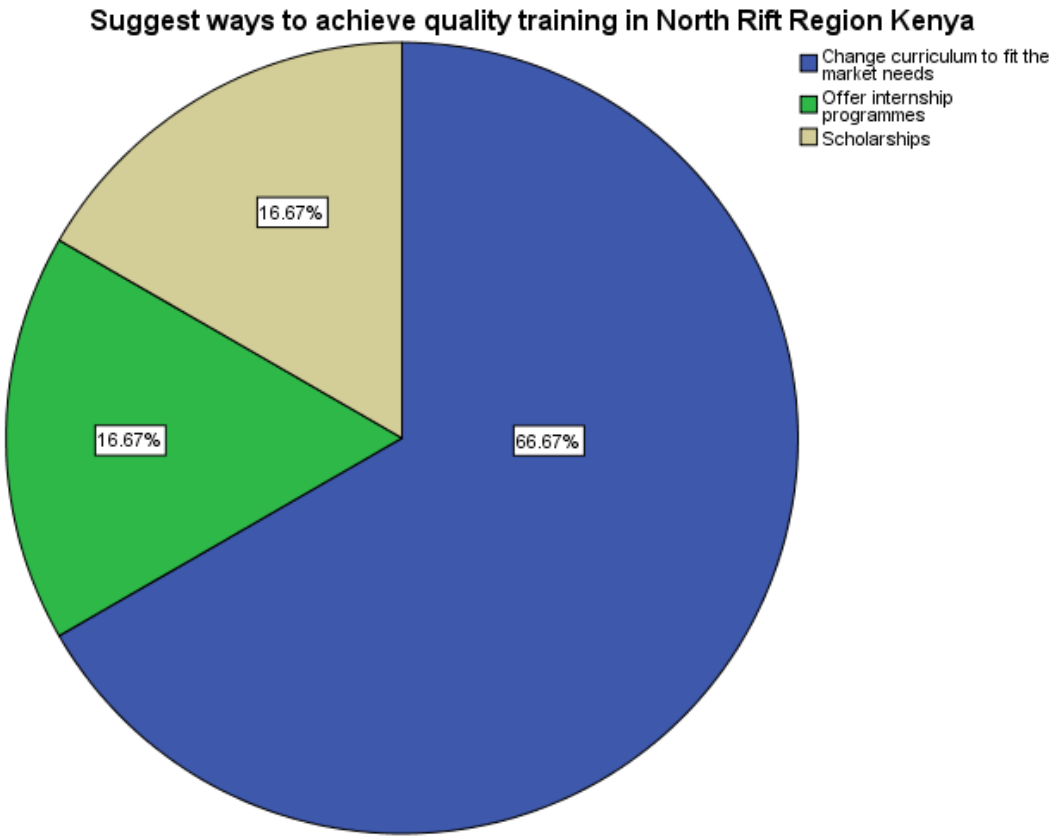

Figure 4.15:Suggested ways to achieve quality training in North Rift Region, Kenya

The findings showed that 66.67% of the human resource respondents' mentioned that curriculum should be changed to fit the market needs, 16.67% said learners to be offered internship programs and 16.67% said learners should be given scholarship in order to achieve quality training in ATVET colleges. This study is in agreement with the study of Mimi, Muhammad & Adnan (2020); their findings revealed that curriculum improvement is a core-component of ATVET institutions. Changing of the curriculum to fit the market needs was very critical.

4.6.3 Frequency of ATVET trainers for work experience in agricultural organizations

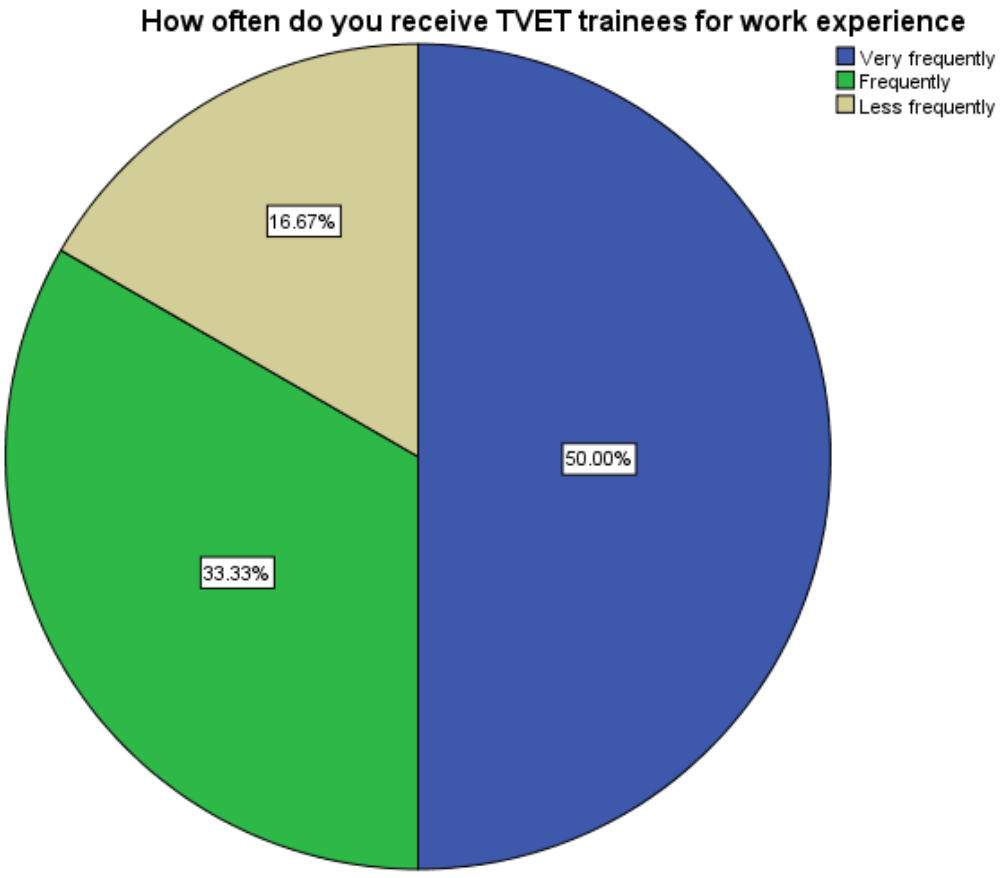

Figure 4. 16:TVET trainees for work experience

The findings showed that 50% of the human resource respondents' noted that they received trainees for work experience very frequently, 33.33% of the human resource

said they frequently receive students for work experience and 16.67% of the human resource said less frequently do they receive students for work experience. Generally, the findings revealed that majority of the trainees sought work experience from the industry. This study is in agreement to the study of Kiboi (2017) who found that the graduates sought work experience from the industry since there was no provision for ATVET graduates to acquire small tool kits loans for business start-ups.

4.6.4 Relevance of ATVET course on employment opportunities in Kenya today

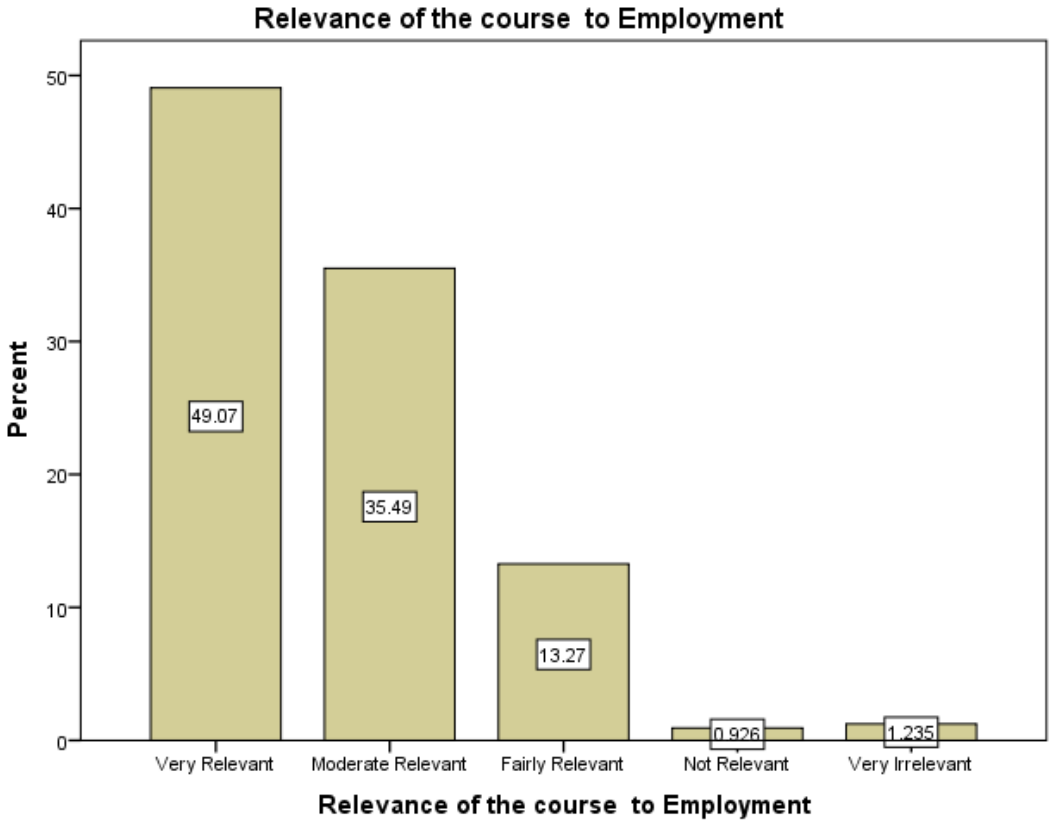

Figure 4.17:Relevance of the course to Employment

Findings revealed that 49.1% of the trainees' respondents mentioned that their course was very relevant to employment, 35.5% of the trainees' respondents said their course was moderate relevant to employment, 13.3% of the trainees, respondents noted that their course was fairly relevant, 0.9% of the trainees' respondents highlighted that their course was not relevant and 1.2% of the trainees' respondents said their course

was very irrelevant to employment. This study concurred with the study of Mabunda (2021) where his results suggested that there existed negative perception of the stakeholder towards employment of the TVET graduates. Calxte, Roberts. & Bunch (2019). Found out that the employment opportunities were affected by the overall unemployment, the existing opportunities in agriculture and lack of government support.

4.6.5 Expectation of the students to job market

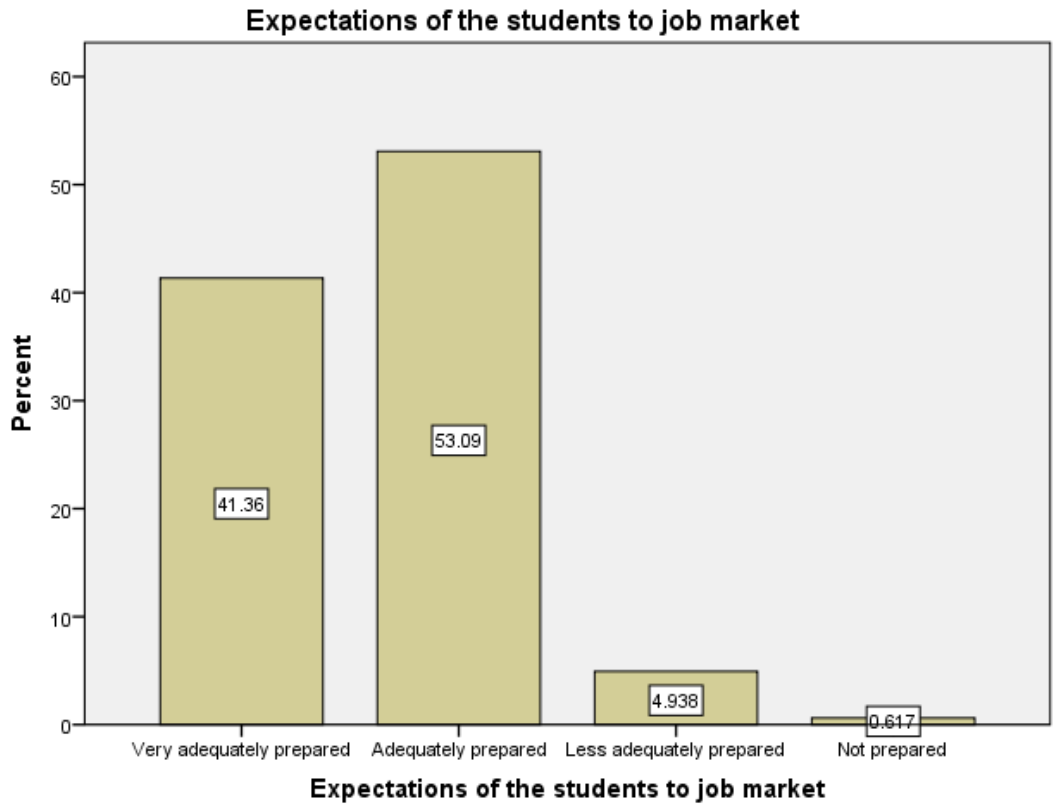

Figure 4.18 Expectations of the students to job market

Findings in figure 4.5 showed that 41.4% of the respondents said they were very adequately prepared to job market, 53.1% of the respondents said they were adequately prepared to job market, 4.9% of the respondents said that they were less adequately prepared to job market and 0.6% of the respondents said that they were not

prepared to job market. This study investigated the expectations of the learners to job market in relation to the level of their preparedness. Though majority of the learners were adequately prepared for the job market, study of Adams (2019) revealed that the job market perceived TVET colleges as not being aligned and responsive to the competencies needed in the job market. According to Kithae & Awuor (2014). Their findings revealed that despite a lot of relevant competentecies imparted to the TVET trainees, access to credit, technical support and access to technology and information were the main impendiments to growth and sustainability of TVET graduate enterprises. The employability of the TVET graduates to a large extent was a reflection of the quality and functionality of the TVET colleges. From those findings, the researcher noted that the respondents (trainees) did not know there was mismatch between their training and the quality competencies required by the agricultural organizations.

4.6.6 What the learner would like to do after training in agriculture

Table 4.8:What the learner would like to do after training in agriculture

	Frequency	Percentage
Self-employment	45	13.9
Employment	279	86.1

This study sought to find out what the TVET learners would like to do most after training. Findings in Table 4.6 showed that 86.1% of the trainees' respondents said they would like to be employed in various agricultural organizations after the training, 13.9% mentioned that they would like to be self-employed after training in agriculture. According to Bhurtel (2015). His study revealed the role of TVETs stands

on employment generation in the job market while on the other hand, TVET was regarded more significant to promote self-employment where employment opportunities are scarce. This study concurred with the study of Kithae & Awuor (2014). They concluded that learners did not fully engaged in courses they trained in, instead TVET graduates sought employment in any area where opportunities were available for employment. The few who wanted to be self-employed lacked funds to start their own business. Learners also were limited in their ability to take initiative. They were not confident to compete in the job market. Therefore, from this study majority wanted to be employed in various agricultural organizations.

Table 4.9:Relationship between Market Needs and Relevance of the course to Employment

Market Needs	Value	df	Approx. Sig
Preparedness in terms of competencies Acquired during training	81.547	12	.000
Expectations of the students to job market	246.703	12	.000
Training Equipment	33.836	12	.000
Qualified Trainers	30.796	12	.002
Learning hours for competency acquisition And development	32.414	12	.001

The table above shows the inferential statistics of the findings. Chi square was used to test the relationship of the hypothesis at 95% confidence level. H_{04} There is no significance difference on the extent to which the market needs of stakeholders differ from the competencies offered in selected TVET colleges yielded the results above.

On the basis of chi square tests, it was clear that α=0.000 which is a value respected to be very significant showed that there was a statistically significant relationship between the market needs and relevance of the course to employment. The H_{04} There is no significance difference on the extent to which the market needs of stakeholders differ from the competencies offered in selected TVET colleges was therefore rejected. Therefore, the researcher suggested that for quality competencies to be acquired in ATVET colleges; general competencies taught in ATVET colleges needs

to be matched with the competencies required by the labour market through collaboration.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS OF THE STUDY

5.1 Introduction

The summary of the major findings is provided in this chapter as presented in chapter four under the following sub-headings: Summary of the findings of the study, conclusions and recommendations based on the research findings and recommendations for further research. The study was guided by the following objectives: To assess the extent to which the capacity of trainers influence the quality of teaching of agriculture in selected TVET colleges, to examine the relevance of the current curriculum to the job market in selected TVET colleges in the North Rift Region, to assess the extent to which training infrastructure for agriculture in TVET colleges influences competencies acquired by trainees in the North Rift region and to establish the market needs for agriculture trainees in TVET colleges. The summary of the findings, conclusions and recommendations are presented according to the research objectives, research questions and research hypothesis.

5.2 Summary of the Findings

The findings revealed by the study have been presented as per the research questions and research hypothesis.

5.2.1 To assess the extent to which the capacity of trainers influences the quality of teaching of agriculture in selected TVET colleges

The first objective was to assess the extent to which the capacity of trainers influences the quality of teaching of agriculture in selected TVET colleges. This was guided by

the research hypothesis that was stated: H_{01} There is no significance difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges; The findings revealed that teaching and learning agriculture in TVET colleges influenced competencies of the learners positively, make the learners self-reliant and capable of solving farming problems, enhance socially and economically rewarding jobs. In contrary, the findings revealed that trainers lacked the following competencies: curriculum development, modern technology e.g. tissue culture, hydroponics, green house farming and smart agriculture, how to handle farm machinery, farm tools and farm equipment, soft skills, how to handle physically challenged persons and leadership skills. From those findings, quality training in TVET colleges may be compromised due to the competencies lacked by the trainers. On the basis of chi square tests, it was clear that there was a statistically significant relationship between the capacity of the trainers and the quality of training of agriculture in TVET colleges. The H_{01} There is no significance difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges was therefore rejected.

5.2.2 To examine the relevance of the current curriculum to the job market in selected TVET colleges in the North Rift Region

The second objective was to examine the relevance of the current curriculum to the job market in selected TVET colleges in the North Rift Region. This was guided by the research question that was stated: How does curriculum used in TVET colleges influences production of quality middle level work force? Though curriculum number of review and benchmarking was fairly done, the findings revealed that the curriculum used was less relevant since less than 50.0% of the trainees' respondents

said that curriculum was relevant. In addition, 21.0% of the trainees' respondents mentioned that they had only two (2) hours for practical lesson and 17.0% of the trainees' respondents said they did not have lesson allocated for practical. Those findings may have negative influence on the production of middle level work force. However, the respondents mentioned that new technology and research should be incorporated in the curriculum, duration of diploma courses should be increased; they believed that would allow adequate coverage of the course content, mismatch of the curriculum with the market needs should be avoided, infrastructure should be changed to fit the changing needs, competency based learning should be introduced, the number of trainers should be increased and there should be provision for games in the curriculum.

5.2.3 To assess the extent to which training infrastructure for agriculture in TVET colleges influences competencies acquired by trainees in the North Rift region

The third objective was to assess the extent to which training infrastructure for agriculture in TVET colleges influences competencies acquired by trainees in the North Rift region. This was guided by the research question that was stated: How does training infrastructure influences the competencies acquired by trainees in the selected TVET colleges in North Rift region? The learners believed that infrastructure in the institution would raise agricultural productivity and improve learners' competencies. However, those infrastructures were not adequate or fairly adequate. The few modern equipment was shared by more than a half (59.3%) of the learners and the other equipment which existed were outdated. Some of the student respondents' said there was no equipment to be shared. Furthermore, the sitting

facilities were inadequate and respondents said there was congestion in classroom especially when teaching common courses. Practical tools, equipment and facilities were inadequate, online facilities were not available. The inadequacy and status of the facilities in ATVET colleges is of great concern since self-employment would be difficult to the learners, outdated facilities would impart outdated competencies to the learners hence mismatch of the competencies required by the labour market.

5.2.4 To establish the market needs for agriculture trainees in TVET colleges

The fourth objective was to establish the market needs for agriculture trainees in TVET colleges. This was guided by the research hypothesis that was stated: H_{04} There is no significance difference on the extent to which the market needs of stakeholders differ from the competencies offered in selected TVET colleges. The findings revealed that majority of the trainees sought work experience from the industry, majority of the trainees believed that their course was very relevant to employment and majority also believed that they were adequately prepared to job market. Therefore, they had a lot of expectation to job market; 86.1% would like to be employed after training in agriculture and very few 13.9% of the respondents would like to be self-employed after training in agriculture. However, 83.3% of the respondents (human resource) who is their employer said that there was mismatch between the competencies offered in TVET colleges and competencies required by agricultural organizations; that could be the reason as to why immediately after employment the employees are re-trained. Research and technology were the most lacking competencies in TVET agriculture trained graduate. Therefore, for TVET to fast-track quality the respondents said curriculum should be changed to fit the market needs, learners should be offered internship programs and learners should be offered

scholarship. On the basis of chi square tests, it was clear that there was a statistically significant relationship between the market needs and relevance of the course to employment. The H_{04} There is no significance difference on the extent to which the market needs of stakeholders differ from the competencies offered in selected TVET colleges was therefore rejected.

5.3 Conclusion

Based on the findings presented the study as shown that agriculture training has been found to have mismatch training in competencies needed in agricultural organizations. Trainers lacked very important competencies; they lacked competency on curriculum development, the lacked competency on modern technology e.g., tissue culture, hydroponics, green house farming and smart agriculture, they lacked competency on how to handle farm machinery, farm tools and farm equipment, they lacked soft skills, they lacked training on how to handle physically challenged persons and they lacked leadership skills. The curriculum used was less relevant and therefore not adequate to produce middle level workforce; the time allocated for practical lessons was not adequate. Research and new technology should be incorporated in the curriculum especially considering the dynamics in the universe. The learning infrastructure were not adequate; the few modern equipment was shared with very large number of the learners, some of the equipment were outdated; that could impart outdated competencies to the learners and others did not have equipment in their institution. Sitting facilities were inadequate hence congestion especially during common courses, practical tools, equipment and facilities were inadequate, online facilities were not available. On the market needs, the respondent said the rate of mismatch between the competencies offered and competencies required was too high; research

and technology were the most lacking competencies in TVET agriculture trained graduate.

This study therefore concluded that agriculture training should be matched with the competencies required by the agricultural industry.

5.4 Recommendations

i. TVETA and other stake holders should provide in-service training for the TVET trainers. This is because the competencies lacked by the trainers will not be passed to the trainees.

ii. Quality assurance of TVET should increasing the number of practical hours and reducing lecture hours. This could aid in competency development in the learners.

iii. The government of Kenya should fund the various projects including modern and adequate infrastructure in TVET colleges.

iv. TVETA and other stake holders should provide linkages between TVET and the industry.

5.5 Suggestions for Further Studies

In this study, agriculture training was used to check the gaps that existed in the competencies required by the agriculture industry. However, the researcher suggests further investigation into:

i. Influence of Research and Technology in agriculture competency acquisition

ii. Influence of online facilities on agriculture competencies

iii. Impact of management on competency acquisition

iv. Relationship between games and agriculture competency acquisition

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APPENDICES

Appendix I: Letter from the University of Eldoret to NACOSTI

University of Eldoret
flame of knowledge and innovation

P. O. Box 1125-30100,
ELDORET, Kenya
Tel: 0774 249552
Fax No. +2544)53-206311 Ext 2232
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UNIVERSITY OF ELDORET

SCHOOL OF EDUCATION
CENTRE FOR TEACHER EDUCATION

Our Ref: U0E/B/CTE/REF/059

January, 15th 2021

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

Dear Sir/Madam,

RE: RESEARCH PERMIT FOR TARUS JEPKURUI

This is to confirm that the above named Post Graduate Student has completed Course work and has successfully defended her thesis proposal

She is currently preparing for field work to collect data on the thesis title: "***Agricultural Education Training Against Competencies Needed In Agricultural Organizations: An Analysis Of Selected Technical And Vocational Colleges In North Rift Region, Kenya.***" The proposal was examined and approved by academic board of examiners of the school of education.

Any assistance accorded her to facilitate acquiring research permit for data collection will be highly appreciated.

Yours Faithfully,

HEAD Centre for Teacher Education

DR. R.M. AMIN'GA
HEAD, CENTRE FOR TEACHER EDUCATION

Cc: - *DVC-ASA*
- *Dean, School of Education*

Appendix II: Research Permit from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

RESEARCH LICENSE

Ref No: **444846**

Date of Issue: **19/January/2021**

This is to Certify that Miss.. JEPKURUI . TARUS of University of Eldoret, has been licensed to conduct research in Baringo, Nakuru, Transnzoia, Uasin-Gishu on the topic: AGRICULTURAL EDUCATION TRAINING AGAINST COMPETENCIES NEEDED IN AGRICULTURAL ORGANIZATIONS: AN ANALYSIS OF SELECTED TECHNICAL AND VOCATIONAL COLLEGES IN NORTH RIFT REGION, KENYA for the period ending : 19/January/2022.

License No: **NACOSTI/P/21/8537**

444846

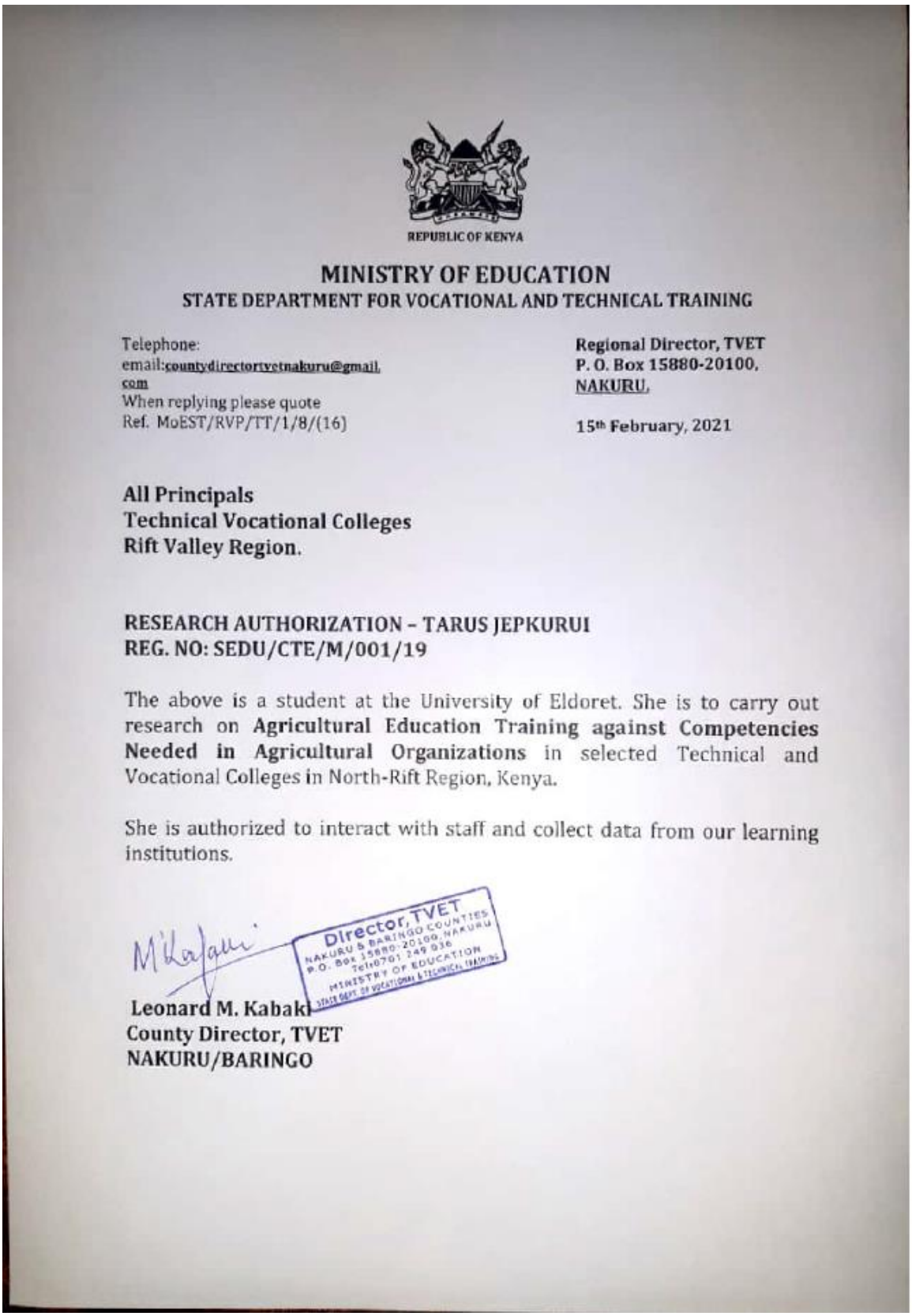
Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix III: Letter from University Of Eldoret to NACOSTI



REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT FOR VOCATIONAL AND TECHNICAL TRAINING

Telephone:
email:countydirectortvetnakuru@gmail.com
When replying please quote
Ref. MoEST/RVP/TT/1/8/(16)

Regional Director, TVET
P. O. Box 15880-20100,
NAKURU.

15th February, 2021

All Principals
Technical Vocational Colleges
Rift Valley Region.

RESEARCH AUTHORIZATION – TARUS JEPKURUI
REG. NO: SEDU/CTE/M/001/19

The above is a student at the University of Eldoret. She is to carry out research on **Agricultural Education Training against Competencies Needed in Agricultural Organizations** in selected Technical and Vocational Colleges in North-Rift Region, Kenya.

She is authorized to interact with staff and collect data from our learning institutions.

Director, TVET
NAKURU & BARINGO COUNTIES
P.O. Box 15880-20100, NAKURU
Tel:0701 249 936
MINISTRY OF EDUCATION
STATE DEPT OF VOCATIONAL & TECHNICAL TRAINING

Leonard M. Kabaki
County Director, TVET
NAKURU/BARINGO

Appendix IV: Informed Consent Letter

Dear Respondent

This is to request you to take your time and fill in this questionnaire. This questionnaire is meant to collect data for my Masters studies which am currently pursuing at the University of Eldoret. The study is on **Agricultural Training against Competencies Needed in Agricultural Organizations: An Analysis of Selected Technical and Vocational Colleges in North Rift Region, Kenya.** The information you provide will be used for studies only. Confidentiality will be maintained in all aspects. Please respond to all the questions honestly. It is optional to write your name and contacts on this document.

Thank you in advance.

Sign……

Jepkurui Tarus

Appendix V: Student Questionnaire

SECTION A

1. Please tick (√) to indicate your gender. Male [ ] Female [ ]
2. What is your age in years according to your last birthday?.....
3. What is your highest level of formal education?
   primary school [ ]
   Secondary school [ ]
   Certificate level [ ]
4. Name of institution……
5. Course pursuing (e.g. Diploma in general agriculture) ……
6. How long did you take before joining your current study programme……years?

SECTION B

7. To what extent is your course in TVET education relevant to the following? (Tick(√) the correct response in each case)

Area of Relevance	Very Relevant 5	Moderate Relevant 4	Fairly Relevant 3	Not Relevant 2	Very Irrelevan 1
Direct Employment					
Self-employment					
Further Studies					
Nation Building					
Social Cohesion					
Moral Integrity					
Quality standard of life					

8. How relevant is your course in TVET Education on employment opportunities in Kenya today? (Tick the correct response in each case)

i) Very relevant [ ] ii) Moderate relevant [ ] iii) Fairly relevant [ ]
iv) Not relevant [ ] Very irrelevant [ ]

9. Rank the following factors on the development of Agricultural training in technical education in Kenya in order of importance from the most important to the least important

a. Labour market needs
b. Relevance of TVET curriculum to the job market
c. Quality of trainers
d. Adequacy of training equipment
e. Status of physical facilities used for training
f. Relevance of training materials and text books
g. Management of TVET programmes

11. Considering the competencies required in your training, how do you rate the following in your institution

Course Syllabus Coverage	Very Adequate 4	Adequate 3	Very Inadequate 2	Not Adequate 1
Learning hours for competencies acquisition and development				
Time allocated for practical lessons				
Qualified trainers				
Time allocated for coverage of the course				

12. Considering that Agricultural training is expected to equip you with practical competencies, does your institution organize trips to the following places? If yes how many times per year

(i) Industries Yes [ ] No [ ] How many times…….
(ii) Factories Yes [ ] No [ ] How many times……

(iii) Jua Kali Industries Yes [ ] No [ ] How many times……

(iv) Specify any other…….How many times…...

13. How many weeks does your industrial attachment last……weeks
14. How many hours of practical lessons are allocated for competencies acquisition and development per week in your course……

15. How would you rate the time allocated for competencies acquisition and development in your course? (tick the appropriate one)

    (i) Very adequate [ ]
    (ii) Adequate [ ]
    (iii) Not adequate [ ]

16. How would you rate the overall training equipment in your course? (tick the appropriate one)

    (i) Very Modern [ ]
    (ii) Modern [ ]
    (iii) Outdated [ ]
    (iv) Not sure [ ]

17. What is the average size of the group that shares equipment during practical sessions……?

SECTION C

18. By the time you finish your training in Agriculture, how would you rate your preparedness in terms of competencies acquired during training? (tick the appropriate one)

    (i) Very adequately prepared [ ]
    (ii) Adequately prepared [ ]
    (iii) Fairly prepared [ ]
    (iv) Not Adequately prepared [ ]

19. In relation to work expectations, how would you rate your preparedness for job market? (tick the appropriate one)

    (i) Very adequately prepared [ ]

    (ii) Adequately prepared [ ]

    (iii)Less Adequately prepared [ ]

    (iv)Not prepared [ ]

20. What challenges do student trainees in your programme of study face? List three such challenges

    (i) ……

    (ii) ……

    (iii)……

21. What would you like to do most when you finish your agricultural training?

    ……

    ……

Thank you for finding time to respond to the questionnaire

Appendix VI: Questionnaire for Human Resource Personnel in Agricultural Organizations

SECTION A

1. Please tick (√) on your gender [ ] Male [ ] Female
2. Kindly indicate the name of your company……...
3. What category is your Organization? Public [ ] Private [ ]
4. How many years have you worked in this Organization……...……?
5. How many TVET graduates do you have as employees in your organization……..
6. Did you train in TVET College yourself? Yes [ ] No [ ]
7. If the question in six above is 'Yes' please indicate your professional qualification from TVET……

SECTION B

8. How often do you receive TVET trainees for work experience from Agricultural training (tick (√) the appropriate one)?

   Very frequently [ ]
   Frequently [ ]
   Less Frequently [ ]
   Seldom [ ]

9. Which competencies have you identified lacking in TVET Agricultural trained graduates, please indicate three most common competencies which are lacking;

   (i) ……
   (ii) ……
   (iii)……

10 .Please comment TVET Agriculture trainee on the ability to work (tick the appropriate one)

Very effective [ ]
Effective [ ]
Less Effective [ ]
Not Effective [ ]

11. List three most common technical competencies which should be introduced in Agricultural Technical and Vocational Education and Training (ATVET) colleges

(i) ……
(ii) ……
(iii)……

12. Do you think there is a mismatch between competencies needed by Agricultural Organization and ATVET training? Yes [ ] No [ ]

13. Please indicate the extent of this mismatch. (tick the appropriate one)

Very high mismatch [ ]
High mismatch [ ]
Fair mismatch [ ]
No mismatch [ ]

14.How would you rate the relevance of the current TVET programmes in quality training in the North Rift Region, Kenya? (tick the appropriate one)

(i) Very relevant [ ]
(ii) Relevant [ ]
(iii)Less relevant [ ]
(iv) Irrelevant [ ]

15. Do you think TVET can fast track quality training in North Rift Region, Kenya? If yes, please state three ways how this can be done;

(i) ……

(ii) ……

(iii)……

16.Are there policy issues that should be readdressed in order for TVET to fast track quality training development: If yes, please state three such policy issues;

(i) ……

(ii) ……

(iii)……

17. Please state three main challenges facing TVET in light of quality training development in North Region, Kenya.

(i) ……

(ii) ……

(iii)……

18.What would you suggest as solutions in addressing the above challenges?

(i) ……

(ii) ……

(iii)……

Thank you for finding time to respond to the questionnaire

Appendix VII: Observation Schedule

INSTRUCTIONS

This observation schedule has two sections: Section A, will be used to collect data on the school training infrastructure; training farm, the lab, ICT, library. Section B, will be used to collect data on the school curriculum; number of review, benchmarking and individual partnership. Please tick (√) on your appropriate response.

Section A: On the scale of 4=Very adequate 3=adequate 2=fairly adequate 1= Not adequate, please rate the following training infrastructure as observed. Tick as is appropriate (√)

SECTION A				
TRAINING INFRASTRUCTURE	4	3	2	1
FARM				
1. Space				
2. Nature of equipment				
3. Functionality of equipment				
4. Ongoing Collaborative activities				
5. Students projects				
LABORATORY				
1. Space				
2. Nature of equipment				
3. Functionality of equipment				
4. Ongoing Collaborative activities				
5. Students projects				
ICT				
1. Space				
2. Nature of equipment				
3. Functionality of equipment				
4. Ongoing Collaborative activities				
5. Students projects				
LIBRARY				
1. Space				
2. Nature of equipment				
3. Functionality of equipment				
4. Ongoing Collaborative activities				
5. Students projects				

Section B: On the scale of 4=Very adequate 3=adequate 2=fairly adequate 1= Not adequate, please rate the TVET curriculum as observed.

SECTION B				
TVET CURRICULUM	**4**	**3**	**2**	**1**
1. Number of review				
2. Benchmarking				
3. Individual partnership				

Appendix VIII: Focus Group Discussion for TVET Lecturers

1. How does teaching and learning of agriculture related courses influence competencies of the learners

…….....

.....

.....

.....

.....

.....

2. How can we improve agriculture training in TVET colleges to ensure learners are getting the right competencies?

   …….....

   .....

   .....

   .....

   .....

   .....

3. What competencies do you think you lack in teaching agriculture in TVET college?

   ……

   ……

   ……

   ……

   ……

   ……

4. What changes would you recommend to be made on the current TVET agriculture curriculum

   ……

   ……

   ……

   ……

   ……

5. What are specific issues, concerns, or problems you have faced when using institutional infrastructure in teaching agriculture related course

   ……

   ……

   ……

   ……

   ……

   ……

6. How significant is the problem or concern you have with the competencies of the learners?

   ……

   ……

   ……

   ……

   ……

   ……

7. What competencies are commonly required by agricultural companies on TVET graduates

   ……

   ……

   ……

   ……

   ……

   …….

Appendix IX: Key Informants for the TVET Principals

SECTION A: DEMOGRAPHIC INFORMATION

1. Please tick (√) on your gender [ ] Male [ ] Female
2. Kindly indicate the name of your Institution…….
3. What category is your Institution? Public [ ] Private [ ]
4. Kindly indicate the number of: Technical staff [ ] Teaching staff [ ]
5. Age in years……..……
6. How many years have you worked in this Institution……..……?
7. Did you train in TVET College yourself? Yes [ ] No [ ]
8. If the question in six above is 'Yes' please indicate your professional qualification from TVET……..……

SECTION B

9. In relation to work experience, how would you rate the capacity of trainers teaching agricultural related courses? (tick the appropriate one)

(i) Very adequately prepared [ ]
(ii) Adequately prepared [ ]
(iii) Less Adequately prepared [ ]
(iv) Not prepared [ ]

10. Considering the competencies required in agricultural training, how do you rate the following in your institution

Capacity of Trainers	Very Adequate 4	Adequate 3	Very Inadequate 2	Not Adequate 1
Experience in the industry				
Level of education				
Equipment handling				
Quality of their graduates				

Area of Relevance	**Very Relevant 5**	**Moderate Relevant 4**	**Fairly Relevant 3**	**Not Relevant 2**	**Very Irrelevar 1**
Self-employment					
Direct employment					
Further studies					
Wastage rate					

11. To what extent do Agricultural related courses in TVET in the last 5 years relevant to the industry? (Tick (√) the correct response in each case)

12. What types of specialized training has agricultural staff been involved in teaching and learning Agriculture related courses?

(i) Social conditions [ ]

(ii) Institutional framework [ ]

(iii) Research and education [ ]

(iv) Technical progress [ ]

(v) Specify any other……

13. How does infrastructure in your institution influence teaching and learning competencies of learners pursuing agriculture-related courses

(i) Raises agricultural productivity [ ]

(ii) Brings about higher agricultural wages [ ]

(iii) Improve learners competencies [ ]

(iv) Specify any other……

14. To what extent is the current curriculum relevant to teaching agriculture related courses?

(i) Very relevant [ ]

(ii) Relevant [ ]

(iii) Less relevant [ ]

(iv) Irrelevant [ ]

15. What types of competencies demonstrated by TVET lecturers teaching agriculture related courses?

(i) Critical thinking [ ]

(i) Learning strategies [ ]

(ii) Social perceptiveness [ ]

(iii)Specify any other…….

16. What are specific competencies recommended on students on attachment from your institution by agricultural companies

(i) Active listening [ ]

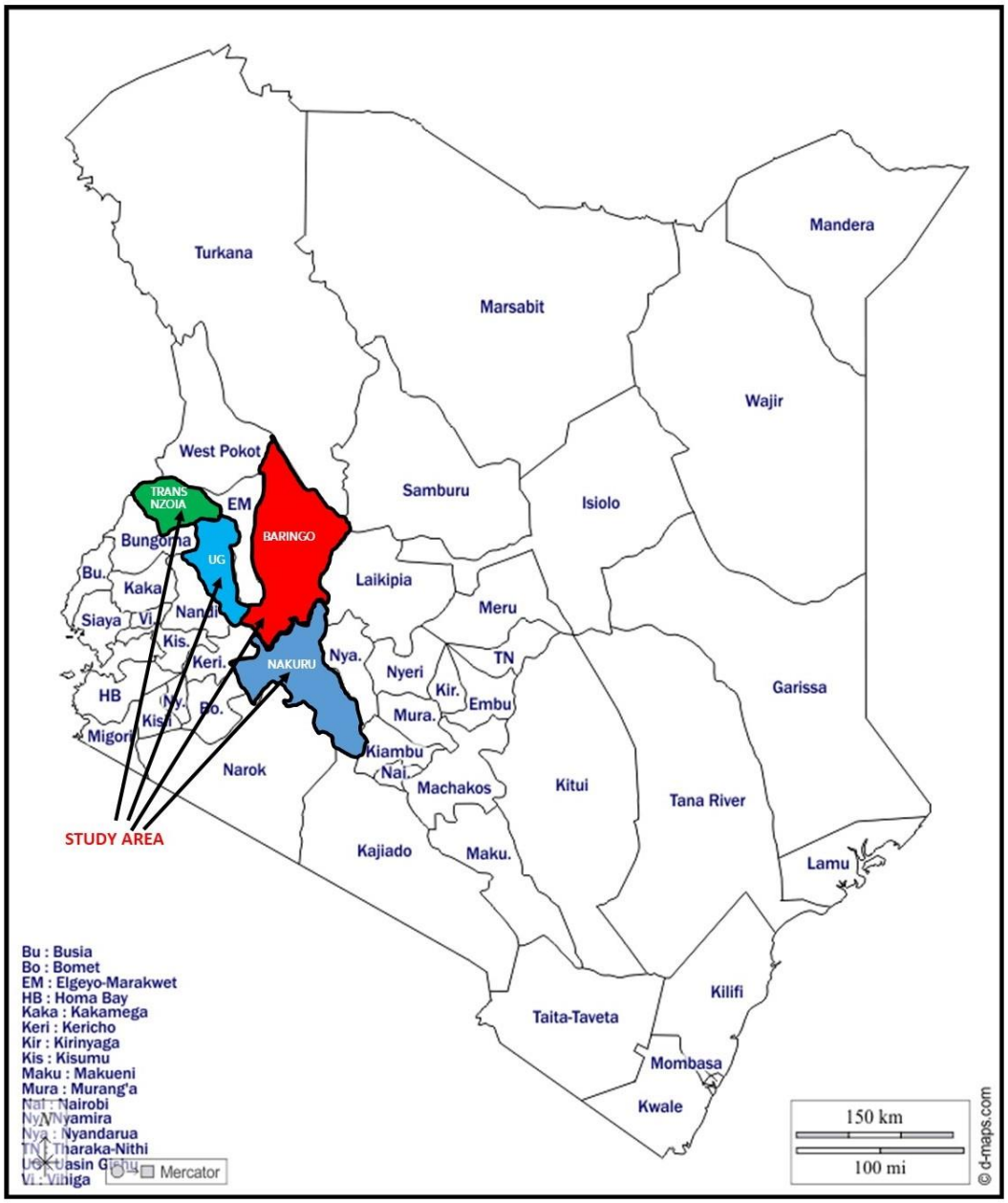
(ii) Equipment selection [ ]

(iii) Time management [ ]

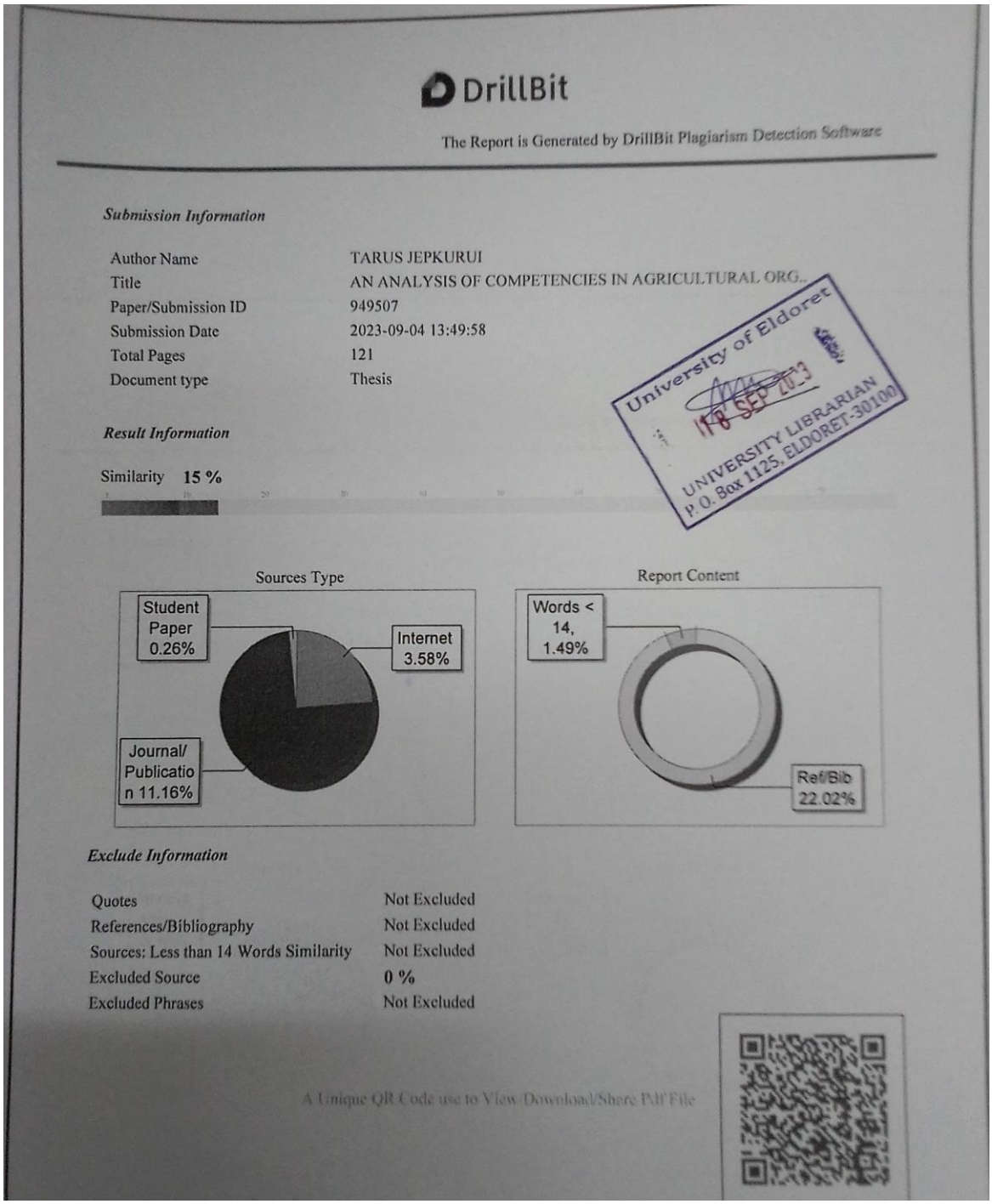
(iv) Specify any other……

Thank you for finding time to respond to the questionnaire

Appendix X: Map of North Rift Region, Kenya



Appendix XI: Similarity Report



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