# DETERMINANTS OF IMPLEMENTATION OF COMPETENCY-BASED EDUCATION AND TRAINING IN TECHNICAL AND VOCATIONAL INSTITUTIONS IN MERU COUNTY

**BY**

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# DECLARATION

**Declaration by the Candidate**

This thesis is my original work and has not been presented for the award of any degree in The University Eldoret or any other institution. No part of this work may be reproduced without prior authority of the author and /or University of Eldoret.

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**Declaration by the Supervisors**

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

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## DEDICATION

I dedicate this thesis to my family for their endless love, support and encouragement.

## ABSTRACT

The traditional TVET system in Kenya has been criticized for its focus on theoretical knowledge rather than practical skills, leading to a skill gap in the workforce. This has resulted in high rates of youth unemployment and underemployment. To address this problem, the Kenyan government has adopted the CBET approach, which emphasizes the development of practical skills and competencies that are relevant to the job market. However, the implementation of CBET in Technical and Vocational Education and Training (TVET) institutions in Kenya has been slow and faces several challenges, including lack of infrastructure, inadequate funding, and a shortage of qualified trainers. The purpose of this study was to assess the determinants of implementation of Competency-Based Education and Training (CBET) in TVET institutions in Meru County. The specific objectives of this study were; to examine the influence of trainee factors on implementation of competency-based education and training, to determine the influence of trainer factors on implementation of competency-based education and training and to assess the influence of institutional factors on implementation of competency-based education and training. The study adopted a descriptive survey design using mixed methods approach. The target population included 6000 TVET trainees, 422 trainers, 44 technicians and 19 principals in the 19 public TVET institutions in Meru County. Using Krejcie and Morgan (1970) sample size determination formula, 363 respondents were selected to participate in the study. These included 335 trainees, 23 trainers, 3 technicians and 2 principals. Interview schedules and questionnaires were used to collect data where institution principals were interviewed while questionnaires were administered to trainers, technicians and trainees. Data obtained was analyzed using quantitative and qualitative techniques. Based on the findings from the first objective, the study found a significant positive correlation between trainee factors and implementation of competency-based education and training ($r = .276$; $p = .000$) meaning that trainee factors affected implementation of competency-based education and training in Meru County. Based on the findings from the second objective, it was established that there was a significant positive correlation between trainer factors and implementation of CBET ($r = .232$; $p = .000$) meaning that trainer factors affected implementation of competency-based education and training in Meru County. Based on the findings from the third objective, it was found out that there was a weak positive correlation between institutional factors and implementation of CBET in Meru County($r = .286$; $p = .000$) depicting that institutional factors affected implementation of competency-based education and training in Meru County. The study's recommendations include the need to improve trainee preparedness and motivation for Competency-Based Education and Training (CBET) through orientation programs, career counseling, and mentorship, address trainer competencies through comprehensive training and support programs, and prioritize the allocation of resources, clear guidelines, and policies to enhance CBET implementation with regular monitoring and collaboration with stakeholders. The findings from the study will be useful to education stakeholders in successful implementation of competency-based education in technical institutions in Kenya.

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **BECF** | Basic Education Curriculum Framework |
| **CBC** | Competency-Based Curriculum |
| **CBE** | Competency-Based Education |
| **CBET** | Competency-Based Education and Training |
| **CDACC** | Curriculum Development Assessment and Certificate Council |
| **CfBT** | Centre for British Teachers |
| **GoK** | Government of Kenya |
| **IBE** | International Bureau of Education- |
| **ICT** | Information and Communication Technology |
| **KBET** | Knowledge-Based Education and Training |
| **KICD** | Kenya Institute of Curriculum Development |
| **KNUT** | Kenya National Union of Teachers |
| **MOEST** | Ministry of Education, Science and Technology |
| **NQF** | National Qualification Framework |
| **OECD** | Organization for Economic Co-activity and Development |
| **PISA** | Programme for International Student Assessment |
| **QASO** | Quality Assurance and Standards Officers |
| **SAQA** | South African Qualifications Authority |
| **SCL** | Student Centred Learning |
| **SPSS** | Statistical Package for Social Sciences |
| **TSC** | Teachers Service Commission |
| **TVET** | Technical and Vocational Education and Training |
| **UK** | United Kingdom |

| | |
|---|---|
| **UNESCO** | United Nations Educational, Scientific and Cultural Organization |
| **US** | United States of America |

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# CHAPTER ONE

# INTRODUCTION

## 1.1 Overview

This chapter presents background of the study, statement of the problem, purpose of the study, objectives of the study, research hypotheses, significance of the study, scope of the Study, limitations of the Study, assumptions of the Study, theoretical and conceptual framework and operational definition of key terms.

## 1.2 Background of the Study

Competency-Based Education and Training (CBET) is an approach that emphasizes the development of skills or competencies that are actually required in the world of work. In CBET, the focus is shifted from the content or knowledge to outcomes derived from the requirements of employment (Kyobe & Rugamayo, 2015). Various authors have defined the concept of competency. According to Jallow (2011), a competency is a statement of learning outcomes for a skill or body of knowledge. He adds that when students demonstrate a competency, they are demonstrating their ability to do something (showing the outcome of the learning process). Sullivan (2015) views competency as a set of skills, knowledge and behaviors' someone needs to have achieved in order to perform tasks, or activities at school and in the world of work (Kouwenhoven, 2013).

The competency based approach to education started in the United State of America (USA) in the late 1960s. Moreover, countries such as United Kingdom (UK), Germany, Netherlands and Australia have implemented competence-based education approach. However, the way in which the approach has been adopted differs from one country to

another depending on the historical, social, economic and technological advancement of the respective country (Rutayuga, 2012). According to Ayonmike, Okwelle and Okeke (2014), the competency-based education and training (CBET) is an approach to teaching and learning which involves learning concrete skills rather than abstract learning where students focus on the development of one competency at a time and periodic assessments or formal testing are made to determine their level of mastery of particular competencies. Obwoge (2016) affirmed that CBET facilitates students with the ability to learn at their own pace by moving quickly through material that they are already conversant with and spending more time on what they do not know so as to ensure cost effectiveness, enhanced quality and consistency, lessen the time needed to graduate, and offer true measures of learning for students.

Due to this success, some African countries including South Africa, Malawi, Ghana, Ethiopia and Tanzania started to adopt it Rutayuga, (2012) Okoye and Isaac, (2015); Dadi, (2014); Kufaine and Chitera, (2013). According to Dlamini, SithulisiweBhebhe and Dlamini (2018), although CBET has been practiced in Swaziland since the 1970s, it was not until 2014 when the Swaziland National Curriculum Framework was crafted; that deficiencies in the education system were addressed by focusing more on basic competencies founded on societal demands and priority areas as far as the economy was concerned. Indeed, rather than making drastic changes to the existing curriculum, the new approach sought to make necessary adjustments by developing generalized core competencies that would equip students with the requisite knowledge, skills and abilities to perform their work effectively. Walters and Isaacs (2015) posited that the post-apartheid era witnessed the propagation of an indigenized version of the CBET in South

Africa, which was based on the National Qualification Framework (NQF) under the management of the South African Qualifications Authority (SAQA) in collaboration with the government, Sectoral Education and Training Authorities (SETAs) and other stakeholders. This CBET experienced many challenges including persistent inequalities, inadequate access by students to education resources, weak management practices and poor teaching methods.

Tanzania embarked on the implementation of the CBET curriculum in 2005 by rolling it out in secondary schools, then primary schools followed suit in 2006; initiatives which were accompanied by concerted financial and human commitments to retrain and support teachers, head teachers and other professionals within the education sector. This process has encountered a number of constraints including: lack of institutional support, weak teachers' and students' educational background, lack of cooperation from students, large classes, limited teaching and learning resources, and inadequate number of trained teachers in CBET (Tambwe, 2019). Thus, through the Tanzania Public Service College, the government sought to address the above by providing courses in public administration and human resources which were expected to equip students with content competencies as well as personal competencies for employees within the public sector so as to enable them apply new management practices. Nonetheless, problems persisted since the two curricula were found to be more vocational than education in nature Ramadhani (2017). Kabanga, Mugimu and Oonyu (2018) affirmed that CBET programs of nurses and midwives have been implemented in Uganda so as to enhance the quality of healthcare by focusing on pedagogical practices such as Student Centred Learning (SCL), the use of pedagogical Teaching Learning Materials (TLM), as well as the placement of trainees in

training sites. Consequently, trainees were able to achieve the pre-determined competencies and provide the desired level of service delivery.

Additionally, Oyugi (2015) ascertained that CBET has gained increasing popularity in Uganda as evidenced by the mushrooming of many universities and other education institutions pursuing CBET; however, there have been a number of so-called wicked problems that have handicapped the effective adoption of the same such as a disengaged and apathetic public which has led to the absence of holistic, innovative and flexible approaches to its implementation. In the year 2012 it saw its implementation start in technical colleges. Currently, the approach is used in the Technical and Vocational Education and Training (TVET) sector; specifically in Vocational Education and Training (VET) centres and Technical Education and Training (TET) colleges. The introduction of CBET was intended to facilitate a paradigm shift from the traditional Knowledge-Based Education and Training (KBET) Rutayuga (2012). It is hoped that by adopting the CBET system, technical institutions will be able to produce people who are competent in their workplaces and who can spearhead the country to its desired vision (Mrowicki, 1986; Weddel, 2016; Thinkwise, 2017; Kafyulilo, et al., 2012).

The government of Kenya has also introduced Competency-Based Education and Training approach in TVET institutions across the country (Ondiek, 2016). According to Mutua, Kimiti and Mulwa (2019), Kenya's CBET project has been founded on its Vision 2030, which is focused on the creation of a globally competitive and adaptive human resource base as part of the Big Four Agenda through the TVET. This process involved collaborations between the Ministry of Planning and training institutions; however, there has been a number of challenges including a general deficiency of facilities such as

equipment, tools, machines, and other reference materials; and a mismatch between the available facilities and the requirements of special needs students. Further, in his investigation of the linkage between CBET and sustainable development in Kenya, Ngwacho (2019) established that whilst it is rationalized on the right objective, that is, the acquisition of practical skills and knowledge so as to boost their entrepreneurial and innovative abilities, it has been hampered by the fact that it is presently unproven in terms of determining sustainable development which should be expected given that it is still in its infancy.

The enhanced focus by the Kenyan Government on the implementation of CBET through the use of TVET institutions has led to the graduation of students who are well equipped with the requisite skills, knowledge and attitude which in turn resulted in heightened employability since the CBET curricula are more market-driven and primed towards meeting industrial occupational standards (Ndile, 2018). In order for the CBET to be effectively implemented in Kenya, teachers need support in imparting core competencies, critical thinking, problem solving, creativity and imagination, and communication and collaboration. In fact, teachers identified deficiencies in the provision of essential materials such as handbooks; the design of assessment criterion of the teachers; the construction of assessment rubrics; as well as the maintenance of assessment records (Waweru, 2018). Whereas introduction of CBET curriculum represents a positive step in moving Kenya towards achieving the goals of Vision 2030 towards raising education standards, challenges in Kenya have to do with effective implementation since its adoption (Kigwilu, Akala & Wambua, 2016). It is against this backdrop that

this study sought to assess the determinants of implementation of competency-based education and training in Technical and Vocational Training Institutions in Meru County.

### 1.3 Statement of the Problem

Technical and Vocational Education and Training (TVET) is an education program which is mainly designed for students to acquire practical skills, know-how, and understanding necessary for employment in a particular occupation, trade or a group of occupations (Anindo, Mugambi & Matula, 2016). The most important feature of TVET is its orientation towards the world of work, with the curriculum emphasizing the acquisition of employable skills. This means that TVET will promote skill acquisition through competency-based training for the world of work. Thus, competency-based education and training is derived from employment opportunities that exist for the graduates. Graduates from CBET curriculum will either be employed in different public and private business sectors or they will be self-employed.

However, the implementation of competency-based education and training in Kenya has been very slow. The Ministry of Education has been providing data on the level and stage of implementation of competency-based curriculum (CBC), but no data has been published on the level of implementation of competency-based education and training (CBET) in technical training institutions yet there exist a problem. It is therefore against this backdrop that this study sought to fill this gap by examining the determinants of implementation of Competency-Based Education and Training in Technical and Vocational Training institutions in Meru County.

## 1.4 Objectives of the study

### 1.4.1 Main objective

The purpose of this study was to assess the determinants of implementation of competency-based education and training in technical and vocational training institutions in Meru County

### 1.4.2 Specific Objectives

The study was guided by the following specific objectives.

1. To examine the influence of trainee factors on implementation of competency-based education and training in technical and vocational training institutions in Meru County
2. To determine the influence of trainer factors on implementation of competency-based education and training in technical and vocational training institutions in Meru County
3. To assess the influence of institutional factors on implementation of competency-based education and training in technical and vocational training institutions in Meru County

## 1.5 Hypotheses of the Study

The following null hypotheses were tested in this study;

**Ho1**: There is no significant relationship between trainee factors and implementation of competency-based education and training in Meru County.

**Ho2**: There is no significant relationship between of trainer factors and implementation of competency-based education and training in Meru County.

**Ho3**: There is no significant relationship between institutional factors and implementation of competency-based education and training in Meru County.

### 1.6 Significance of the Study

The results of this study would be of importance to various stakeholders. The study findings if adopted would be of great benefit to the Ministry of Education (MoE) and parties involved in the curriculum development for TVET institutions. This will facilitate the provision of evidence on the areas of the CBET curriculum that need development or review to make it more applicable especially in the context of persons with disabilities and ensure that the number of visually impaired graduates from TVET institutions that are competent. The findings would help the ministry identify some of the gaps in the development of the curriculum, which would ensure adequate reforms are undertaken, and effective strategies for implementing this curriculum enhanced towards increased the employability.

The study findings would also benefit the Government of Kenya (GoK) by highlighting the needs of TVET institutions in ensuring that CBET is effectively implemented especially for persons with special needs and what strategies can be used to ensure efficient mobilization and allocation of resources to meet the objectives of this education reform. The study could be an eye opener for the GoK through the MoE to assess the preparedness of TVET institutions in terms of facilities and infrastructure and also staffing towards the implementation of the CBET programmes. The findings would also help the Ministry of Labour to assess whether it has adequately developed the required occupational standards in conjunction with other stakeholders that are needed in guiding the skills taught in TVET institutions especially in the context of students with visually

impairments and whether the framework for ensuring that the existing standards are adhered to by all concerned parties are efficient. The study findings would also help the management of the TVET institutions under study in evaluating the effectiveness of the strategies employed in implementing CBET based on whether they are able to produce graduates that are competent and well prepared for the job market. This study would help in the assessment of the strength and weaknesses of the strategies applied and what the institutions can do on their part to enhance the employability of their graduates.

### 1.7 Justification of the study

The government policy on implementation of education programs is a promise to better the lives of the citizens. Information from the stakeholders on the progress of any project may be communicated in various ways and can also be interpreted differently by the beneficiaries of the program. However, research is the only sure way of getting true knowledge of information which practices can be informed. Therefore, it is important that a study of this nature be undertaken in order to provide stakeholders on the recommendations that are needed for implementation of Competency-Based Education and Training in TVET institutions. It is against this reason that this study sought to examine the determinants of implementation of competency-based education and training in technical and vocational training institutions in Meru County.

### 1.8 Scope of the Study

This research involved 6000 TVET trainees, 422 TVET trainers, 44 technicians and 19 principals of public TVET centres in Meru County. The content scope include trainee factors, trainer factors and institution factors that affect implementation of competency-

based education and training in public TVET centres in Meru County. However, other determinants not addressed in this study may affect the implementation of competency based education and training would form a basis for further studies. The study adopted a mixed method design to collect data and undertaken between September and November 2022 at a time when TVET centres were in session.

### 1.9 Limitations of the Study

The study considered some thematic areas that influence implementation of Competency-Based Education Training in public TVET institutions in Meru County. These areas included trainee factors, trainer factors, and institution factors in public TVET institutions. However, other determinants not addressed in this study may affect implementation of competency-based education and training would form a basis for further studies. In addition, this study relied on self-reports which carries their own bias. This was overcome by employing the use of triangulation in data collection by use of questionnaires and interview schedules.

### 1.10 Assumptions of the Study

This study was guided by four assumptions; it was assumed that the institutes' administrators have documented information on trainers' academic and professional qualifications of trainers who have undergone Competency-Based Education and Training. It was also assumed that the CBET curriculum, the facilities applied in its implementation and trainers' qualifications in CBET were relevant factors likely to affect the level of acquisition of employable skills among the students and their employability rates after graduating. The study was also based on the assumption that the findings obtained would be representative of students/graduates from TVET institutions in Kenya.

The study was further be based on the assumption that the respondents were knowledgeable about the study subject and that they would provide honest and objective responses to the questions asked besides being cooperative throughout the research process.

### 1.11 Theoretical Framework

This study was anchored on the job skilling theory framework by Dreyfus and Dreyfus (1986) as cited by Kitainge (2017). Job skilling theory explains the skills formation process which one must go through before reaching the level of expertise. The stages are as follows: The novice phase is the stage in which the trainee acts only according to the instructions specified; the amateur stage is where he is guided to do something in a clear-cut way. The competent stage is where the trainee is able to perform the tasks assigned and the final stage is proficient level where trainees are able to see the important benefits of the skills, which can be demonstrated better while expert trainees are no longer, restricted as they are able to perform those tasks on their own.

According to Tarno, Simiyu, Kitainge and Rono (2017), the field of vocational training emphasizes attaining of skills through experiential learning; this can be realized by teaching the skills in sequential stages. In line with this study, this means that the students will learn through practicing the skills in stages as suggested in the above discussed theories. To achieve this, the CBET curriculum content should be broken into small teachable tasks as a way of considering the students. Since students are unable to see, the trainers should explain what they are doing, as well as allowing the students to demonstrate. They should also be given a chance to touch and feel the final products.

This means the trainer should use appropriate teaching methods to meet the needs of the visually impaired students.

Progressively, the trainer should allow the students to practice the skills at their own pace. Here, the trainer will be guiding them as they perform the tasks. This to some extent calls for adapted facilities for easy acquisition of skills. The learning environment should also be least restrictive for easy mobility among the students. Consequently, learning will have taken place for experience is based on the notion that individuals don't have the understanding of the elements of thought that remain otherwise unchanged but instead formed and reformed through experience. This translates to acquisition of employable skills among the students hence high chances of employment upon graduation.

In this study, the application of job skilling theory was evident in the examination of Trainee Factors, Trainer Factors, and Institutional Factors. Trainee Factors were explored to understand how the characteristics, abilities, and prior experiences of the trainees influenced the implementation of CBET. The study investigated the impact of trainees' educational background, including their level of formal education or previous vocational training, on their ability to acquire and apply the skills taught in CBET programs. Additionally, the researcher examined trainees' motivation, learning styles, and aptitude for skill development to determine their role in the successful implementation of CBET. Trainer Factors were analyzed to understand how the characteristics and qualities of the instructors or trainers affected the implementation of CBET. Within the framework of job skilling theory, the study investigated the trainers' expertise in CBET methodologies, their teaching strategies, and their ability to effectively transfer knowledge and skills to

the trainees. The researchers also examined the trainers' understanding of industry needs and their ability to align the CBET curriculum with current job market requirements.

Institutional Factors were another significant aspect considered within the job skilling theory framework. These factors pertained to the organizational and structural elements of the technical and vocational training institutions implementing CBET. The study explored how institutional factors impacted the successful implementation of CBET. This involved investigating the availability of resources, infrastructure, and facilities, the support and commitment of institutional leadership, the presence of appropriate policies and guidelines, and the overall organizational culture that supported CBET implementation.

By considering these trainee, trainer, and institutional factors within the framework of job skilling theory, the conducted study provided insights into the determinants that influenced the successful implementation of CBET in technical and vocational training institutions in Meru County. The findings of the study informed strategies and interventions to improve the effectiveness of CBET programs and enhance vocational education and training practices in the region.

### 1.12 Conceptual Framework

This study was based on the following conceptual framework. Implementation of competency-based education and training (Dependent Variable) is positively or negatively affected by various factors (independent Variables). The independent variables in this study included trainee factors, trainer factors and institutional factors. The effect of the independent variables; trainee factors, trainer factors and institutional factors on the

dependent variable; implementation of competency-based education and training can be influenced by the amount of government support, institutional culture and the Technical and Vocational education training Act of 2013 and therefore the factors were control through triangulation. Figure 1.1 shows the conceptual framework.

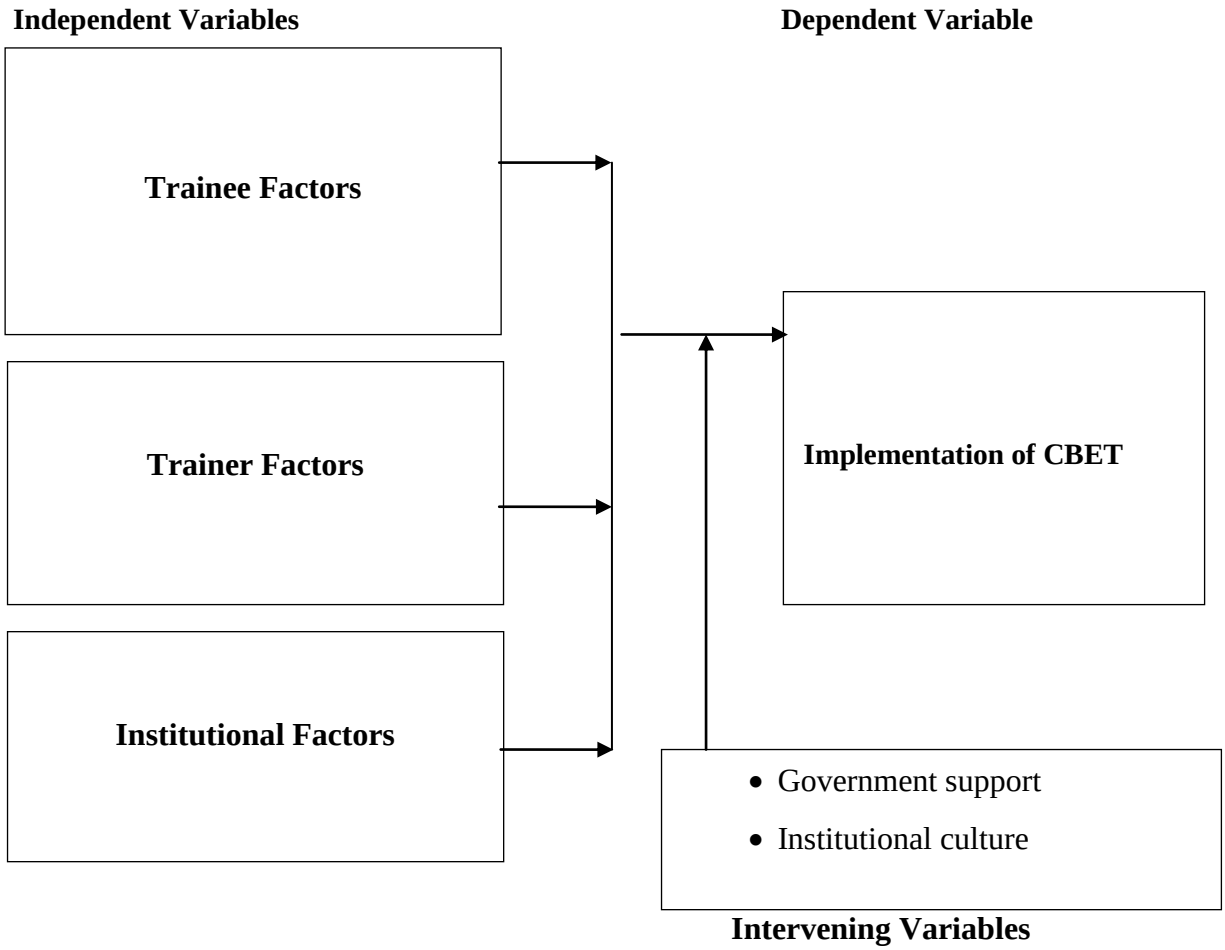


**Figure 1.1 Determinants of implementation of Competency-Based Eeducation and Training**

**Source: Researcher, 2022**

### 1.13 Operational Definition of Terms

**Competency:** Refers to application of knowledge, skills and attitudes in different situations.

**Competency-based curriculum:** Is a curriculum that emphasizes what learners are expected to do rather than mainly focusing on what they are expected to know. In principle, such a curriculum is learner-centered and adaptive to the changing needs of students, teachers, and society.

**Competency-Based Education and Training**: refers to a curriculum that encompasses the application of skills as opposed to subject content and rote memorization.

**Determinants**: Refers specifically to the factors or variables that are considered to be influential in the implementation of competency-based education and training (CBET) in technical and vocational training institutions within Meru County. Examples of determinants in this study could include institutional factors, trainer factors and trainee factors,

**Implementation:** refers to making something that has been officially decided to start or happen or to be used, for example new curriculum

**Institutional Factors**: These refer to administrative and organizational culture of a particular institution,

**Trainee Factors**: Refers to conscientiousness, self-efficacy, motivation to learn, learning goal orientation, performance goal orientation, instrumentality, job function, position and job experience

**Trainer factors**: refers to competency, motivation, remuneration, and attitude, physical and mental preparedness that affects performance of a trainer.

### 1.14 Summary

The first chapter introduces the study by providing essential background information, defining the research problem, outlining the study's objectives, specifying the hypotheses to be tested, and explaining the significance and justification of the study. Additionally, it establishes the scope and limitations of the research and identifies key assumptions. Furthermore, this chapter introduces the theoretical and conceptual frameworks that underpin the study's methodology and concludes with an operational definition of key terms for clarity and precision. The Background of the Study section sets the stage for the research by offering a thorough context for the topic under investigation. It delves into the historical context, existing knowledge, and broader academic or practical framework in which the study is situated. This section provides readers with an understanding of why the research is relevant and necessary.

The Statement of the Problem section articulates the specific issue or challenge that the research intends to address. By doing so, it clarifies the research's purpose and outlines the problem that the subsequent chapters seek to explore and potentially resolve. Following the problem statement, the Objectives of the Study section outlines the overall goals of the research, encompassing both the general aim and the specific objectives that will guide the investigation. These objectives help structure the study and direct the research process toward meaningful outcomes. Within the Specific Objectives subsection, the research further breaks down the general objectives into specific,

measurable, and achievable tasks, providing a more detailed focus for the study and defining the areas of investigation. The Hypotheses of the Study section presents the testable hypotheses that the research seeks to confirm or refute. These hypotheses serve as a structured approach to data analysis and interpretation, guiding the research's investigative process.

In the Significance of the Study section, the researcher emphasizes the study's importance and relevance. This discussion highlights potential contributions to academia, policy, or practical applications, underlining why the research matters. The Justification of the Study section explains the rationale behind conducting the research. It outlines the reasons for selecting this particular topic, highlighting its relevance to the field of study and the potential benefits it may bring to society, academia, or a specific industry. Additionally, the chapter establishes the Scope of the Study and Limitations of the Study, providing clarity on the boundaries and constraints within which the research will operate. It also identifies key Assumptions of the Study that underlie the research's methodology and approach. The chapter concludes by introducing the Theoretical Framework and Conceptual Framework, which will guide the research's methodology and analysis. Lastly, it offers an Operational Definition of Terms to ensure that key concepts and terminology used throughout the study are clearly defined for the reader's understanding.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

The literature relevant to this study was reviewed with the aim of assessing the determinants of implementation of competency- based education and training in technical and vocational training institutions. The chapter is divided into the following sections; the concept of management in education, issues affecting implementation of CBET in TVET; trainee factors, trainer factors, and institution factors.

## 2.2 The Concept of Competency-Based Education

For any nation, education is an important input for economic progression at any time Breen (2014). Development of the nation relies on the quality of the education. The dynamic society and growing anxiety of gaining of 21$^{st}$ century skills, digital and the globalization affects the process involved in classroom teaching and learning, and calls for the need to guarantee to everybody the achievement of new competences for their personal and social-development Pamia (2017). Therefore, Competency-Based Curriculum has been proposed to ensure that the needs of the dynamic society into the job market are actually attained. CBC which is an abbreviation for Competency-Based Curriculum, is an area of interest, and has been researched on from the early 1970s when the USA first engineered it (Richard & Rogers, 2011). The educational goals are defined in form of accuracy in measuring descriptive skills, behavior, and knowledge among students. Such measurable objectives are to be obtained at every completion stage in

student's studies (Wolf, 2011). This was followed by its spread as a movement among nations such as United Kingdom and Germany in Europe.

In the 1990s, it was adopted by Australia and later spread to other countries of the world. Countries were obliged to adopt the education as a result of the conditions of the demands of the global markets and the dynamic nature of the emerging technologies. Africa as well adopted the education, starting with South Africa in 1998. The 1981 recommendation in Kenya, 'Presidential Working Party on the establishment of the Second University in Kenya' introduced a new system of education known as 8-4-4 by 1985.

The guiding philosophy which the system presented was 'education for self-reliance'. The system was reviewed thrice; in 1992, 1995 and 2012 when several reports as well as formative evaluations were drafted and presented to the ministry. The evaluations mainly focused on the content which the education was to deliver, subject overload, pointless overlaps and emerging trends. However, there was no adequate focus on developing citizens for thorough economic growth and development. According to KICD (2019), the content of the education, and its implementation was basically academic and exam-focused. In addition to the education being so much overloaded, several schools faced the challenge of poor equipment, and lack of trained teachers, to facilitate development of practical skills. Literacy and numeracy skills were not adequately enforced in Students.

Perterson and Peterson (2016) suggest that the quality of a teacher is a key factor in determining the effectiveness of a school performance which will in turn help to foster efforts of achieving education reforms. In addition, teachers require important knowledge, skills and ability to interact with all the students setting manageable standard

and choosing instructional materials that can accommodate students at different levels (Zeiger, 2018). Kate (2012) noted that for students to acquire number work skills, they ought to have a variety of relevant instructional materials that are locally available within the environment. Therefore, they should be exposed to a different type of resource in order to actively construct their knowledge better (Omaiyo, 2013). This promotes learning that is practical even in their future lives.

The teachers' perspectives and attitude are important for effecting teaching and they influence students' achievements (Eggen & Sahak, 2011). Quality assurance of the education system ensures quality development in materials used in the learning-teaching environment, advisory service provision and creation of opportunities needed for staff development. Quality assurance Officers see to it that quality is sustained through monitoring and supervising the TVET learning in Kenya. At the local level, the heads of the institutions are in charge of the same. The QASO are representatives of the Ministry of Education and specialize in ensuring quality of learning is maintained in the institutions. According to Ajuoga et al. (2010), the quality assurance department is responsible for overseeing curriculum implementation in schools as well as ensuring teacher effectiveness.. Gongera et al. (2013) argue that the officers provide an external evaluation of curriculum performance in various schools.

The Competence-Based Education came into being to fill the gaps in education and training. The developments had emerged as a consequence of the reports to re-align the education sector as outlined in Kenya's vision 2030, and in the Constitution, 2010. The ministry went ahead to advance the Sessional Paper No. 2 of 2015 on Kenyan education reforms. Some of its key recommendations included; the new CBC, a national system to

cover the national assessments, talent identification and nurturing from early stage, conception of nation values and cohesion, which was to be integrated in classroom learning and teaching. In addition, the new curriculum introduced the three pathways at the senior learning levels.

Kenya's Vision 2030 objectives, in addition to the Sessional Paper no. 2 of 2015- on education reformation, and training had put a stronger importance on the sciences, innovations, and technology. Innovation is possible through curriculum which has undergone a number of changes since 1965. However, the 8.4.4 curriculum has failed to offer planned policies, suitable instructive approaches, and adequate resources to put a stronger base for the progress of competences, innovations, and skills (Muricho & Nyang'ach, 2013; Amukowa, Gunga & Vihenda, 2013). The 8.4.4 system was planned to build education that is more relevant to the world needs by ensuring that individuals became skilled, and having a higher level labor force to provide the demands of labor (UNESCO, 2016). However there was a need to implement a better skill based education system such as CBC to enhance technological advancement innovations. The teachers' perspectives and attitude are important for effecting teaching and they influence students' achievements (Eggen & Sahak, 2011). Quality assurance of the education system ensures quality development in materials used in the learning-teaching environment, advisory service provision and creation of opportunities needed for staff development. Quality Assurance Officers see to it that quality is sustained through monitoring and supervising the TVET learning in Kenya. The institution heads are in charge at local level. The QASO are representatives of the Ministry of Education and specialize in ensuring quality of learning is maintained in the institutions. Ajuoga et al. (2010) write that the quality

assurance department should oversee how the curriculum is implemented in the classrooms and to guarantee that instructors are working to their full potential. Gongera et al. (2013) write that the officers provide an external evaluations of performance of curriculum in various schools. The Competence-Based Curriculum came into being to fill the gaps in education and training. The developments had emerged as a result of the reports to re-align the education sector as outlined in vision 2030 and in the Constitution, 2010.

The ministry went ahead to advance the Sessional Paper No. 2 of 2015 on Kenyan education reforms. Some of its key recommendations included; the new CBC, a national system to cover the national assessments, talent identification and nurturing from early stage, conception of nation values and cohesion, which was to be integrated in classroom learning and teaching. The emphasis of the competency-based curriculum is more on what students are expected to perform than to specialize in what they are expected to know. According to Jallow (2011), the Competency-Based Curriculum aims to increase students' capacity for problem-solving, research, and the discovery of effective learning strategies. The Competency-Based Curriculum is thought to be appropriate for addressing changing society desires, technology socio-financial needs, habits, and attitudes widespread in carrying out various tasks (Maodzwa-Taruvinga & Cross, 2012). It is a movement from traditional center-driven training, where the primary focus is on knowledge improvement, to competence-based completely education (Young, 2009). It focuses on the development of abilities as a set of values, attitudes, skills, and knowledge required to carry out certain tasks (Mulder, 2014). The Competency-Based Curriculum discourages the accumulation of knowledge and places a premium on talent development.

The curriculum is shifting from a content-based to a competency-based approach (MoE, 2005). As a result, there is a need to shift coaching-learning procedures away from rote memorization and toward ways that aid in the development of talents and abilities that can be applied to solving real-world situations. Woods (2008) and the World Bank (2011). Expert and know-how facilitators who can follow appropriate teaching strategies such as mentorship, facilitation, and instruction are essential for this curriculum to be delivered and executed effectively (Abuya, 2017).According to Sudsomboon (2010), the successful consciousness of Competency–Based Curriculum is based heavily at the teachers, who are required to soak up the new position of training and facilitating instead being transmitters of information. Therefore, in-servicing of teachers for the implementation of the Competency-Based Curriculum may be very important. Competence based inquiry is a manner of creating a mastering framework designed to meet man or woman newcomers pre-determined the set of abilities. Given the reality that students have diverse competencies, it is essential for them to comprehend and actualize that competence based getting to know requires that the activities are palms on and no longer mastering simply by using observation (Jengere et al., 2017).

The transition from the 8-4-4 education system to Competency-Based Education and Training (CBET) in technical institutions in Kenya marks a substantial educational reform initiative in the country. The 8-4-4 system, established in the 1980s, has long been the framework for Kenyan education, consisting of eight years of primary education, four years of secondary education, and four years of university education or vocational training. However, recent developments have necessitated a shift toward the CBET approach. This transition is driven by several contemporary factors that have gained

prominence in the Kenyan educational landscape. Firstly, it is motivated by the imperative to align the country's education system with the evolving needs of its industries (Lukalo, 2019). Industries in Kenya are continually changing, requiring a workforce with up-to-date, practical skills. CBET's emphasis on practical competencies is seen as a means to produce graduates who can seamlessly integrate into the workforce.

Secondly, the adoption of CBET in Kenya aligns with global trends in education (Mulongo, 2020). Many nations have gravitated towards competency-based education and training to better prepare their students for a rapidly changing job market. Kenya's embrace of CBET reflects its commitment to aligning its education system with international best practices. Additionally, the transition seeks to address the persistent issue of unemployment among graduates of the 8-4-4 system. Graduates are frequently underprepared for the job market due to a mismatch between their acquired abilities and the needs of prospective employers (Simiyu & Kiboss, 2017). The CBET approach aims to alleviate this issue by producing graduates with practical, industry-relevant skills.

Furthermore, CBET promises a more engaging and effective learning experience for students. It encourages active learning, problem-solving, and mastery of skills over rote memorization (Khaemba & Ndiwa, 2020). This shift in pedagogy is expected to make education more meaningful and applicable, enhancing students' readiness for the world of work.

The transition to CBET involves several crucial steps, beginning with the advancement of new curricula tailored to technical institutions. These curricula are developed in consultation with industry experts to ensure their alignment with current industry

demands. Teachers and instructors also receive training to adapt to CBET's teaching and assessment methodologies (Kipkebut, 2021). Additionally, technical institutions may need to upgrade their infrastructure and resources to support CBET, including workshops, laboratories, and equipment. Assessment and certification methods are being restructured to align with the continuous assessment approach of CBET. Awareness campaigns are essential to inform students, parents, and employers about the benefits and nuances of CBET, differentiating it from the 8-4-4 system. Pilot programs are often initiated to test the CBET system in select technical institutions before full-scale implementation (Khaemba & Ndiwa, 2020). Continuous monitoring and evaluation mechanisms are put in place to identify challenges, make improvements, and ensure that the CBET system is effectively meeting its objectives.

### 2.2.1 Trainee Factors and Implementation of Competency-Based Education and Training

It is commonly agreed that education is a crucial factor that influences one’s situation in the labor market upon graduation. Education prepares students for future occupations by equipping them with required skills. Yet, with the rapid appearance and creation of new jobs and occupations, nowadays, that need innovative knowledge and skills, it becomes difficult or even impossible for educational institutions, to cater for the increasing needs of the labor market (Małgorzata, Justyna & Michał 2020; Ionescu, 2012). Supporting this, Gáthy (2013) puts it clear that "higher education usually does not meet the requirements of the labor market and, what is more, it actually contributes to the unemployment of young graduates" cited in Varga, Szira, Bardos, and Hajos, (2016) pp. 95-96.

In a competency-based learning system in CandA, students are allowed to progress forward at their own pace regardless of age, seat time or other students. Once a student demonstrates mastery of identified competencies and necessary skills, s/he is free to move ahead. Student demonstrated mastery of academic content is assessed against established benchmarks (McDonald, 2018). In a competency-based learning system, a radical change in the roles of both faculty and students is done. Faculty no longer serve as knowledge transmitters responsible for lecturing over a specified number of hours and weeks. Their roles change from that of "sages on the stages" to "guides on the sides." They work with their students as facilitators who lead discussions, guide their learning, answer their questions and help them apply the knowledge they acquire. On the other hand, student roles change from passive recipients to proactive knowledge producing ones (Egbert & Shahrokni, 2019). Thanks to the practical reusable learning resources available any time when required, students in competency-based learning are responsible for their own learning and for moving forward toward mastery.

However, in a competency-based learning system, students receive just-in-time differentiated help according to their needs and abilities and students may have difficulty in adopting it. Faculty therefore should be ready to step in when their individual students need help. Faculty work with struggling students individually and help them draw on their strengths to help them move forward (Ralf et al., 2020). In so doing, they offer them personalized learning and equal opportunities to succeed. Faculty should not wait for students requesting for help. Moreover, faculty should be wholly aware of each individual student’s progress.

Furthermore, there is an extensively reported complaint among employers of the shortage in employees who are capable of transferring their acquired knowledge to solve work problems and make the proper decisions (Rodriguez & Gallardo, 2017). Accordingly, a shift is needed, in educational paradigms, from traditional time-based to outcome-based or competency-based which concentrates on the type of knowledge, skills, values and behaviors required for achieving the desired level of performance in a particular job or activity in the labor market. That shift which focuses on innovation in higher education, is one of the most important elements of the Saudi Arabian Kingdom's Vision 2030. Despite the willingness on the part of universities, stakeholders, as well as employers, to implement competency-based learning, little is known about how to incorporate it into bachelor degree programs (Dragoo & Barrows, 2016; Bosman & Arumugam, 2019). Furthermore, there is a significant lack of peer-reviewed literature on CB curriculum design (Torres, Brett, Cox & Greller, 2018); Jennifer, Ellen & Jessica, 2017; Ryan & Cox, 2017).

With the change in higher education institutions, as required by the digitization of the society, from being centers of "knowledge dissemination to the core of forming specific competencies" that individuals need for their professional, as well as their social lives, competency-based learning has become a necessity nowadays (Kostikova, Viediernikova, Holubnycha & Miasoiedova, 2019) p. 118. Competency-based learning, especially in postgraduate education, represents a change from a mainly time-based model to an outcome-based one which involves with acquiring distinct competences that describe the information, skills, and attitudes required by a specific specialty (Evan et al., 2020). This method of instruction deviates from setting time limits, during which students are asked

to learn a specific amountof knowledge and allows students to proceed in learning at their own rate. Thus, the learning objective changes from attaining an increased quantity of knowledge which can be delivered along one semester or quarter, to making sure that students master pre-determined learning outcomes before advancing to the following level (Henri, Johnson & Nepal, 2017). For Parson, Childs and Elzie (2018), competency-based learning has grown significantly as a method that clearly connects skills of a particular profession and its protocols to the curriculum. In competency-based curriculum design, Choices are based on the knowledge, skills, and beliefs required for students to be proficient in chosen vocations after graduation. According to Johnstone and Soares (2014), Competency-Based Education is urgently required nowadays for two reasons; firstly, It reorients the educational process toward the demonstrated mastery of the use of acquired information and abilities in real-world situations outside the educational institutions. In so doing, a bridge is built between academics and employers that help students gain the kind of information and abilities they need to excel in the workplace in the real world. Furthermore, Competency-Based Education offers a means for helping quality and affordability to be found side by side in higher education. Competency-Based Learning, for Henri et al. (2017), is "an outcome-based, student centered form of instruction" (p. 607). According to that system of instruction, students are allowed to proceed to more advanced tasks upon mastering the essential pre-determined requirements of knowledge and skills. McDonald (2018) claims that competency-based higher education can be attractive to students because it enables them to master, often at a speed that suits them, the competencies essentially required for future careers.

The study of Kostikova et al. (2019) was carried out to assess the impact of a competency-based learning paradigm for foreign language teaching on the successful accomplishment of the first certificate in English. It was showed that competency-based approach to teaching a foreign language for specific purposes is the type that matters most.. Using a mixed-methods approach Kabombwe and Mulenga (2019) investigated the adoption of competency-based teaching and learning among history teachers in in Lusaka district, Zambia. According to the study's findings, 67% of participants did not understand the notion of competency-based learning. Results also showed that teachers were not using competency based approaches because of a lack of awareness and skills required for implementing competency-based approaches.

However, there are literature gaps that the current the current study intends to fill. The body of literature currently available contains a consensus that education plays a pivotal role in preparing individuals for the labor market by developing appropriate knowledge and abilities (Małgorzata, Justyna & Michał, 2020; Ionescu, 2012). However, a growing challenge is emerging in the face of rapidly evolving job markets that demand innovative and adaptable skills and competencies. This presents a formidable task for educational institutions to keep pace with the ever-changing needs of the labor market (Małgorzata, Justyna & Michał, 2020; Ionescu, 2012). Moreover, Gáthy (2013) highlights a concerning issue where higher education may not adequately meet the requirements of the labor market and may inadvertently contribute to graduate unemployment (cited in Varga, Szira, Bardos, and Hajos, 2016).

To address this challenge, a paradigm shift towards Competency-Based Education and Training (CBET) has gained prominence, aiming to provide students with competencies and skills that are directly applicable in the job market (Rodriguez & Gallardo, 2017). This shift signifies a move from traditional time-based educational models to outcome-based or competency-based systems, aligning education more closely with the skills and behaviors required in specific jobs or industries (Małgorzata, Justyna & Michał, 2020).

Within this context, the implementation of competency-based learning systems, such as the one described in CandA, offers students the flexibility to progress at their own pace, demonstrating mastery of identified competencies and skills (McDonald, 2018). This approach transforms the roles of both faculty and students, with instructors transitioning from traditional knowledge transmitters to facilitators, while students become proactive knowledge producers (Egbert & Shahrokni, 2019).

However, challenges arise in ensuring that students receive tailored support when needed, as individual learning paces and needs may vary. Faculty members are required to step in and provide just-in-time differentiated help (Ralf et al., 2020). They must be well-acquainted with each student's progress and provide personalized assistance to ensure equal opportunities for success. This shift towards personalized learning aligns with the broader educational goals of CBET. Despite the growing recognition of CBET's potential to bridge the gap between education and employment, there are critical gaps in the existing literature. Firstly, there is limited research on how to effectively incorporate CBET into bachelor degree programs (Dragoo & Barrows, 2016; Bosman & Arumugam, 2019). This gap raises questions about the practical implementation of CBET within traditional degree structures.

Secondly, there exist a dearth of peer-reviewed literature on CBET curriculum design (Torres, Brett, Cox & Greller, 2018; Jennifer, Ellen & Jessica, 2017; Ryan & Cox, 2017). This lack of comprehensive guidance for curriculum development in a competency-based context highlights a need for more research in this area. Furthermore, while CBET is gaining traction in higher education, especially in postgraduate programs, there remains a need for a more extensive examination of its impact on student outcomes and employability (Kostikova, Viediernikova, Holubnycha & Miasoiedova, 2019). This includes understanding how CBET can better prepare students to meet the needs of the modern workforce.

### 2.2.2 Trainer Factors and Implementation of Competency-Based Education and Training

Curriculum is the means by which countries all over the world equip the populace with the values, knowledge, skills, and attitudes required for them to be actively involved in economic and social life in order to achieve both national and individual development (Kabita & Ji, 2017). The term "curriculum" refers to any instruction that is planned and overseen by schools, whether it occurs in individual or group settings, within or outside of the classroom (Kelly, 1983). According to this concept, a curriculum includes learning programs such as subjects provided, intramural and interscholastic programs, and career guidance, among other things (Azuka & Kurumeh, 2015). Planning learning activities with the intention of causing change in students as well as determining how much of the desired change has been attained are both necessary for the development and implementation of a curriculum. Any excellent educational program advancement is a constant and ongoing engagement because educational plan improvement is typically

driven by the desire to respond to change. Trainers are crucial and influential stakeholders in determining the degree to which the schools implement curriculum policies (Porter, 2015). This relies on their attitude and perspective of the curriculum. As found out in a study that was conducted in Tanzania on change from knowledge-based to competence-based curriculum among secondary schools, some trainer regarded the new textbooks as irrelevant as other consider it impractical and complex (Luhambati, 2013). According to Eggen and Sahak (2011), the trainers' perspectives and attitude are important for effecting teaching and they influence Students achievements. According to Barr in Banning (1954), trainer attitudes are crucial to curriculum change and its execution. This means that in order to ensure successful implementation of any curriculum reform in the educational system, consideration must be given to the perspectives, interests, perceptions, and attitudes of the trainer. This is because, trainers decide on activities considering theirattitude, experience and beliefs upon their responsibilities in the school. It's important to note that Trainers oppose the competence-based curriculum because they have not taken part in the training. These centers fear in them since they view themselves as unprepared to undertake the task as it is. This is the case with when dealing with special needs where trainers develop low confidence and negative attitudes to inclusion (Ozoji, 1998; Obani, 2012).

According to McMillan's (2010), trainers need to be knowledgeable and of understanding to conduct assessments on student learning. This is due to the results showed that trainers who had sufficient knowledge on assessments were able to integrate it well into their teaching. They were also able to use effective approaches, techniques, and strategies to enhance their students' competencies. In dealing with the adoption of the competence-

based curriculum, technology and especially ICT is important. In a study done in Canada by Hardy (2013), pre-service and in-service trainers felt that they lacked adequate equipment and sufficiently prepared with the ICT skills fundamental for handling and use of technological tools for successful implementation of technology in their classroom. This happened though trainers were formally trained in how to use computer technology in classroom but they could not do so in practice.

A decent educational plan needs to line up with worldwide patterns of fast development of information, widening data and correspondence advancements, and the resulting constant shift in the skills needed for students to fit into the gig market (Stabback, 2016). The globe is currently seeing a movement toward capability-based education (Gardner, 2017). The development of ability-based schooling in the United States of America (USA) began around 1980.

In any event, the origins of ability-based education may be traced back to the 1920s, to ideas of instructional transformation linked to plans of action indicating results in aims (Williamson, 2010). Right now in the USA, schools execute a capability based training framework by which students continue to higher instructive levels whenever they have dominated going before ideas and abilities regardless of time, spot or speed. The functioning meaning of capability-based teaching framework in the United States is governed by five educational program plan standards: i) students advance to a more significant level after mastering current abilities and ideas; ii) the abilities include clear, quantifiable, and adaptable learning targets that enable students; iii) there is a significant appraisal process that provides students with positive learning experiences; and iv) students are given separated and timely help, which is in accordance with individual

adapting needs. and v) the learning system's outcomes emphasize capabilities such as knowledge creation and application, as well as the improvement of fundamental abilities and manners (Sturgis, 2016). There is a considerable distinction between customary frameworks of training and ability based instruction, since in conventional frameworks students are relied upon to devote a set measure of energy on specific curricular subjects and proceed to more raised levels at foreordained stretches, regardless of whether they have not dominated the talents and concepts. Finland's schooling framework is profoundly recognized as one of the best all over the planet, with Finnish schools frequently ranking first in exams supervised by the Program for International Student Assessment (PISA), which routinely analyzes training frameworks in OECD nations. Defenders of ability-based education in Europe see Finland's educational framework as a paradigm of greatness (Bristow & Patrick, 2014). The success of the Finnish educational framework can be attributed to developments that began in the country in the 1970s. The modifications resulted in the limitation of Finland's public educational program, which had previously been particularly concentrated (Darling-Hammond & McCloskey, 2018). Finnish instructors were then given abilities in brain science, curricular hypotheses, and examination abilities, to the point where they are now in charge of developing their own educational programs based on public guidelines. School administrators and educators across the country take the responsibility of identifying the general goals of training for their schools, the appraisal cycle for students in their schools, and self-evaluation of school improvement goals (Sahlberg, 2012). The general public has a strong belief that the instructors and executives will work really hard satisfying these obligations. One of the primary reasons for Finland's educational framework's success is that the government

invests much in educator training. Educators are chosen from the top 10% of secondary school graduates and trained to the level of bosses certification (Bristow & Patrick, 2014). In Kenya, a significant educational program reform occurred in 1985, when the 8-4-4 instructional system was introduced in response to recommendations made by the Presidential Working Party on the Establishment of the Second University in Kenya Republic of Kenya (1981). The 8-4-4 framework was for the most part directed by a way of thinking of independence. From that point forward, different developmental and summative audits and team reports brought about surveys of the public educational program in 1992, 1995 and 2012 Republic of Kenya, (2017).

The Kenya Institute of Curriculum Development (KICD)'s acceptance of an ability-based educational plan strategy in the adjustments was the pinnacle of this educational plan survey procedure. KICD defined ability as students' ability to apply learning assets and achieve satisfactory results (perspectives, information, abilities, and qualities) in a characterized setting, either in school, individual, work, or expert turn of events Republic of Kenya (2017). In Kenya, capability-based education is defined as putting emphasis on what a student is expected to perform rather than what the student is expected to know. A competency-based educational plan is then student-centered, with a strong emphasis on the changing needs of students, teachers, and the broad public in its entirety. The ramifications of this are that the educational plan agrees students a chance for securing and use of information, abilities, mentalities and qualities to everyday critical thinking while at the same time setting accentuation on 21$^{st}$ century abilities Republic of Kenya (2017).

In 2015, Rwanda presented a skill based educational program (CBC) from an information based educational program (Ndihokubwayo & Habiyaremye, 2018). By changing the educational program, Rwanda moved from information and abilities procurement figuring out how to decisive reasoning, creation and development, examination and critical thinking, correspondence, participation, relational fundamental abilities and long lasting learning skills (Ngendahayo & Askell-williams, 2016). These capabilities were presented along with cross-cutting issues including annihilation studies, climate and maintainability, sex, sexuality, comprehensive, harmony and values, monetary and normalization culture training REB (2015). The CBC is valued to draw in a unique discovering that is in accordance with the future business needs of Rwanda and the worldwide economy REB (2015). Further, the CBC is valued to assist graduates with defeating difficulties looked at the work market, and for advancing guidelines in capabilities required at the worldwide level REB (2015). The CBC presentation was depended on to put greater emphasis on the needs of students (Mbarushimana & Kuboja, 2016). Subsequently, it was imagined as a methodology for addressing the goals of Rwanda and its populace to fulfill their necessities through further developed instruction framework Singer et al. (2014).

Trainers determine the quality of education provided by any system in any state. This means that for any nation to develop it should possess a quality education system Arab Knowledge Report (2019). Therefore, it is important to determine the standard of instruction, it is necessary to perform evaluation. In education, assessment is a methodical process to determine values, and impact using principles provided based on standards set by a governmental which is in charge of education matters in a given

country. Trainer appraisal is a composite process which requires a multifarious approach and methodology based on the latest attainments of technology in an information society (Arab Knowledge Report, 2019).

School effectiveness is enhanced by the nature of the trainer in terms of the skill set possessed by the teacher, whereby a teacher who is well versed by the needs of the Student is able to attain more Student achievement. A study conducted by UWEZO (2014), a TVET teacher's capacity to integrate the CBC into teaching and learning significantly affects the success of curriculum implementation. Thus, when an education system needs to be changed, a key factor to take into account is a teacher's effectiveness. Additionally, Peterson and Peterson (2016) write that evaluation process is important to evaluate how effective a teacher is; this has the ability to improve the value of such a teacher, in turn increasing his/her professional development for better future results (Robinson et al., 2018). This is what Alghanabousi (2010) calls performance evaluation, which he claims is an important function to help leaders in assessing the performance of the instructors within a given period, which is likely to benefit the education system in future. In Kenya, TSC oversees the role of quality assurance, ensuring that high standards of instruction are followed in schools. Recently, teachers have been obliged to master the subject on hand. which they teach. In addition, professional skills and development of values were found to be critical to teachers' professionalism (KICD, 2016). In addition, teachers require important knowledge, skills and ability to interact with all the students setting manageable standard and choosing instructional materials that can accommodate students at different levels (Zeiger, 2018). This promotes learning that is practical even in their future lives.

The existing literature underscores the crucial role of the curriculum in shaping the values, knowledge, skills, and attitudes of individuals, which are essential for their economic and social engagement and personal development (Kabita & Ji, 2017). Curriculum, in this context, encompasses various learning programs, including subjects, extracurricular activities, and career guidance (Azuka & Kurumeh, 2015). Furthermore, trainers are highlighted as influential stakeholders in the implementation of curriculum policies, as their attitudes and perspectives significantly impact students' achievements (Porter, 2015).

However, several gaps and areas of concern within the literature become evident. Firstly, while the trainers' perspectives are recognized as crucial, there is limited exploration of how their attitudes may influence the adoption and effective implementation of curriculum changes, particularly regarding competence-based education (Luhambati, 2013). Understanding trainers' views, interests, opinions, and attitudes towards curriculum changes is vital to ensure successful implementation within the educational system (Eggen & Sahak, 2011).

Another gap relates to the challenges trainers face in adapting to competency-based education, especially when dealing with special needs (Ozoji, 1998; Obani, 2012). There is a need for further research to investigate the factors contributing to trainers' apprehensions and their ability to effectively accommodate diverse learning needs.

Additionally, the literature points to the importance of trainers' knowledge and understanding of assessment practices for student learning (McMillan, 2010). However, there is a dearth of research addressing how trainers can be better prepared to integrate

assessment techniques into their teaching effectively, particularly in the context of competency-based education. Furthermore, the literature highlights the significance of technology, specifically information and communication technology (ICT), in modern education (Hardy, 2013). Trainers' preparedness and competence in utilizing ICT tools are critical for the successful implementation of technology in the classroom. However, there is a lack of comprehensive research on how to equip trainers with the necessary ICT skills for effective teaching.

Moreover, the literature emphasizes the need for educational systems to align with global trends and the changing demands of the job market (Stabback, 2016). The shift towards competency-based education is seen as a response to these demands, but there is limited exploration of the practical implications and challenges of implementing competence-based curricula in different contexts. Comparative studies that examine successful models of competency-based education, such as those in the United States, Finland, and Rwanda, provide valuable insights (Sahlberg, 2012; REB, 2015). However, there is a lack of research that explores the transferability of these models to other educational systems, such as that of Kenya. Furthermore, while the literature acknowledges the pivotal role of trainers in the effectiveness of education systems (Arab Knowledge Report, 2019), there is a limited focus on how teacher evaluation and professional development can contribute to enhancing teaching quality and curriculum implementation.

### 2.2.3 Institutional Factors and Implementation of Competency-Based Education and Training

School-related factors provide some useful information with which to evaluate effective preparation practices for teachers (Adre & Sullivan, 2018). However, much of the

research is limited in scope, focuses on inputs to the education process rather than outcomes, uses data that are only loosely connected to the concepts being examined, or employs case-study methodologies from which it is difficult to determine causal relationships or generalize to other populations (Adre & Sullivan, 2018). As a result, there is still much to learn about school-related factors influencing the effective implementation of school curriculum. Adelman (2016) posits that school related factors include; adequate staffing, instructional resources, school facilities and school management support.

In a longitudinal study conducted in California, Ball (2010b) revealed that discussions of the preparedness of most schools in California have focused on the percentages of teachers without credentials or, at the middle and high school levels, teachers without the appropriate single-subject credential for the subject areas to which they are assigned. Ball (2010b) established that little attention has been paid to the preparation of schools in California to provide dynamics such as teachers, instructional resources, physical facilities and stakeholders' attitudes towards implementation of school curriculum. In Sub-Saharan Africa, most studies seeking to evaluate teachers' proficiency in a given subject area have focused on interview studies measuring teachers' perceptions 2 of their own preparedness, without a comparative analysis of school related factors and pupils' educational outcomes Amarel (2018).

However, research on school related factors and teacher efficacy has indicated that there is a relationship between self-assessments of preparedness and behaviors that affect pupil learning, including a willingness to try new instructional techniques, persistence in problem-solving, and levels of planning and organization. In a longitudinal study

conducted in Ghana about what certification does tell about teacher effectiveness on academic achievement, Ajayi (2011) indicated that teachers who are prepared with instruments of teaching such as schemes of work, lesson plans, and records of work are competent in their delivery and have the greatest impact on students's achievement. The study further indicated that any form of preparedness such as provision of teachers, instructional resources, school facilities and manifestation of positive attitude are among the principal components of any pedagogical program aimed at improving Implementation of school curriculum.

In Kenya, efficacy and schools' preparedness influence the effort teachers invest in teaching, the goals they set for their classes and their level of aspiration and, in addition, stakeholder, especially teachers with a strong sense of efficacy, often tend to manifest greater levels of planning and organization of lessons. They are also more open to new ideas and tend to experiment with new methods and strategies to better meet the needs of their Students. These research studies affirm the fact that dynamics within schools are key in enhancing pupils' Implementation of school curriculum which determines their transition to other levels of learning. Despite these assertions, little is known about how such aspects of school related factors enhance school pupils' academic performance (Sushila, 2014).

Considering Nguu Division, implementation of school curriculum has experienced numerous challenges. Studies have had difficulties identifying specific mode of preparedness related to schools' effectiveness (Sifuna & Karugu, 2010). The lack of evidence linking observable aspects of preparedness such as adequate levels of staffing, provision of instructional resources, physical facilities and stakeholders' 3 attitude to the

implementation of school curriculum is a common problem which requires to be addressed. Dupas, Duflo and Kremer (2016), noted that improvement of the staffing levels in schools improves teacher to pupil ratio (that is to a smaller sized class per teacher), this leads to improvement in curriculum implementation. This will consequently lead to improved performance in exams because the test scores are expected to be higher in a case whereby pupils are put in more homogeneous classes or assigned to extra teachers. This is because a large number of pupils per teacher, makes it difficult for teachers to give adequate assignments to the pupils, as teaching workload and marking become overwhelming (UNESCO, 2015).

According to Fuller (1986), school quality is often indicated by school characteristics which include the institutional resources and school facilities which are related to effective curriculum implementation. The school characteristics should be able to improve the achievements by the students and encourage more efficient management of material inputs by school management. Poor curriculum implementation is associated with limited learning materials and facilities Riddell & Nyagura, (1991). The execution of the curriculum will be improved by having access to sufficient textbooks and learning resources, as well as instructors who are qualified and experienced. Boissiere, (2014) found that management support appears as the most important ingredient that affect curriculum implementation. These results suggest that management support is associated with better achievement. This is because management supplies the teaching and learning resources and facilities, making their assistance critical in curriculum implementation. Based on the outcomes of a needed evaluation research conducted in 2016, the Kenya Institute of Curriculum Development (KICD) adopted a competency-based approach

(CBA). Kenyan educators received instruction on this technique from the UNESCO International Bureau of Education (IBE-UNESCO) and other professionals. KICD defined competency-based curriculum as the ability to apply learning resources and outputs (knowledge, abilities, values, and attitudes) appropriately in a specified context (education, work, private, or expert) enhancement) (UNESCO, 2017). The curriculum reform was guided by the vision of developing each student's expertise and hidden capacity in order to produce residents who are equipped with all relevant and satisfactory information in accordance with the Kenya charter of values and social amenities (2010), as well as to equip them with competencies required in the realization of Vision 2030.. Kenya undertook a top-notch curriculum overhaul at the national level.Competency-Based Education was implemented as a government order in Australia in 1990 Smith (1996).. It developed from deficiencies discovered in the skills level of the Australian workforce as a result of the never-ending changes in the economy and the dizzying rate of technological advancement. Weakness in the delivery of skills was mostly attributable to flaws found in the current educational systems. It was stated that the access stage serviced by current apprenticeships and traineeships was insufficient. There was very limited qualification mobility from states and territories or from other countries to Australia. Industry stakeholders frequently expressed displeasure with Vocational Education and Training (VET) providers' training. More generally, it was considered that there was an emphasis on consistent length guides that suppliers chose to make available rather than on the development of abilities that students and trainers need (Smith, 1996). Economic and technological advances compelled a number of trends in administrative center reform, award restructuring, and challenge. Australia's education system has been

re-evaluated in order to increase ability levels and international competitiveness. In other countries, the Zambia curriculum has been altering in an effort to prepare students for future problems in a rapidly changing globe (MoGE, 2013). The goals of the 2013 Zambian curriculum revision are to develop self-inspired, life-long students, confident and competent persons, holistic, autonomous rookies with the values, abilities, and knowledge to enable them to succeed in school and in life. (Zulu, 2015). One would be correct to conclude that the Zambian ministries of General and Higher Education had studied the Zambian economy fairly accurately because organizations such as the World Bank have determined that despite the fact that youths in Zambia make up three-thirds of the United States of America's working-age population; young people unemployment is a massive task in that one area where they're unemployed.According to Taasisi ya Elimu (2013), Tanzania's final curriculum overview was created in 2005.It evolved into a new guiding principle known as Competency-Based Curriculum (CBC), which meant that it strengthened students' talent acquisition. The ideas are said to have been significantly influenced by Tanzania's Development Vision 2025 and the Education Development Sector initiative (Justin, 2013). By 2006, the competency-based curriculum had been implemented in all elementary and secondary schools. Serious financial and human commitments were made to restrain and assist instructors, head teachers, and other education specialists in developing the necessary competence and self-belief to effectively manage competency-based training (Woods, 2008). The development of competency-based curricula became the second most important pedagogical trade in the United States. Following the primary alternatives in 1967, when self-reliance education was launched.Like many African nations, Kenya has a large and diverse population of

young people without jobs. To alleviate this burden, training and education in Kenya must be linked to meet the desires and aspirations of the Kenyan population, with vocational schooling training emphasizing to help minimize the high youth unemployment problem. Policy Framework for Education, Training, and Research in the Republic of Kenya, Sessional Paper No. 1 of 2005 (2016). A competency-based curriculum is education that aims to develop in pupils the capacity to apply suitable skills and knowledge to effectively carry out a feature. Kenyan Republic (2016). In January 2011, the Kenyan government launched a review of the national curriculum in order to develop a curriculum that adequately addresses and meets the needs and aspirations of Kenyans and equips children with knowledge, appropriate attitudes, and abilities to help them stay healthy and compete globally. A KICD study report on the needs assessment for curriculum reform reiterated the need for a first-rate faculty curriculum that combines and prepares persons with competencies and abilities applicable in real-life situations regionally and worldwide.Kenya's new curriculum revisions aim to nurture each capability and improve a better approach of discovering, nurturing, and developing young talent through learning tracks and routes that will be provided at senior secondary (Republic of Kenya, 2017). Based on a needs assessment and the vision and mission of the BECF, there are seven skills to be developed, which include self-efficacy, citizenship, creativity and creativity, critical questioning and problem solving, communication and collaboration, learning to analyze, and digital literacy. Basic education is divided into three stages: early childhood education, center faculty education, and senior high school. The new competence-based curriculum was implemented in lower schools in January 2017 and is being phased in from grade one to grade four. The competency-based

curriculum was introduced in grade 4 in 2020, and it will be expanded to grades 5, 6, 7, 8, and form one in 2021. It will be extended to form 2, form 3, and form 4 in 2021, 2022, and 2023, respectively, according to the Daily Nation, Sunday, and (January 22, 2017).

Teachers are curriculum implementers, so they play a significant role in student progress and transformation. As a result, the quality of instruction is heavily dependent on the trainer (CfBT, 2012). As a result, teachers must be extremely competent in the use of teaching methodologies necessary to ensure that students learn successfully (Kafyulilo, Rugambuka, & Moses, 2012). Because teachers are crucial players in the execution of the curriculum, competency-based techniques require instructors to be competent enough to allow their freshmen to participate in the learning process (Botha & Reddy, 2011; Wangeleja, 2010).Student accomplishment is related to teacher preparation and training. Teacher quality and student accomplishment are more closely associated than other types of investments such as instructor compensation and a reduced number of freshmen in the classroom (Darling-Hammond, 2000). Teachers must also understand their specific difficulty in order to produce tailored merchandise (Moodley, 2013). Thus, for the technique to be successful, a teacher must be well-equipped with pedagogical content knowledge (PCK), which is information developed by instructors for students to analyze (Botha & Reddy, 2011).Time allocation and evaluation of student progress are critical components of every academic curriculum. Because of the shift to a competency-based curriculum, there is a need to match evaluation with the continuous emphasis on competences (Conor, 2009). The viewpoints of Stiggins (2008) demonstrate that assessments must change from being a remote, occasionally timed event often connected at the conclusion of instructional software to attach to continuing associated occurrences

that display regular student exchange. Teaching and learning materials play an important role in a child's learning. They ensure that students receive a balanced and relevant curriculum to which they are entitled MOEST (2004). Miller and Seller (1990) assert that instructional materials are crucial components of learning and that intended programs cannot be successfully implemented without them. Adequate teaching and learning resources are necessary for the successful implementation of competency-based education because no major teaching or learning can occur without them. The government or ministry of education must provide schools with enough support materials, such as textbooks, coaching aids, and stationery, to enable teachers and students to play their roles in the systems for implementing the curriculum in a manner that is fully in line with the plan.The existing body of literature provides valuable insights into the implementation of competency-based education and training (CBET) across various educational contexts globally. Researchers have emphasized the importance of CBET in equipping students with the necessary skills, knowledge, and attitudes to thrive in the workforce and meet the demands of the rapidly changing job market. This approach is seen as a response to the shortcomings of traditional education systems that often emphasize knowledge acquisition over practical skills and competencies.

While previous studies have shed light on the benefits of CBET, there have been certain gaps and areas where further investigation is warranted. Firstly, much of the research has been centered around Competency-Based Curriculum (CBC) in specific subject areas or disciplines. While this focus is essential, it doesn't provide a comprehensive view of CBET as a broader educational framework applicable across various fields and industries. One significant gap in the existing literature is the limited exploration of the determinants

or factors that influence the successful implementation of CBET. Understanding these factors is crucial because they can significantly impact the effectiveness of CBET programs. These determinants may encompass a wide range of elements, including teacher preparedness, school-related factors, and the broader socio-economic context in which CBET is implemented.

Furthermore, the regional context plays a pivotal role in shaping the dynamics of CBET. Each region or locality may face unique challenges and opportunities when it comes to CBET implementation. This study, specifically focused on Meru County, Kenya, allows for a more in-depth examination of CBET within a specific geographical area. It enables an exploration of the nuances and intricacies of CBET in a particular regional context, potentially uncovering insights that are specific to Meru County. This research takes a comprehensive approach to address these gaps. It delves into various aspects, including the readiness of teachers to implement CBET, the impact of school-related factors, and their combined influence on CBET outcomes. This holistic perspective provides a nuanced understanding of the challenges and opportunities associated with CBET and offers a more complete picture of the situation in Meru County.

Importantly, this study aims to go beyond examining perceptions and attitudes by assessing the tangible impact of CBET on student learning outcomes and employability skills. This move toward empirical measurement ensures that this research can provide concrete evidence of the benefits of CBET, contributing to the body of knowledge in this field. Finally, this study holds the potential to influence educational policies and practices, not only in Meru County but also in other regions considering the adoption of CBET. By identifying the determinants of successful CBET implementation, this

research can offer actionable recommendations to improve CBET programs, ultimately enhancing the skills and future prospects of students in the region.

**2.3 Study Gap**

Various authors have defined the concept of competency. According to Jallow (2011), a competency is a statement of learning outcomes for a skill or body of knowledge. He adds that when students demonstrate a competency, they are demonstrating their ability to do something (showing the outcome of the learning process). Sullivan (2005) views competency as a set of skills, knowledge and behaviours someone needs to have achieved in order to perform tasks, or activities at school and in the world of work. Kouwenhoven (2003:126) adds, "… it is the capability to choose and apply an integrated combination of knowledge, skills and attitudes with the intention to realize a task in a certain context, while personal characteristics such as motivation, self-confidence, and willpower are part of that context."

A number of studies on competency based education have focused so much on Competency-Based Curriculum (CBC). For example A study by Gallagher and Stepien (2013) investigated the implementation of a competency-based curriculum in a medical school. The study found that the CBC approach led to increased student engagement, enhanced learning outcomes, and improved clinical performance. A study by Singh and Kaur (2016) examined the effectiveness of CBC in enhancing the employability skills of engineering students. The study found that students who were trained under CBC demonstrated significantly higher levels of employability skills compared to those who were trained under a traditional curriculum.

A study by Hoon and Oliver (2013) explored the perceptions of teachers and students regarding the implementation of CBC in a secondary school. The study found that both teachers and students were generally positive about the CBC approach, with many reporting improved student motivation, engagement, and achievement. A study by Gathoni et al. (2021) examined the implementation of CBC in Kenyan primary schools. The study found that CBC led to improved learning outcomes in literacy and numeracy, increased teacher and student motivation, and enhanced student-centered learning.

However CBET identified as an integrated set of skills, knowledge, and attitudes that enable one to effectively perform the activities of a given occupation or function to the standards expected at school and later in public, in the private sector or for self-employment has not been covered exhaustively. This study therefore filled this gap in assessing the determinants of implementation of competency based education and training in Meru County.

### 2.4 Summary of Literature Review

Curriculum is the medium through which nations around the world empower the general public with the values, knowledge, skills and attitudes that are necessary for them to be economically and socially engaged, in order to attain national and personal development (Kabita & Ji, 2017). Curriculum development is usually necessitated by the desire to respond to change, and as such any quality curriculum development is a continuous and on-going process. A good curriculum needs to align with global trends of rapid expansion of knowledge, broadening information and communication technologies, and the resultant constant change in the skills needed by learners to fit in the job market

(Stabback, 2016). Currently, the world is experiencing a shift to competency-based education (Gardner, 2017).

In developed states like the USA, schools implement a competency-based education system whereby learners proceed to higher educational levels once they have mastered preceding concepts and skills without regard to time, place or pace. The working definition of competency-based education system in the USA is guided by five principles of curriculum design: i) learners progress to a higher level once they master current skills and concepts; ii) the competencies comprise clear, quantifiable, and transferable learning objectives that empower learners; iii) there is a meaningful assessment process that provides learners with positive learning experience; iv) learners are provided with differentiated and timely support, which is in line with individual learning needs; and v) the outcomes of the learning process places emphasis on competencies such as knowledge creation and application, and development of critical skills and dispositions (Sturgis, 2016).

In the Kenyan context, competence-based education and training is considered as one where emphasis is placed on what a learner is expected to do as opposed to what the learner is expected to know. Competency based education and training is therefore student-centred, with a lot of emphasis on the changing needs of learners, educators, and the society at large. The implication of this is that the education and training accords students an opportunity for acquisition and application of knowledge, skills, attitudes and values to day-to-day problem solving while placing emphasis on 21st century skills (Republic of Kenya, 2017). Therefore competency-based curriculum is has been

proposed to ensure that the needs of the dynamic society into the job market are actually attained. Competency Based Education and Training is an area of interest.

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

## 3.1 Introduction

This section discusses research technique as well as the research strategy that guided the entire study. It also covers the study region as well as the target population, as well as the sample size and sampling processes used to obtain a representative sample. Furthermore, the chapter explains the instruments used to collect data for the study, as well as their validity and reliability. Furthermore, data collection processes, including determining the study's boundaries, were explained, as well as the data analysis performed while keeping the study's design in mind. Given the sensitivity of the subject under investigation, special consideration was given to ethical considerations and confidentiality concerns about the participants.

## 3.2 Research Design

Creswell (2019) defines research design as "a plan and procedure for research that extends decisions from broad expectations to detailed approaches of data collection and analysis." This study adopted a descriptive survey design using mixed methods approach. According to Kombo and Tromp (2019), a descriptive survey design allows the investigator to explain the current status of operations and present the findings accordingly. The mixed methods technique is thought to be more useful in assisting researchers in meeting the requirements for measuring the goodness of their responses than single strategy designs (Tashakkori & Teddlie, 2013). A mixed method approach is an investigation strategy that combines qualitative and quantitative data collection and

analysis. Indeed, mixed techniques allow for the presentation of a wider range of divergent viewpoints.In contrast to qualitative research, which has traditionally focused on theory production, quantitative research has historically been concerned with theory verification. Though historically significant, the correlation is far from perfect, and there isn't necessarily a link between purpose and approach. This means that theory generation (as well as theory verification) can be done via quantitative research., and qualitative research can be used for theory verification (as well as generation). A significant benefit of this study's mixed methods approach is that it allows the researcher to respond to inquiries about the factors that influence the adoption of competency-based education in TVET institutions using both open-ended and closed-ended surveys and interviews. The surveys offered quantitative data, while the interview schedule provided qualitative data. As a methodology, it includes philosophical assumptions that drive the direction of data collection, analysis, and the combination of qualitative and quantitative methodologies throughout the research process.

### 3.3 Research Paradigm

In order to combine both qualitative and quantitative methodologies at different stages of the research process, this study employed the pragmatism approach (Tashakkori & Teddlie, 2003). The 'what' and 'how' of the research problem are primarily stressed by pragmatics (Creswell, 2003). Additionally, according to Somekh and Lewin (2005) and Tashakkori & Teddlie (2003), pragmatism is seen as a model that provides the core theoretical underpinning for mixed research methodology.Because the research relies on both qualitative and quantitative methods, this paradigm was deemed appropriate for this study. This is due to the fact that this study examined the determinants of competency-

based education and training implementation in technical and vocational training institutions in Meru County using questionnaires and an interview schedule.Furthermore, pragmatism is typically seen as the theoretical partner for the mixed methods research strategy. It provides a set of expectations about knowledge and inquiry that supports the mixed methods research strategy and distinguishes it from purely quantitative strategies based on postpositivism and purely qualitative strategies based on interpretivism or constructivism (Maxcy, 2003; Johnson & Onwuegbuzie, 2004; Rallis & Rossman, 2003).

### 3.4 Study Area

This research was carried out in Meru County's public TVET centers. There are 19 public TVET institutions located throughout the county. The county is bounded to the north and east by Marsabit, to the North by Isiolo, to the west by Nyeri, and to the south by Kirinyaga and Nakuru. Meru County has been chosen because no documented study has been conducted to assess the determinants of implementation of competency based Education in TVET institutions. However, the choice would provide beneficial effects targeted at increasing competency-based education and training in TVET institutions, not lessening the significance of other counties in the nation.

### 3.5 Target Population

Population refers to the total set of participants, including the entire number of surroundings that the investigator considers to be of concern (Oso & Onen 2018). This research targeted all public TVET institutions in Meru County. The region has 19 public TVET institutions. The target population for this study included 6000 TVET trainees, 422 trainers, 44 technicians and 19 principals. The respondents targeted for this study were

selected because they collectively represent key stakeholders in the implementation and effectiveness of competency-based education and training (CBET) programs, providing diverse perspectives on the subject matter.

### 3.6 Sample Size and Sampling Procedures

According to Maree (2017), sampling is the technique used to select a subset of the study population. This entails the researcher selecting subjects for a certain study who he or she believes are best suited to supply the necessary information. This section describes the sampling procedure that will be used for this investigation. The target population is referred to as a sample by Oso and Onen (2018). A total of 6485 respondents consisting 6000 TVET trainees, 422 trainers, 44 technicians and 19 principals formed the target population. This study was founded on a sample size calculation algorithm developed by Krejcie and Morgan (1970), as cited by Kasomo (2011). The formula is as follows:

$$s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$$

Where:

n= Sample size

X= Chi-square for the specified confidence level at 1 degree of freedom

N= population size

P = population proportion

ME = Desired Margin of Error (expressed as a proportion)

=3.841x6485x0.5 (1-0.5)/ 0.05x 0.05 (6485-1) +3.841x0.5 (1-0.5) = 363

Having arrived at a sample size of 363 respondents, proportionate simple random sampling was used to select 335 trainees, 23 trainers 3 technicians and 2 principals. As a

result, six TVET institutions were chosen using simple random sampling from which the respondents were taken. Table 3.1 shows the sample size for the investigation.

**Table 3.1 The Sample Size for Respondents**

| **Category** | **Target Population** | **Sample size** | **Sampling Criteria** |
|---|---|---|---|
| Trainees | 6000 | 335 | Proportionate random sampling |
| Trainers | 422 | 23 | Proportionate random sampling |
| Technicians | 44 | 3 | Proportionate random sampling |
| Principals | 19 | 2 | Proportionate random sampling |
| **Total** | **6485** | **363** | |

### 3.7 Research Instruments

According to Kombo and Tromp (2016), questionnaires, observation checklists, and standardized evaluations are often employed as research tools in social science. This research adopted both quantitative and qualitative data collection procedures. The following tools were used during data collection;

#### 3.7.1 Interview Schedule

According to Orodho (2019), many people prefer to interact verbally rather than in writing, and they will provide data more readily and completely than when a questionnaire is employed. An investigator is capable of inspiring participants and delving deeply into a problem. In this instance, principals participated in structured interviews to learn more about the issues affecting competency-based education implementation. In research investigations, an interview is often a face-to-face conference in which a researcher asks an interviewee a series of specified research

questions. The interview schedule was created to collect precise information about institutional variables that influenced CBET implementation. It aimed to record the viewpoints and experiences of the institution principals, who were responsible for managing the implementation of CBET programs in their individual institutions. To ensure that the data gathered was consistent and in line with the research objectives, the interview schedule offered a standardized framework for conducting the interviews with institution leaders. During the interviews, the researcher followed the schedule, asking the predetermined questions and probing for more detailed information based on the responses provided by the principals. The data collected through the interviews using the interview schedule were then analyzed to identify common themes, patterns, and insights regarding the institutional factors influencing the implementation of CBET. These findings contributed to the overall understanding of the determinants of CBET implementation and helped inform recommendations for improving the effectiveness of CBET programs in technical and vocational training institutions in Meru County.

### 3.7.2 Research Questionnaires

Data was gathered from trainees, trainers, and technicians using a questionnaire. According to Kothari (2018), surveys are typically devoid of interview bias because respondents' responses are in their own words. Furthermore, research participants have enough time to provide thoughtful responses. Additionally, it is thought that questionnaires reduce time and enable the fastest data collection from a big population. The selection of the questionnaire is consequently based on the fact that participants have enough time to provide thoughtful responses and are typically deemed to be free from interviewer bias. The questionnaire is also thought to be appropriate for literate,

cooperative, and educated respondents, and in this study, all participants were thought to satisfy these criteria.The study objectives and variables employed in the literature review served as the basis for the questionnaire's development. Since the study participants interacted with the questionnaires but not the researcher, the questionnaire was also appropriate for this study because it allowed the researcher to gather extensive information. Trainers and trainees in TVET institutes in Meru County were given the surveys. Each respondent, with the exception of the principals listed in the sample size, received a questionnaire to complete.

The questionnaire was divided into five sections. Part one offers information about the respondents' backgrounds. Part two discusses trainee-related factors and competency-based education implementation; Part three discusses trainer-related factors and competency-based education implementation; Part Four discusses institutional-related factors and competency-based education and training implementation; and Part Five discusses components of competency-based education and training implementation.

The questionnaire was structured because the questions were specific, concrete, and pre-determined. The questionnaire consisted of closed-ended questions. The responses to the closed-ended questions were chosen by the respondents. In answer to a specific notion, sections of parts two, three, four, and five of the surveys used a five-point Likert scale ranging from strongest concurrence to neutral concurrence to no concurrence. The questionnaire's closed-ended questions were designed to generate quantitative data.

### 3.8 Validity and Reliability of the Research Instruments

This section explains how the study instruments' reliability and validity were established.

#### 3.8.1 Validity of the Research Instruments

Validity according to Kothari (2018) is the correctness, accuracy, meaningfulness of implications and dependability of outcomes of conclusion, which are based on the research findings. The researcher sought professional opinions on the study tools' construct validity as well as their content. Their feedback was used to improve the study's instrument before beginning data gathering processes. Additionally, the tools were piloted with a selected group of responders at Nyeri National Polytechnic., which share similar characteristics with TVET institutions in Meru County. Piloting is seen to be important for determining the instrument's content validity and for enhancing formats, questions, and scales. The methodical examination of the test's material with the goal of determining if it corresponds to the distinctive sample of behavior under investigation is known as content validity (Anastasi & Urbina, 1997).

The degree to which the test's content relates a relevant content domain to the construct is also included in content validity evidence. According to Anastasi and Urbina (1997), a test is deemed to have appropriate content validity when the study's items are well chosen. Items are chosen such that they are consistent with the test description created utilizing a thorough examination of subject contents. According to Foxcroft et al. (2014), using a panel of research academics to examine test design and item selection improves a research instrument's content validity. The research researchers could assess the items and comment on whether they covered a representative sample of the behavior criteria. The questionnaire was made available to thesis supervisors as well as a panel of

competent academics from the University of Eldoret to examine in order to test the validity of the research instruments utilized in the study. The results of the piloting, as well as the supervisors' comments, were incorporated into the final instrument changes to improve its validity.

### 3.8.2 Reliability of the Research Instruments

The regularity that an instrument establishes when used frequently under comparable settings is referred to as reliability (Orodho, 2019). Therefore, it is the level of consistency or whether it can be counted on to yield the same findings when employed in two or more attempts to measure theoretical notions. Respondents were piloted using a simple random sample of 30 respondents in Nyeri County, which has comparable characteristics to TVET institutions in Meru County, to determine the dependability of the instruments. To assess the reliability of questionnaires, the test-retest technique was used. The first test was provided to the respondents, then two weeks later, a second test was given to the same respondents. Cronbanch Alpha was used to assess the dependability. Cronbach Alpha is coefficient that is used to measure the internal reliability of an instrument based on the inter-item correlations. If the items are strongly correlated with each other, their internal consistency is high and the alpha coefficient is close to one, if on the other hand, the items are poorly formulated and do not correlate strongly, the alpha coefficient is close to zero. If the coefficient is equal or greater than 0.7, the instrument would be deemed fit for data collection.

To determine the dependability of the research instrument used, reliability tests were conducted. Ursachi, Horodnic, and Zait (2015) claim that a cut-off alpha coefficient of 0.7 is sufficient to demonstrate that the scale's items were reliable and consistent. Table

4.1 contains the dependability index evaluation and presentation. According to Taber's (2018) recommendation, all the constructions used were proven to be reliable with Cronbach alpha values over 0.7. After the pilot study, a reliability index (Cronbach's Alpha) of .816 was obtained and was considered high enough for the instrument to be used in the study. The summary of reliability results were as in table 3.2;

**Table 3.2: Cronbach's Reliability Test**

| | **Reliability Statistics** | |
|---|---|---|
| | Cronbach's Alpha | N of Items |
| Trainee factors | .840 | 4 |
| Trainer factors | .845 | 8 |
| Institutional factors | .835 | 6 |
| Dv | .745 | 3 |
| | 3.265 | 21 |
| **Mean** | **.816** | |

### 3.9 Data Collection Procedures

A permit was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI) through the School of Education at the University of Eldoret. After acquiring the research permit, the researcher sought permission from the County education office to visit TVET institutes. Following an appointment with the school administration, the researcher visited chosen TVET institutes. Data was gathered in stages, with research assistants being chosen and trained on how to deliver questionnaires. With the aid of research assistants, the questionnaires were distributed to 361 respondents in TVET facilities throughout the county. The researcher also conducted 30-minute interviews with the principals to gather information. The information gleaned through interviews was intended to enhance that gleaned via questionnaires.

### 3.10 Data Analysis

Data analysis is the interpretation, arrangement, and presentation of obtained information in order to reduce the amount of information collected from the field to a practical level. Oso and Onen (2015). The collected data was examined quantitatively and qualitatively. In analyzing data, objectives 1, 2, and 3 were first analyzed descriptively. The quantitative data from the questionnaire was subjected to preliminary processing through validation, coding and tabulation in readiness for analysis with the help of the Statistical Package for Social Sciences (SPSS) computer package as a 'toolbox' to analyze data related to objectives. Frequencies, percentages, mean and Standard deviation was used to analyze descriptive data. Pearson Correlation Coefficient was employed to determine relationship that exists between the independent (trainee factors, trainer factors and institution factors) variables and dependent variable (implementation of competency based education). Regression analysis was also used to examine the associations found in the study.

Given is the regression equation: $\mathbf{y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + ę}$

Where,

y= Dependent variable

α= regression constant,

$\beta_1 - \beta_3$ = Regression coefficients (change in y for every unit change in X)

$X_1$ = Trainee factors

$X_2$ = Trainer factors

$X_3$ = Institution factors

e = Error term

The regression coefficient `α' is the Y intercept: while β1, β2 and β3 are the net change in y for each change of either of the variables (factors), x1, x2 and x3.

In addition, qualitative data from interviews were transcribed, thematically classified and arranged before they were reported in narrations and quotations.

Table 3.3 provides a summary of data analysis methodologies.

**Table 3.3 Summary of Data Analysis Techniques**

| **Objective** | **Independent Variable** | **Dependent Variable** | **Analysis Method** |
|---|---|---|---|
| To examine the influence of trainee factors on implementation of competency based education in Meru County | Trainee factors | Implementation of competency based education | Descriptive statistics Pearson Correlation and Regression Analysis |
| To determine the influence of trainer factors on implementation of competency based education in Meru County | Trainer factors | Implementation of competency based education | Descriptive statistics Pearson Correlation and Regression Analysis |
| To assess the influence of Institutional factors on implementation of competency based education in Meru County | Institutional factor | Implementation of competency based education | Descriptive statistics Pearson Correlation and regression Analysis |

### 3.11 Ethical Considerations

Hesse-Biber and Leavey (2017) state that study participants must be familiar with ethical standards in order to protect information gathered from their respondents. Research

involves the collection of information from individuals and about individuals (Punch, 2015). Investigators are thus required to ensure research participants' privacy and confidentiality, the development of mutual trust, the enhancement of truthfulness in research, protection from misbehavior including indecency that may be replicated, and the management of emerging research challenges (Israel, Mark, & Iain, 2016). The following ethical concerns were addressed during the research:Before beginning data collection, the investigator must get a research permit from the National Council for Science. Technology and Innovations (NACOSTI). In addition, permission was sought from County Director of Education and institution heads of the selected primary schools which houses the TVET institutions before conducting the study. The respondents' involvement in the study was voluntary and free. There was no promise of rewards in exchange for participating in the study, and respondents were asked to sign an informed consent form. The participants were also assured that any information they provided would be kept private and confidential, and that it would only be used for this study. Furthermore, the participants were informed that they were free to withdraw from the study at any moment.

### 3.12 Chapter Summary

This chapter presents the methodology that was employed in the study. The study adopted a descriptive survey design using mixed methods approach. The target population included 6000 TVET trainees, 422 trainers, 44 technicians and 19 principals in the 19 public TVETs in Meru County. Using Krejcie and Morgan (1970) sample size determination formula, 363 respondents were selected to participate in the study. These included 335 trainees, 23 trainers, 3 technicians and 2 principals. Interviews and

questionnaires were used to collect data where institution principals were interviewed while questionnaires were administered to trainers, technicians and trainees. Data obtained was analyzed using quantitative and qualitative techniques.

The quantitative data from the questionnaire was first subjected to preliminary processing through validation, coding and tabulation in readiness for analysis with the help of the statistical package for social sciences (SPSS) computer package as a ‘toolbox’ to analyze data related to objectives. Frequencies, percentages, mean and Standard deviation were used to analyze descriptive data. Pearson Correlation Coefficient and Regression analysis was employed to determine relationship that exists between the independent (trainee factors, trainer factors and institution factors) dependent variables.

# CHAPTER FOUR

# DATA PRESENTATION, ANALYSIS, INTEPRETATION AND DISCUSSION

## 4.1 Introduction

This section presents the findings of the data analysis on the determinants of implementation of competency based education and training in technical and vocational training institutions in Meru County. The section opens with information about the participation rate and sociodemographics of the respondents, then the influence of trainee factors on implementation of competency based education and training, influence of trainer factors on implementation of competency based education and training and the influence of institutional factors on implementation of competency based education and training. The chapter also includes interpretations and discussions of the findings, as well as references to relevant studies.

## 4.2 Response Rate

In this study, 346 out of 361 questionnaires were completed and returned by respondents. As a result, the response rate employed in this study for data analysis was 95.8%, which was deemed enough for providing accurate information on the determinants of implementation of Competency Based Education in Meru County. The high response rate in this study lends credence to Peytchev's (2013) claim that getting a high response rate is the best strategy to get unbiased estimates. Fosnacht, Sarraf, Howe, and Peck's (2017) investigation, however, discovered that even somewhat low response rates produced reliable institution-level estimates, but with higher sampling error and a reduced capacity to identify statistically significant differences with comparable institutions. Furthermore,

according to Massey and Tourangeau (2013), a high percentage of non-response raises the possibility of biased estimates but does not always result in biased estimates.

### 4.3 Socio-Demographic Characteristics of the Respondents

Gender, degree of education, and job experience were the demographic information obtained from respondents in this study. According to Wise (2012), when developing a survey, the research must consider who to poll as well as how to divide total survey response data into meaningful groups of respondents. Both evaluations are based on demographic factors. The background material in this study allowed the researcher to comprehend the different types of respondents and their perspectives on the determinants of competency-based education and training implementation in technical and vocational training institutions.

#### 4.3.1 Gender of the Respondents

The administered questionnaires asked the study participants to indicate their gender. Figure 4.1 displays the findings after the information has been processed.

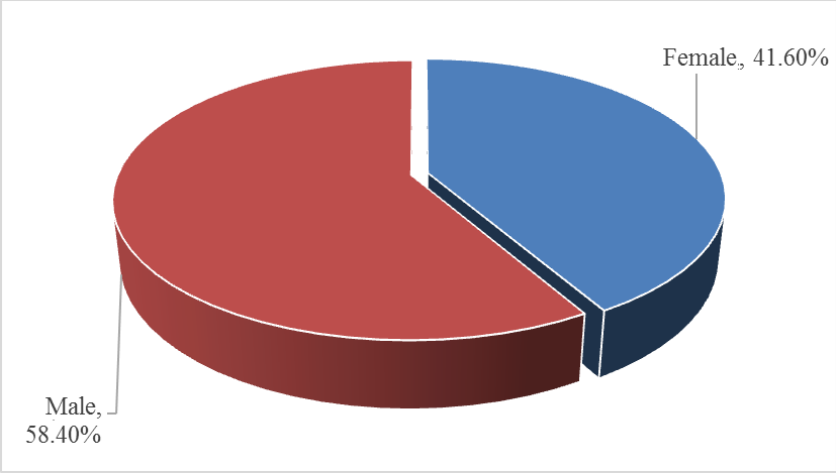


**Figure 4.1: Gender of the Respondents**

Figure 4.1 reveals that 202 (58.4%) of the respondents were men and 144 (41.6%) were women. According to the responses, the bulk of study participants (58.4%) were men. This suggests that the gender imbalance in the study participants raises concerns about potential gender bias in the representation of perspectives and experiences related to CBET implementation. It suggests that the voices and insights of female participants may be underrepresented, which could limit the study's ability to capture a comprehensive understanding of the determinants of implementation of competency based education and training in technical and vocational training institutions. A study by UNESCO (2018) highlighted persistent gender imbalances in enrollment and completion rates across various technical and vocational education and training (TVET) programs worldwide. It emphasized the need for targeted interventions to address gender biases and promote equal opportunities in TVET.

### 4.3.2 Age of the Respondents

Age distribution of respondents was as indicated in Figure 4.2

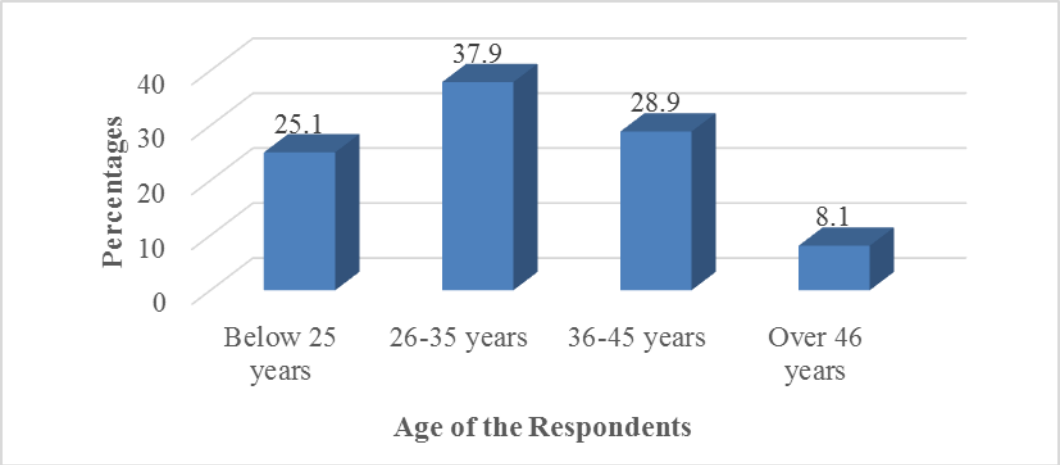


**Figure 4.2: Age Bracket of the Respondents**

Figure 4.2 reveals that 131 respondents (37.9%) were between the ages of 26 and 35, 100 respondents (28.9%), between the ages of 36 and 45, and 87 respondents (25.1%), between the ages of 25 and 24, while 28 respondents (8.1%) were over the age of 46.The finding therefore indicated a distribution of ages. This implies that the age distribution allows for insights into the relevance and applicability of the study's findings across different generations. The responses from participants in different age groups may shed light on the extent to which the determinants of implementing competency-based education and training (CBET) are consistent across different generations or whether there are generational variations in perceptions and experiences. A study by Finkelstein, et al., (2015) illustrated that age-related factors can have significant implications for training and education programs. They emphasize the need for considering age diversity in designing inclusive and effective training approaches that accommodate the preferences, strengths, and experiences of individuals across different age groups.

### 4.4 Trainee Factors and Implementation of competency Based Education and Training

The first objective of this study was to examine the influence of trainee factors on implementation of competency based education and training in Meru County. To achieve this objective, the participants were requested to rate items concerning the influence of trainee factors on implementation of competency based education and training on five-point Likert scale as **(SA-**Strongly agree (5), A-Agree (4), UD-Undecided (3), D-Disagree (2), SD-Strongly Disagree (1). Their responses were tabulated and the results are presented in Table 4.2.

**Table 4.1: Trainee Factors and Implementation of competency Based Education and Training**

| Statement | SD | | D | | UD | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| Trainees are well prepared for competency based education and training | 98 | 28.3 | 107 | 30.9 | 13 | 3.8 | 78 | 22.5 | 50 | 14.5 |
| Trainees have embraced the new competency based education and training | 147 | 42.5 | 111 | 32.1 | 2 | .6 | 80 | 23.1 | 6 | 1.7 |
| Trainees are highly motivated to learn on the new competency based education and training curriculum | 54 | 15.6 | 185 | 53.5 | 18 | 5.2 | 21 | 6.1 | 68 | 19.7 |
| Trainees receive adequate moral financial support from their parents to study on the new competency based education and training | 46 | 13.3 | 143 | 41.3 | 0 | 0.0 | 87 | 25.1 | 70 | 20.2 |

Table 4.1 shows that trainees are well prepared for competency-based education and training according to 107 (30.9%) respondents who disagreed with the statement, 98 (28.3%) respondents who strongly disagreed with the statement, 78 (22.5%), 50 (14.5%), and 50 (14.5%) respondents who strongly agreed with the statement, while 13 (3.8%) study participants were undecided on the statement. According to the findings, the

majority of participants (59.2%) felt that trainees were not adequately prepared for competency-based education and training. This finding implies that most trainees were not ready to adjust to the new curriculum. The result is comparable to that of Ralf et al. (2020), who discovered that using this CBET learning method, students receive just-in-time differentiated help according to their needs and abilities and students may have difficulty in adopting it. Faculty therefore should be ready to step in when their individual students need help. Faculty work with struggling students individually and help them draw on their strengths to help them move forward (Ralf et al., 2020). In so doing, they offer them personalized learning and equal opportunities to succeed.

The statement that trainees have embraced the new competency-based education and training was also strongly disagreed upon by 147 (42.5%) participants. 111 respondents (32.1%) disagreed with the statement, compared to 80 participants who agreed and 6 respondents (1.7% who strongly disagreed). Based on the participants' answers, it seemed that the majority of the participants in Meru county (74.6%) thought that trainees had not embraced the new competency-based education and training. This suggested that students had various reasons why they did not embrace the competency based education and training. The finding is comparable to the finding by Auilerra et al. (2018) who conducted a study to establish the resistance towards the competency-based approach in Mexican University Institutions and found out that there was lack of agreement and transparency to understand the key procedures and strategies that allow the implementation of the competency-based model.

Furthermore, 185 (53.5%) of study participants disagreed with the statement that trainees are strongly motivated to learn on the new competency-based education and training curriculum. The statement was strongly agreed with by 68 participants (19.7%), strongly disagreed with by 54 responders (15.6%), and supported by 21 participants (6.1%). According to the responses, the majority of respondents (73.2%) stated that the new competency-based education and training curriculum had not inspired trainees to learn. The Lumina Foundation conducted a similar study, (2018) researchers found that students who participated in CBE programs were more likely to complete their degree or certificate than those in traditional programs. The researchers also noted that CBE programs are particularly effective for nontraditional students, such as adult learners, who may have prior learning experiences that they can apply toward their degree.

Moreover, 143(41.3%) of respondents disputed the assertion that Trainees receive adequate moral financial support from their parents to study on the new competency based education and training, 87(25.1%) participants agreed with the statement and 70(20.2%) participants were strongly in agreement with the statement while 46(13.3%) participants were strongly in disagreement with the statement. The responses showed that majority (54.6%) of the study participants cited that Trainees do not receive adequate moral financial support from their parents to study on the new competency based education and training. Similarly, a survey of students conducted by the Higher Education Policy Institute, (2018) found out that nearly half of the respondents reported that they had received inadequate financial support from their families for their education. The survey also found that students from lower-income families were more likely to report inadequate financial support.

### 4.4.1 Relationship between Trainee Factors and Implementation of CBET

The First hypothesis of this research stated that:

**$H0_1$:** There is no significant relationship between trainee factors and implementation of competency based education and training in Meru County.

Pearson Correlation Coefficient (simply, *r*) was adopted to determine the potential relationship between trainee factors and implementation of competency based education and training in Meru County. In this case when *r* = (+) 1, it shows a positive correlation and when r is (-) 1, it indicates that there is a negative correlation. This indicates that variations in independent variable (x) explains 100% of the variations in the dependent variable (y) which shows that for a unit change in independent variable there happens to be a constant change in the dependent variables towards the same direction. In this case, the correlation is deemed to be a perfect positive correlation. However, if such change occurs in the opposite direction, the correlation is deemed to be a perfect negative correlation. The value of '*r*' nearer +1 or -1 shows a high degree of correlation between the two variables. Table 4.2 presents the correlation coefficient between trainee factors and implementation of competency based education and training.

**Table 4.2: The Correlation Coefficient between trainee factors and implementation of competency based education and training**

| | **Implementation of competency based education and training** |
|---|---|
| Trainee factors | r = .276** |
| | p = .000 |
| | n = 346 |

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

Table 4.2 shows that there was a significant positive correlation between trainee factors and implementation of competency based education and training (r = .276; p = .000).At 95% confidence level the r value for trainee factors was .276 showing a weak correlation with Implementation of competency based education and training. However, there r value was positive implying a positive correlation. This implies that resolution of student issues leads to smooth Implementation of Competency-Based Education and Training. Therefore, the hypothesis which stated that there is no significant relationship between trainee factors and implementation of competency based education and training in Meru County was rejected showing that there was a significant relationship trainee factors and implementation of competency based education and training. This shows that trainee factors has a positive association with implementation of competency based education and training in Meru County.

On interviewing the principals one of the participants P2 Said;

> *"As compared to the previous curriculum, Competency based education and training model is more specific in terms of specialization and therefore the students are confined to specific skill and expertise in specific course of study however some of the students need more financial support in order for them to complete their courses successfully"*

This statement suggests that competency-based curriculum is designed to be more flexible, personalized, and focused on the development of skills and competencies that are relevant to real-world applications, compared to other forms of curriculum. The response further suggests that the competency-based education and training (CBET) model is more specialized compared to the previous curriculum. This means that students in CBET programs focus on acquiring specific skills and expertise relevant to their chosen course of study. However, it also highlights that some students may face financial challenges in pursuing their CBET courses, indicating that there is a need for additional financial support to ensure these students can successfully complete their programs. In essence, while CBET offers specialized training, financial constraints can still be a barrier to some students in achieving success in their chosen fields.

A related study conducted by Smith and Johnson (2019) aimed to assess the impact of competency-based education and training (CBET) on student learning outcomes in vocational education. In their research, they focused on a sample of TVET institutions in a neighboring region to the one in the current study. They found that the implementation of CBET had a significantly positive impact on student learning outcomes. They

observed that students who underwent CBET programs exhibited higher levels of skill acquisition and competence in their respective fields compared to those who were part of the traditional curriculum. The CBET approach provided students with a more hands-on and practical learning experience, which contributed to their ability to apply their knowledge and skills effectively in real-world situations.

Furthermore, the study found that CBET was particularly beneficial for students who had clear career goals and specific vocational interests. These students thrived in the specialized and focused learning environment that CBET provided. However, it was also noted that students who required additional financial support faced challenges in accessing the necessary resources to succeed in CBET programs. This finding also concurs with the finding by Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020) who postulated that competency-based curriculum is designed to prepare students for real-world applications, by focusing on the development of skills that are relevant to the workplace or other real-world contexts. Other forms of curriculum may place less emphasis on real-world applications.

### 4.5 Trainer Factors and Implementation of competency-Based Education and Training

The study's second objective was to ascertain the trainer-related influences on the implementation of competency-based education and training in Meru County. To accomplish this, a five-point Likert scale was used to ask respondents to score items pertaining to the impact of trainer factors on the implementation of competency-based education and training as follows: **(**SA-Strongly agree (5), A-Agree (4), UD-Undecided

(3), D-Disagree (2), SD-Strongly Disagree (1). Their responses were collated, and the findings are shown in Table 4.3.

**Table 4.3: Trainer Factors and Implementation of competency Based Education and Training**

| Statement | SD | | D | | UD | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| Trainers are adequately trained and prepared on competency based education and training | 124 | 35.8 | 91 | 26.3 | 15 | 4.3 | 79 | 22.8 | 37 | 10.7 |
| Trainers are able to judge if students have achieved the learning outcomes of CBET | 58 | 16.8 | 20 | 5.8 | 13 | 3.8 | 173 | 50.0 | 82 | 23.7 |
| The objectives of Competency based education and training are clear and precise | 132 | 38.2 | 89 | 25.7 | 2 | .6 | 47 | 13.6 | 76 | 22.0 |
| Trainers prepare lesson comprehensive lesson plans | 53 | 15.3 | 46 | 13.3 | 38 | 11 | 150 | 43.4 | 59 | 17.1 |
| Trainers are highly motivated to teach on the new competency based education and training | 185 | 53.5 | 58 | 16.8 | 27 | 7.8 | 45 | 13.0 | 31 | 9.0 |
| The competency based education and training is not a complex system | 17 | 4.9 | 66 | 19.1 | 14 | 4.0 | 206 | 59.5 | 43 | 12.4 |
| The school administration provides support to staff and students | 47 | 13.6 | 35 | 10.1 | 0 | 0.0 | 197 | 56.9 | 67 | 19.4 |
| Trainers are well remunerated | 133 | 38.4 | 125 | 36.1 | 5 | 1.4 | 38 | 11.0 | 45 | 13.0 |

**Source (Field Data, 2022)**

From Table 4.3, 124(35.8%) of study participants strongly disagreed with the statement that trainers are adequately trained and prepared on competency-based education and training, 91(26.3%) disagreed with the statement, 79(22.8%) participants strongly agreed with the statement, 37(10.7%) participants were strongly agreed on the statement, and

15(4.3%) respondents were undecided on the statement. According to the study findings, the majority of study participants (62.1%) indicated that Trainers are not appropriately equipped and prepared for competency-based teaching and training. A similar finding was noted by the Wong, P. Y., & Partridge, H. L. (2021), that many trainers in the Australian vocational education and training system did not have a clear understanding of the principles and practices of competency-based education and training, and were not always able to implement them effectively.

Also, 173(50.0%) study participants agreed with the statement that trainers can judge whether students have achieved CBET learning outcomes, 82(23.7%) participants strongly agreed with the statement, 58(16.8%) participants strongly disagreed with the statement, 20(5.8%) respondents disagreed with the statement, and 13(3.8%) respondents were undecided. According to the responses, the majority (73.7%) of the study respondents agreed that trainers can determine if students achieved the CBET learning outcomes. According to Kahl and Wild (2020), to effectively evaluate learners' achievement of learning outcomes in competency-based education and training, trainers need to have a clear understanding of the competencies and skills that learners are expected to master, as well as the criteria for evaluating mastery. This may involve developing or selecting assessment tools, such as performance tasks or portfolios that are aligned with the specific competencies and skills being targeted. Trainers also need to be able to provide feedback and support to learners to help them improve their performance and achieve mastery of the targeted competencies and skills. This may involve identifying areas where learners need additional practice or support, and providing guidance and resources to help them develop their skills.

In addition, 132 respondents (38.2%) strongly disagreed with the statement that the objectives of competency-based education and training are clear and precise, 89 participants (25.7%) disagreed with the statement, 76 participants (22.0%) agreed with the statement, and 47 participants (13.6%) strongly agreed with the statement. According to the responses, the majority (63.9%) of research participants stated that the objectives of competency-based education and training are unclear. According to the International Labour Organization (ILO), the main objective of CBET is to ensure that learners acquire the necessary competencies to perform a specific job or task effectively. The ILO emphasizes that these competencies should be clearly defined and measurable to ensure that learners are adequately prepared for the workplace (ILO, 2021).

Similarly, 150(43.4%) of respondents agreed with the statement that trainers prepare comprehensive lesson plans, 59 (17.1%) of study participants strongly agreed with the statement, 46(13.3%) of participants strongly disagreed with the statement, 53(15.3%) of participants strongly disagreed with the statement, and 38(11.0%) of respondents were neutral with the statement. According to the responses, the majority of respondents (60.5%) believed that trainers write extensive lesson plans. A study by Sánchez-Gómez, García-Sánchez, and García-Peñalvo (2021) found that trainers faced some challenges in preparing lesson plans for online courses, such as the need to adapt to new technologies and to ensure that the content was engaging and interactive. Similarly, a study by Sim, Tan, and Subramaniam (2021) on the preparation of lesson plans for engineering courses, trainers reported that the main challenge was to ensure that the lesson plan covered all the required topics and activities within the allocated time.

Further, 185 (53.5%) of study participants strongly disagreed with the statement that trainers are highly motivated to teach on the new competency-based education and training, 58 (16.8%) of respondents strongly agreed with the statement, 45(13.0%) of participants agreed with the statement, 31(9.0%) of respondents strongly agreed, and 27 (7.8%) of participants were neutral on the statement. According to the survey findings, the majority (70.3%) of study participants felt that trainers are unmotivated to teach on the new competency-based education and training. Furthermore, 206(59.5%) participants agreed with the statement that competency-based education and training is not a complex system, 66(19.1%) participants disagreed with the statement, 43(12.4%) respondents agreed strongly with the statement, and 17(4.9%) participants strongly disagreed with the statement. According to the responses, the majority of respondents (71.9%) stated that competency-based education and training is not a complicated system. Similarly, 197 respondents (56.9%) agreed with the statement that the school administration provides support to staff and students, 67 respondents (19.4%) strongly agreed with the statement, 47 respondents (13.6%) strongly disagreed with the statement, and 35 respondents (10.1%) disagreed with the statement. According to the responses, the majority (76.3%) of study participants considered that the school administration provided assistance to staff and students. Furthermore, 133(38.4%) respondents strongly disagreed with the statement that trainers are well remunerated, 125(36.1%) study participants disagreed with the statement, 45(13.0%) participants agreed with the statement, 38(11%) agreed with the statement, and 5(1.4%) respondents were neutral on the statement. According to the responses, the majority of respondents (74.5%) believe that trainers are underpaid.

### 4.5.1 Relationship between Trainer Factors and Implementation of competency Based Education and Training

The second hypothesis of this research stated that:

**$H0_2$:** There is no significant relationship between Trainer Factors and Implementation of competency Based Education and Training in Meru County.

This hypothesis was similarly tested through the use of Pearson correlation coefficient. The outcomes of the analyzed information is presented in Table 4.4.

**Table 4.4: Correlation Coefficient between Trainer Factors and Implementation of CBET**

| | Implementation of CBET |
|---|---|
| Trainer Factors | r = .232** |
| | p = .000 |
| | n = 346 |

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

A substantial positive association between Trainer Factors and CBET Implementation was found, as shown in Table 4.4 (r =.232; p =.000). The Trainer Factors r value was.232 at the 95% confidence level, indicating a weak association. In this instance, the positive values indicated a positive association where improved CBET implementation results from resolving trainer-related issues. Therefore, the claim that there is no significant relationship between trainer factors and CBET implementation was rejected. This shows that Trainer Factors affect Implementation of CBET. This implies that trainer factors have a positive effect Implementation of CBET. Similarly, a study by McClurg, et al. (2020) examined the relationship between trainer characteristics and practices in

competency-based education settings. The findings indicated that trainer factors such as their understanding of competency-based approaches, their ability to provide personalized instruction, and their use of formative assessments significantly impacted the implementation and effectiveness of CBET programs.

On interviewing the principals, Participant 1 Said:

> *"Despite the government's commitment to employ more teachers, we still have a huge shortage of teaching of staff. The current staff was also not adequately trained on the new competency based education. Further we have had challenges with the current staff complaining of poor remuneration. If these issues are not addressed, the success of the competency based education will not be realized"*

The interview response reflects several critical challenges facing the education system, particularly in the context of the implementation of competency-based education. Firstly, it underscores the government's dedication to increasing the number of teachers, indicating recognition of the importance of sufficient staff for effective education delivery. However, the interviewee points out that there is still a substantial shortage of teaching staff, which poses a significant hurdle. This shortage is exacerbated by the second issue raised, which is the inadequate training of the existing staff in the new competency-based education approach. Without proper training, teachers may struggle to effectively impart the required skills and knowledge to students, potentially compromising the success of the new curriculum.

Additionally, the interviewee highlights the persistent problem of poor remuneration for teachers. This issue has far-reaching consequences, as low salaries can lead to reduced

motivation and job satisfaction among educators. Consequently, it may impact the quality of teaching and the willingness of teachers to fully engage with the demands of a competency-based education system. The interviewee's closing remark serves as a warning that these unresolved issues could impede the successful implementation of competency-based education in the country. It emphasizes the urgent need for comprehensive solutions, including addressing the staffing shortages, enhancing teacher training, and revisiting teacher compensation, to ensure the desired educational outcomes are achieved. This statement also suggested that there is still shortage of teachers to implement the competency based education and training. In a similar study conducted by Wambua et al. (2020), the research findings revealed several noteworthy insights into the challenges of implementing competency-based education in the Kenyan context. The study identified that the insufficient training and preparedness of teachers in implementing the new curriculum posed a significant obstacle to its successful execution. Furthermore, the research found that the lack of adequate teaching and learning resources, including textbooks and instructional materials, hindered effective delivery of competency-based education. A report by the United Nations Educational, Scientific and Cultural Organization (UNESCO) highlights the shortage of qualified teachers to implement CBET in sub-Saharan Africa. Many nations in the region, according to the assessment, lack trained teachers who can effectively deliver CBET (UNESCO, 2020).

### 4.6 Institutional Factors and Implementation of Competency-Based Education and Training

The third objective of this study was to ascertain the influence of institutional factors on implementation of competency based education and training in Meru County. To accomplish this objective, the respondents were requested to rate items concerning the influence of institutional factors on implementation of competency based education and training on five-point Likert scale as **(SA-**Strongly agree (5), A-Agree (4), UD-Undecided (3), D-Disagree (2), SD-Strongly Disagree (1). Their responses were collated, and Table 4.5 shows the findings.

**Table 4.5: Institutional Factors and Implementation of Competency-Based Education and Training.**

| Statement | SD | | D | | UD | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| The institution provides adequate teaching and learning resources suitable for competency based education and training | 38 | 11.0 | 98 | 28.3 | 15 | 4.3 | 110 | 31.8 | 85 | 24.6 |
| Our institution has provided clear guidelines on the implementation of the competency based education and training | 141 | 40.8 | 117 | 33.8 | 2 | .6 | 69 | 19.9 | 17 | 4.9 |
| Our institution has adopted implementation policies on competency based education and training | 114 | 32.9 | 135 | 39.0 | 30 | 8.7 | 59 | 17.1 | 8 | 2.3 |
| Our institution has updated workshops for effective implementation of CBET | 79 | 22.8 | 106 | 30.6 | 30 | 8.7 | 70 | 20.2 | 61 | 17.6 |
| Our institution is well equipped with adequate learning infrastructure in terms of lecture halls, workshops, sporting facilities etc. which facilitates smooth implementation of CBET | 102 | 29.5 | 98 | 28.3 | 3 | .9 | 84 | 24.3 | 59 | 17.1 |
| The institution administration has been conducting monitoring and evaluation on the progress of the implementation of CBET | 141 | 40.8 | 102 | 29.5 | 12 | 3.5 | 44 | 12.7 | 47 | 13.6 |

**Source (Field Data, 2022)**

According to Table 4.5, 110(31.8%) of study participants agreed with the statement that the institution provides adequate teaching and learning resources suitable for competency-based education and training, 85(24.6%) strongly agreed with the statement, 98(28.3%) disagreed with the statement, 38(11.0%) respondents strongly disagreed with the statement, and 15(4.3%) respondents were undecided. According to the findings of the study, the majority of Meru county respondents (56.4%) believe that the institution provides adequate teaching and learning materials suitable for competency-based education and training. Additionally, 117 respondents (33.8%) disagreed with the statement, 141 respondents (40.8%) strongly disagreed, 69 respondents (19.9%) agreed, and 17 respondents (4.9%) strongly agreed that the institutions provided clear guidelines on how to implement competency-based education and training. The results showed that majority (74.6%) of the respondents believed that the institutions did not provide clear guidelines on the implementation of the competency based education and training.

On the statement that the institutions have adopted implementation policies on competency based education and training, 135(39.0%) study participants disagreed with the statement, 114(32.9%) participants strongly disagreed, 59(17.1%) respondents agreed with the statement and 30(8.9%) respondents were undecided on the statement while 8(2.3%) respondents were strongly in agreement. From the responses, it emerged that majority (71.9%) of the inhabitants of the study area pointed out that the institutions have not adopted implementation policies on competency based education and training.

Similarly, 106(30.6%) of the study participants disagreed with the statement that institutions have adequate workshops and materials for effective implementation of

CBET, 79(22.8%) participants strongly disagreed with the statement, 70(20.2%) participants strongly agreed with the statement and 61(17.6%) respondents strongly agreed with the statement while 30(8.7%) respondents were undecided on the statement. As shown by the responses, most (53.4%) of the inhabitants of Meru County noted that institutions have inadequate workshops and materials for effective implementation of CBET.

Additionally, 102(29.5%) respondents strongly disagreed that the institutions are well equipped with adequate learning infrastructure in terms of lecture halls, workshops, sporting facilities etc. which facilitates smooth implementation of CBET, 98(28.3%) study participants disagreed with the statement and 84(24.3%) respondents were in agreement, 59(17.1%) while 3(0.9%) respondents were in agreement with the statement. As shown by the responses, it emerged that majority (57.8%) of the study's respondents reported that institutions have inadequate learning infrastructure in terms of lecture halls, workshops, sporting facilities etc. which would facilitate smooth implementation of CBET.

Similarly, 141(40.8%) of the study participants strongly disagreed with the statement that the institutions administration has been conducting monitoring and evaluation on the progress of the implementation of CBET, 102(29.5%) participants were disagreement with the statement, 47(13.6%) participants were strongly in agreement with the statement and 44(12.7%) respondents were in agreement with the statement while 12(3.5%) respondents were neutral on the statement. As shown by the responses, majority (70.3%)

of the respondents believed that the institutions administration have not been conducting monitoring and evaluation on the progress of the implementation of CBET.

### 4.6.1 Relationship between Institutional factors and implementation of CBET

The third hypothesis of this study stated that:

**$H0_3$:** There is no significant relationship between Institutional factors and implementation of competency based education and training in Meru County.

This hypothesis was also tested using Pearson Correlation Coefficient analysis. The results of the analyzed data are presented in Table 4.6.

**Table 4.6: Correlation Coefficient between Institutional factors and implementation of CBET**

| | Implementation of CBET |
|---|---|
| Institutional factors | r = .286** |
| | p = .000 |
| | n = 346 |

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

Table 4.6 shows that there was a weak and positive correlation between Institutional factors and implementation of CBET in Meru County(r = .286; p = .000). This shows that at 95% confidence level, the r value for institutional factors was .286 showing a weak correlation with implementation of CBET. The positive values show a positive correlation meaning that increased resolution of institutional factors lead to increased

implementation of CBET. Therefore, the null hypothesis which stated that there is no significant relationship between institutional factors and implementation of competency based education and training in Meru County was rejected. Hence there exists a significant relationship between Institutional factors and implementation of competency based education and training in Meru County. Similarly, as study conducted by Poon, et al, (2017) investigated the factors influencing the implementation of CBET in TVET institutions. The findings identified institutional factors such as curriculum development, resource availability, infrastructure, staff capacity, and collaboration with industry partners as key determinants of successful CBET implementation.

On interviewing the principals, participant P2 said;

> *"Our institution has enrolled many students to pursue various courses but unfortunately the infrastructure and instructional facilities are inadequate. This institution needs more lecture halls, modern library, updated workshops and more work benches. We are therefore appealing to stakeholders especially the government through the ministry of Education to intervene so as to enable us to implement the competency based education seamlessly".*

This statement suggest that although the government has put a lot of effort in investing in TVET there is still challenges of infrastructure to accommodate students taking various course in Meru County. This interview response highlights a critical issue within the institution: the glaring inadequacy of infrastructure and instructional facilities to accommodate the significant number of enrolled students pursuing various courses. The interviewee underscores the pressing need for essential resources such as additional

lecture halls, a modern library, updated workshops, and more workbenches. These facilities are deemed essential for the effective implementation of competency-based education. The appeal made to stakeholders, particularly the government through the Ministry of Education, is a plea for urgent intervention and support. It reflects a recognition that the success of the institution's transition to competency-based education hinges on the availability of these necessary resources, which are currently insufficient. In essence, the interviewee's statement serves as a call to address the infrastructure and facility gaps to ensure a seamless and successful implementation of the new educational approach. A study conducted by Orodho, J. A., & Mwabu, G. (2013) in Kenya explored the challenges facing technical and vocational education and training (TVET) institutions in the country. The researchers found that many TVET institutions in Kenya faced significant challenges, including inadequate funding, outdated equipment, and a shortage of trained teaching staff. These challenges were identified as major impediments to the effective implementation of competency-based education and training (CBET) programs. The study also highlighted the need for increased government support and investment in TVET institutions to address these issues and enhance the quality of technical and vocational education in Kenya. Similarly a study on the challenges facing TVET institutions in Ghana, Abdulai, Mohammed, and Ibrahim (2019) identified inadequate infrastructure as one of the major challenges. The study noted that many TVET institutions in Ghana lacked the necessary infrastructure to provide high-quality education and training.

### 4.7 Elements of Implementation of Competency-Based Education and Training

The purpose of this study was to assess the determinants of implementation of competency based education and training in technical and vocational training institutions in Meru County. The respondents were requested to rate items concerning the Elements of Implementation of Competency Based Education and Training on five-point Likert scale as **(SA-**Strongly agree (5), A-Agree (4), UD-Undecided (3), D-Disagree (2), SD-Strongly Disagree (1). Their responses were tabulated and the results are presented in Table 4.7.

**Table 4.7 Elements of Implementation of Competency Based Education and Training**

| Statement | SD | | D | | UD | | A | | SA | |
|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % |
| Competency based education and training has been fully rolled out in our institution | 102 | 29.5 | 97 | 28.0 | 17 | 4.9 | 69 | 19.9 | 61 | 17.6 |
| The objectives of Competency based education and training has been fully implemented | 191 | 55.2 | 66 | 19.1 | 13 | 3.8 | 46 | 13.3 | 30 | 8.7 |
| The quality of graduates and absorption in the job market is good | 121 | 35.0 | 113 | 32.7 | 2 | .6 | 104 | 30.1 | 6 | 1.7 |

**Source (Field Data, 2022)**

Table 4.7 shows that 102(29.5%) respondents strongly disagreed with the statement that competency based education and training has been fully rolled out in the institutions 97(28.0%) participants disagreed with the statement, 69(19.9%) participants were in agreement and 61(17.6%) respondents strongly agreed with the statement while 17(4.9%)

respondents were neutral on the statement. The responses showed that majority (57.5%) said that competency based education and training has not been fully rolled out in the institutions. This implies that the expected benefits and outcomes of CBET, such as improved learning outcomes and enhanced student skills, may not be fully realized. The study's findings may be influenced by the incomplete implementation, as the experiences and perspectives of participants may be shaped by the stage of implementation they are currently. A study conducted by Johnson et al. (2019) explored the implementation of competency-based education and training (CBET. The research involved multiple technical and vocational training institutions and examined the extent to which CBET had been fully rolled out. The findings indicated that a majority of the participants (approximately 62%) reported that CBET had not been fully implemented in their institutions.

Similarly, 191(55.2%) study participants strongly disagreed with the statement that the objectives of Competency based education and training has not been fully implemented, 66(19.1%) respondents disagreed with the statement, 46(13.3%) respondents agreed with the statement and 30(8.7%) respondents strongly agreed with the statement while 13(3.8%) respondents were undecided. The responses showed that majority (74.3%) of the respondents said that the objectives of Competency based education and training has not been fully implemented. It suggests that there is a misalignment between the intended objectives of CBET and its actual implementation in the educational institutions under study. This finding indicates that the full realization of the objectives of CBET, such as the development of relevant skills, competencies, and employability of learners, may not have been achieved. As similar findings, a research by Smith et al. (2020) examined the

implementation of CBET and found that a significant proportion (around 76%) of the participants expressed that the objectives of CBET were not fully implemented.

Additionally, 121(35.0%) respondents strongly disagreed with the statement the quality of graduates and absorption in the job market is good, 113(32.7%) respondents disagreed with the statement while 104(30.18%) respondents were in agreement with the statement, 6(1.7%) strongly agreed on the statement while 2(0.6%) were neutral on the statement. As shown by the responses, it seems that majority (67.7%) of the respondents reported that the quality of graduates and absorption in the job market is not good. This finding suggests that there may be certain factors or challenges that prevent a portion of CBET graduates from securing employment. This finding implies the need for further investigation to identify the underlying reasons why some graduates are not absorbed in the job market despite their CBET qualifications. The study by Johnson et al. (2019) delved deeper into the factors influencing the employment outcomes of CBET graduates. It identified issues such as limited job opportunities, skills gaps, and mismatched expectations between graduates and employers as potential reasons for the disparity in job market absorption.

### 4.8 Regression Analysis

Regression analysis was employed to test the relationships between factors that affect implementation of competency Based education and Training. The regression method was used to determine the effects of these factors (Trainee, Trainer and Institutional) as the independent variables and Implementation of Competency based education and

training as the dependent variable. The term "independent" variables and "dependent" variables are derived from the mathematical expression;

$y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$

Where,

y= Dependent variable

α= regression constant,

$\beta_1 - \beta_3$ = Regression coefficients (change in y for every unit change in X)

$X_1$ = Trainee Factors

$X_2$ = Trainer Factors

$X_3$ = Institutional factors

e = Error term

The regression coefficient `α' is the Y intercept: while $\beta_1$, $\beta_2$, $\beta_3$ and $\beta_4$are the net change in y for each change of either of the variables (factors), $x_1$, $x_2$ and $x_3$.

Regression analysis combined selected independent variables (Trainee Factors, Trainer Factors and Institutional factors) with Implementation of Competency Based Education and Training being the dependent variable. This was to determine any significance for the assumed relationships based on the magnitude and direction of the relationship. The $R^2$ characterized the degree of Implementation of Competency Based Education and Training that is accounted for by the predictors (independent variables). From the model, ($R^2$ = .697) shows that all the predictors account for 69.7% variation in Implementation of Competency Based Education and Training in Meru County. Therefore, the predictors

used in the model have captured the variation on Trainee Factors, Trainer Factors and Institutional factors.

The adjusted $R^2$ gave the idea of how well the model simplifies and ideally, its value would be the same or very close to $R^2$. In this case the value of adjusted $R^2$ is .693, showing that if the data was derived from the population rather than the sample it accounts for approximately 69.3% variance of Trainee Factors, Trainer Factors and Institutional factors. The change statistics were used to test whether the change in $R^2$ is significant using the F ratio as indicated in Table 4.8.

**Table 4.8: Regression Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change | |
| 1 | .835[a] | .697 | .693 | .55502 | .697 | 196.010 | 4 | 341 | .000 | 1.952 |

a. Predictors: (Constant), Trainee Factors, Trainer Factors and Institutional factors

b. Dependent Variable: Implementation of CBET

Analysis of variance (ANOVA) was used to examine if the regression model significantly fitted in forecasting the results over the usage of the mean as shown in Table 4.9.

**Table 4.9: ANOVA for Combined effect of Trainee Factors, Trainer Factors and Institutional factors on Implementation of CBET**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 241.518 | 4 | 60.379 | 196.010 | .000[b] |
| | Residual | 105.043 | 341 | .308 | | |
| | Total | 346.560 | 345 | | | |

a. Dependent Variable: Implementation of CBET

b. Predictors: (Constant), Trainee Factors, Trainer Factors and Institutional factors

The F- ratio represents the ratio of improvement in prediction that results from fitting the regression model, relative to the inaccuracy that exists in the model. The F- ratio was 196.010 which are likely to happen by chance and was significant (P< .05). The model significantly improved the ability to predict the determinants of Implementation of CBET in Meru County practices as a development aspect.

### 4.9 Coefficients of Implementation of CBET

Table 4.10 expresses the estimations of β values and provides contribution of each predictor to the regression model. The β value gives the existing association between Implementation of CBET with each predictor. Positive β values indicate a positive association between the predictors and the outcome whereas a negative coefficient represents a negative association. The β value for Trainee Factors, Trainer Factors and Institutional factors was positive β values indicating the direction of relationship between predictors and outcome.

**Table 4.10: Coefficients of Implementation of CBET**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | .244 | .153 | | 1.592 | .112 | | |
| | Trainee Factors | .242 | .056 | .198 | 4.289 | .000 | .417 | 2.397 |
| | Trainer Factors | .163 | .055 | .115 | 2.967 | .003 | .589 | 1.697 |
| | Institutional Factors | .280 | .045 | .321 | 6.238 | .000 | .337 | 2.971 |

a. Dependent Variable: Implementation

The coefficients for each of the variables indicates the amount of change one could expect in Trainee Factors, Trainer Factors and Institutional factors given a one-unit change in the value of that variable. Given that all other variables in the regression model are held constant, the constant is .244, and this is the predicted value when all the independent variables equal zero. The standardized regression coefficient for trainee is .242, meaning that for a one-unit increase resolution of Trainee Factors we would expect a unit increase in implementation of CBET while on the other hand; a one-unit increase in resolution of Trainer Factors would yield a positive change of .163 units in implementation of CBET. The standardized regression coefficients were used to compare the relative strength of the various predictors within the regression model. Because the beta coefficients were all evaluated using standard deviations, instead of the units of the variables, they were linked to one another. The beta coefficients are the coefficients that would be found if the results and predictor variables were all transformed to standard scores, also called z-scores, before running the regression.

From the results in Table 4.11, this study model can then be specified as:-

Implementation of Competency Based Education and Training = .244 +.242$X_1$ +.163 $X_2$ +.280 $X_3$+ e

**4.10 Chapter Summary**

The chapter has reported the findings of the study. The areas covered included the response rate, background information of the respondents, the objectives guiding the study which included Trainee Factors, Trainer Factors and Institutional factors influencing Competency Based Education and Training. The next chapter provides summary of findings drawn and makes suggestions for further research.

# CHAPTER FIVE

# SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

This chapter presents a summary of the research findings, conclusions, recommendations and suggestions for further research based on the analysis of information reviewed by the study. The section is sub-divided into four sections, namely, summary of research findings, conclusions, recommendations and suggestions for further research. These divisions were informed by the aim of the research and its outcomes.

## 5.2 Summary of Findings

The purpose of this study was to assess the determinants of implementation of competency-based education and training in technical and vocational training institutions in Meru County. It specifically addressed the following areas; the influence of trainee factors on implementation of competency-based education and training in Meru County, the influence of trainer factors on implementation of competency based education in Meru County and the influence of institutional factors on implementation of competency based education in Meru County. Data was collected and analyzed through mixed methodology where questionnaires were used to collect quantitative data while interviews were used to collect qualitative data. The analyzed data revealed the following;

### 5.2.1 Trainee Factors and Implementation of Ccompetency-Based Education and Training

The first objective of this study was to examine the influence of trainee factors on implementation of competency based education and training in Meru County. The findings revealed that most (59.2%) of the participants noted that trainees are not well prepared for competency based education and training. Similarly, a majority (74.6%) of the respondents in Meru county believed that trainees have not embraced the new competency based education and training. Additionally, it was revealed that most (69.1%) of respondents noted that trainees are not motivated to learn on the new competency based education and training curriculum. Moreover, a majority (54.6%) of the study participants cited that Trainees receive inadequate moral and financial support from their parents to study on the new competency based education and training.

Further, hypothesis which stated that there is no significant relationship between trainee factors and implementation of competency based education and training in Meru County was rejected since there was a significant relationship trainee factors and implementation of competency based education and training. This showed that trainee factors have a positive association with implementation of competency based education and training in Meru County.

### 5.2.2 Trainer Factors and Implementation of Competency-Based Education and Training

The second objective of this study was to determine the influence of trainer factors on implementation of competency based education and training in Meru County. The study findings showed that most (62.1%) of the study participants reported that Trainers are not

adequately trained and prepared on competency based education and training. Further, majority (73.7%) of the study respondents reported that trainers are able to judge if students have achieved the learning outcomes of CBET. Additionally, the responses showed that majority (63.9%) of the study participants reported that the objectives of Competency based education and training are not clear. Similarly, a majority of the respondents at 56.7% reported that trainers prepare lesson comprehensive lesson plans. Further, majority (70.3%) of the study participants believed that trainers are not motivated to teach on the new competency based education and training. Moreover, (71.9%) of the respondents believed that the competency based education and training is not a complex system. Similarly a majority (76.3%) of the study respondents believed that the school administration provide support to staff and students. Moreover, it emerged that majority of the respondents at 74.5% believed that trainers are not well remunerated. Further, hypothesis which stated that there is no significant relationship between Trainer Factors and Implementation of CBET was rejected because the study revealed that Trainer Factors affect Implementation of CBET.

### 5.2.3 Institutional Factors and Implementation of Competency-Based Education and Training

The third objective of this study was to determine the influence of institutional factors on implementation of competency based education and training in Meru County. The study showed that most (56.4%) of the respondents of Meru county reported that the institution provides adequate teaching and learning resources suitable for competency-based education and training. Additionally, majority (74.6%) of the respondents believed that the institutions did not provide clear guidelines on the implementation of the

competency-based education and training. On the statement that the institutions have adopted implementation policies on competency-based education and training, it emerged that majority (71.9%) of the respondents of the study area pointed out that the institutions have not adopted implementation policies on competency-based education and training. Similarly, most (53.4%) of the inhabitants of Meru County noted that institutions have inadequate computer labs for effective implementation of CBET. Moreover, it emerged that majority (57.8%) of the study's respondents believed that institutions are ill equipped with adequate learning infrastructure in terms of lecture halls, well equipped workshops, sporting facilities etc. which facilitates smooth implementation of CBET. Similarly, majority (70.4%) of the respondents reported that the institutions' administrations have not been conducting monitoring and evaluation on the progress of the implementation of CBET.

Further, the null hypothesis which stated that there is no significant relationship between institutional factors and implementation of competency-based education and training in Meru County was rejected since there exists a significant relationship between institutional factors and implementation of competency-based education and training in Meru County.

### 5.3 Conclusions of the Study

Based on the findings of the study, the following conclusions were made;

From the first objective, the study revealed that a significant number of the participants believed that trainees were not well prepared and to embrace the new competency-based education and training. A significant number of the respondents reported low levels of motivation among trainees to learn under the new curriculum. Additionally, the study

revealed that a significant number of trainees do not receive adequate moral and financial support from their parents to study CBET. The hypothesis testing indicated a significant relationship between trainee factors and the implementation of CBET in Meru County. This implies that trainee factors, such as preparedness, acceptance, motivation, and support, have a positive association with the successful implementation of CBET.

From the second objective, the study showed that a significant number of the participants reported that trainers are not adequately trained and prepared for CBET. They also perceived that trainers are able to assess whether students have achieved the learning outcomes of CBET. The objectives of CBET were considered not clear and precise, and trainers reported that trainers prepare lesson comprehensive lesson plans. The study participants also believed that trainers are ill motivated to teach CBET. Moreover, the study indicated that the complexity of the CBET system was not a concern among trainers, and there was inadequate support from the school administration. Additionally, remuneration issues seem to negatively impact trainers' motivation and performance. The hypothesis testing revealed a significant relationship between trainer factors and the implementation of CBET. This indicates that trainer factors, including training, assessment capabilities, clarity of objectives, motivation, and support, have an impact on the successful implementation of CBET.

From the third objective, the study revealed that a significant proportion of respondents reported that the institution do not provide adequate teaching and learning resources suitable for CBET. Further, the institutions were perceived to have unclear guidelines for CBET implementation and a lack of adoption of implementation policies. The availability of computer labs for effective CBET implementation was reported to be inadequate and

that there were concerns about insufficient learning infrastructure such as lecture halls, workshops, and sporting facilities. Additionally, the study revealed that some institutions' administrations have not been conducting monitoring and evaluation of the progress of CBET implementation. However, there is room for improvement in terms of the adoption of clear guidelines and policies. The hypothesis testing indicated a significant relationship between institutional factors and the implementation of CBET. This suggests that institutional factors, including teaching and learning resources, guidelines, policies, infrastructure, and monitoring and evaluation practices, influence the successful implementation of CBET in Meru County.

### 5.4 Recommendations of the Study

Based on the findings and conclusion the study the researcher made the following recommendations;

i) Considering the significant number of participants who reported that trainees were not well prepared and lacked motivation to embrace CBET, and the importance of trainee factors in the successful implementation of CBET, it is recommended that there is a need to develop and implement programs or interventions aimed at improving trainee preparedness and motivation for CBET. This can be achieved through pre-training orientation programs, career counseling, and mentorship initiatives. Additionally, creating awareness among parents and providing them with resources to support their children's education can contribute to enhancing trainee motivation and academic success in CBET.

ii. Based the significant number of participants who reported that trainers were not adequately trained, lacked assessment capabilities, and trainers prepare lesson

comprehensive lesson plans, and the impact of trainer factors on CBET implementation, there is a need to invest in comprehensive and ongoing training programs for trainers to enhance their competencies in CBET methodologies, assessment techniques, and lesson planning. Providing trainers with professional development opportunities, mentoring, and support systems can help improve their performance and motivation. Additionally, addressing remuneration issues and ensuring timely payment can contribute to maintaining high levels of motivation and dedication among trainers.

iii. Having been revealed that the inadequate availability of teaching and learning resources, unclear guidelines, and lack of implementation policies reported by a significant number of respondents, and the influence of institutional factors on CBET implementation, Institutions should prioritize the allocation of adequate resources, including teaching and learning materials, workshops and infrastructure, to support the effective implementation of CBET. Clear guidelines and policies need to be developed and communicated to all stakeholders involved in the implementation process. Additionally, regular monitoring and evaluation mechanisms should be established to assess the progress of CBET implementation and identify areas for improvement. Collaboration with relevant stakeholders, such as government agencies and industry partners, can also contribute to enhancing institutional support for CBET.

### 5.5 Suggestion for Further Research

Based on the limitations of the study and the gaps therein, there is need to conduct further studies on the following areas;

1. There is a need to explore the specific barriers and facilitators that affect the implementation of CBET in Meru County. Conducting qualitative research and engaging stakeholders can help uncover the underlying factors that hinder or support the successful implementation of CBET initiatives. This will enable policymakers and educational institutions to develop targeted strategies to address challenges and enhance the facilitators.
2. There is need for longitudinal studies to assess the long-term impact and outcomes of CBET programs in terms of trainees' employability, career advancement, and skill development. This research can provide valuable evidence on the effectiveness and sustainability of CBET initiatives and inform decision-making processes.
3. Further studies should also be done to evaluate the relevance of the CBET curriculum in meeting the needs of the local job market. This assessment can help identify any gaps or areas that require improvement to ensure that the training provided aligns with the skills and competencies demanded by employers.
4. A study focusing on pedagogical approaches used in CBET programs can shed light on effective teaching and learning methods that promote competency development. Comparing different instructional strategies and assessing their impact on trainee outcomes can inform the selection and refinement of pedagogical approaches.

5. There is also need to investigate the allocation and utilization of resources, such as funding, infrastructure, and technological support, in CBET implementation. Understanding how resources are allocated and their impact on program effectiveness can help in optimizing resource allocation and ensuring equitable access to quality CBET programs.
6. Further research should also examine the role of different stakeholders, including policymakers, trainers, industry representatives, and trainees, in the implementation of CBET. Exploring their perspectives, expectations, and experiences can provide insights into effective stakeholder engagement strategies and promote collaborative efforts in enhancing CBET implementation.

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# APPENDICES

## Appendix I: Letter of Introduction

School of Education
University of Eldoret,
P.O Box 1125
Eldoret.

**Dear Participant,**

**RE: PARTICIPATION IN THIS STUDY**

I am a post graduate student pursuing a Master of Philosophy in Technology Education of the University of Eldoret. I am currently conducting research on **"Determinants of implementation of Competency-Based Education and Training in Technical and Vocational Training Institutions in Meru County".** I kindly request you to participate in this study. Your response to the items in the questionnaire will be treated with utmost confidentiality, and will not be used for any other purposes except this study. You are free to withdraw from this study at any time you deem fit. You may also request the researcher to inform you about the findings of this research. Thank you very much for accepting to participate in this study.

Yours Sincerely,

_____

Ambrose Muthuri Date

SEDU/TED/M/024/21

**Appendix II: Questionnaire for Trainees, Trainers and Technicians**

**SECTION A: Demographic Information.**

1. Designation ……(Trainee, Trainer, Technician)
2. Please indicate your age bracket?

18-25years ☐ 26-35years ☐ 36-45years ☐

46-55 years ☐ above 56 years ☐

3. Kindly indicate your gender?

Male ☐ Female ☐

4. Highest level of education attended

Certificate ☐ Diploma ☐ PhD ☐

Bachelors ☐ Masters ☐

5. For how long have you stayed in this institution?

Less than 5 years ☐ 5-9 years ☐ 10-14 years ☐

15-19 years ☐ above 20 years ☐

6. Using a five point Likert scale where 1= strongly disagree, 2= disagree, 3= Undecided, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statements on Trainee factors and implementation of competency based education and training

**Section B: trainee factors and implementation of competency-based education and training**

| Statement | SD | D | UD | A | SA |
|---|---|---|---|---|---|
| Trainees are well prepared to on competency based education and training | | | | | |
| Trainees have embraced the new competency based education and training | | | | | |
| Trainees are highly motivated to learn on the new competency based education and training curriculum | | | | | |
| Trainees receive adequate moral financial support from their parents to study on the new competency based education and training | | | | | |

**Section C: Trainer factors and implementation of competency-based education and training**

7. Using a five point Likert scale where 1= strongly disagree, 2= disagree, 3= Undecided, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statements on Trainer factors and implementation of competency based education and training

| Statement | SD | D | UD | A | SA |
|---|---|---|---|---|---|
| Trainers are adequately trained and prepared on competency based education and training | | | | | |
| Trainers are able to judge if students have achieved the learning outcomes of CBET | | | | | |
| The objectives of Competency based education and training are clear and precise | | | | | |
| Trainers prepare lesson comprehensive lesson plans | | | | | |
| Trainers are highly motivated to teach on the new competency based education and training | | | | | |
| The competency based education and training is not a complex | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| system | | | | | |
| The school administration provides support to staff and students | | | | | |
| Trainers are well remunerated | | | | | |

**Section D: Institutional factors on implementation of competency-based education and training**

8. Using a five point Likert scale where 1= strongly disagree, 2= disagree, 3= Undecided, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statements on Institutional factors on implementation of competency based education and training

| **Statement** | **SD** | **D** | **UD** | **A** | **SA** |
|---|---|---|---|---|---|
| The institution provides adequate teaching and learning resources suitable for competency based education and training | | | | | |
| Our institution has provided clear guidelines on the implementation of the competency based education and training | | | | | |
| Our institution has adopted implementation policies on competency based education and training | | | | | |
| Our institution has adequate workshops for effective implementation of CBET | | | | | |
| Our institution is well equipped with adequate learning infrastructure in terms of lecture halls, Workshops, sporting facilities etc. which facilitates smooth implementation of CBET | | | | | |
| The institution administration has been conducting monitoring and evaluation on the progress of the implementation of CBET | | | | | |

**Section D: Elements of Implementation of Competency-Based Education and Training**

9. Using a five point Likert scale where 1= strongly disagree, 2= disagree, 3= Undecided, 4= agree 5= strongly agree. Please show to what extent you agree or disagree with the following statements on Elements of Implementation of Competency Based Training

| **Statement** | **SD** | **D** | **UD** | **A** | **SA** |
|---|---|---|---|---|---|
| Competency based education and training has been fully rolled out in our institution | | | | | |
| The objectives of Competency based education and training has been fully implemented | | | | | |
| The quality of graduates and absorption in the job market is good | | | | | |

**Appendix III: Interview Schedule for Principals**

1. What is the students view on Competency-Based Education and Training CBET as compared to 8-4-4 system of education?

   ……..

   ……..

   ……..

2. What is the level of readiness of students towards Competency-Based Education and Training CBET?

   ……..

   ……..

   ……..

3. What is the trainers' view on Competency-Based Education and Training CBET as compared to 8-4-4 system of education?

   ……..

   ……..

   ……..

4. What is the level of training and readiness of trainers towards Competency-Based Education and Training CBET?

   ……..

   ……..

   ……..

5. To what extent does Institutional factors affect implementation of competency-Based Education in Meru County

   ……..

   ……..

   ……

## Appendix IV: Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 298680

Date of Issue: 23/September/2022

### RESEARCH LICENSE

This is to Certify that Mr.. ambrose kinoti muthuri of University of Eldoret, has been licensed to conduct research in Meru on the topic: DETERMINANTS OF IMPLEMENTATION OF COMPETENCY-BASED EDUCATION AND TRAINING IN TECHNICAL AND VOCATIONAL TRAINING INSTITUTIONS IN MERU COUNTY for the period ending : 23/September/2023.

License No: NACOSTI/P/22/20584

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Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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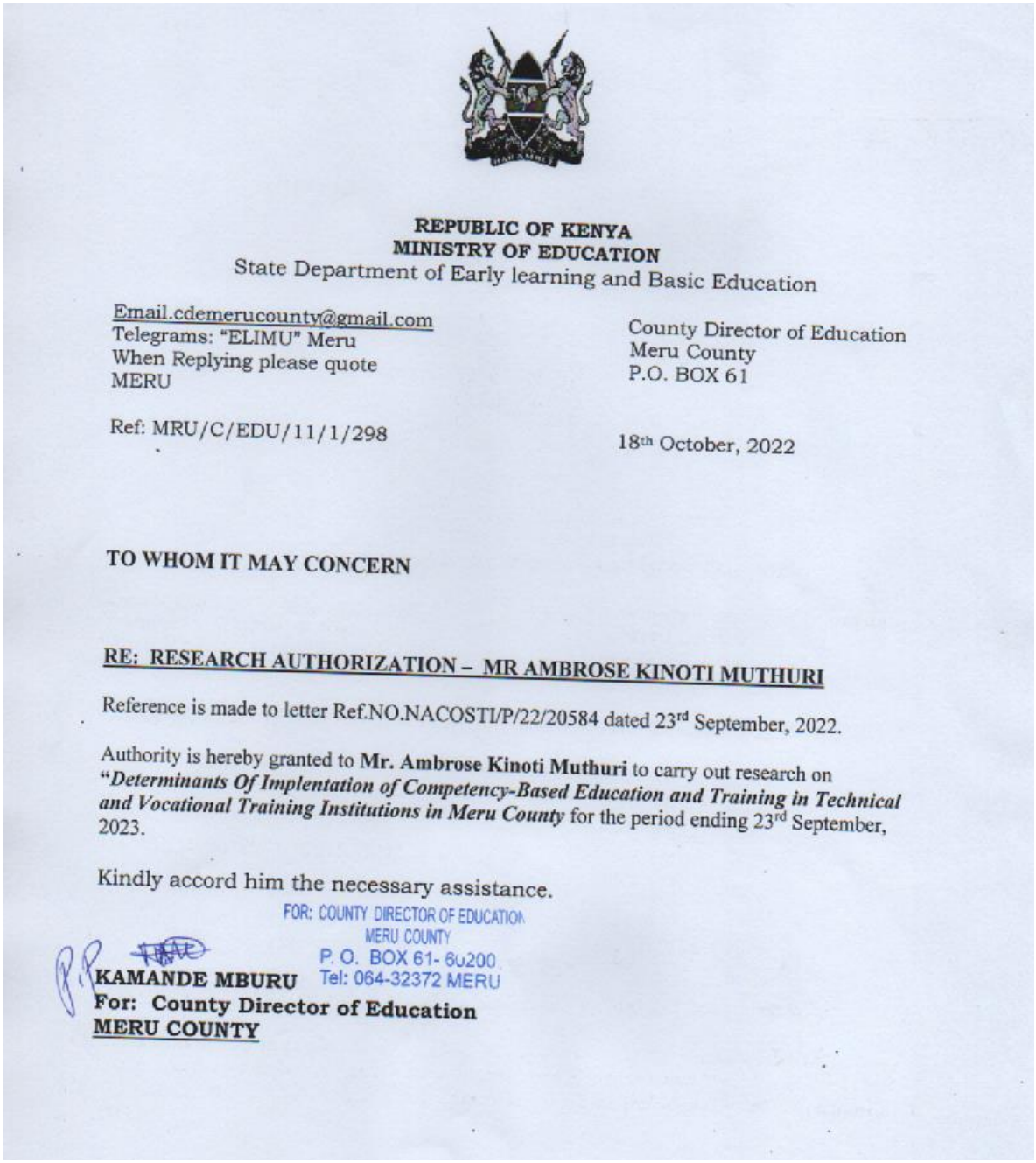
## Appendix V: Research Authorization Letter



**REPUBLIC OF KENYA**
**MINISTRY OF EDUCATION**
State Department of Early learning and Basic Education

Email.cdemerucounty@gmail.com
Telegrams: "ELIMU" Meru
When Replying please quote
MERU

County Director of Education
Meru County
P.O. BOX 61

Ref: MRU/C/EDU/11/1/298

18th October, 2022

**TO WHOM IT MAY CONCERN**

**RE: RESEARCH AUTHORIZATION – MR AMBROSE KINOTI MUTHURI**

Reference is made to letter Ref.NO.NACOSTI/P/22/20584 dated 23rd September, 2022.

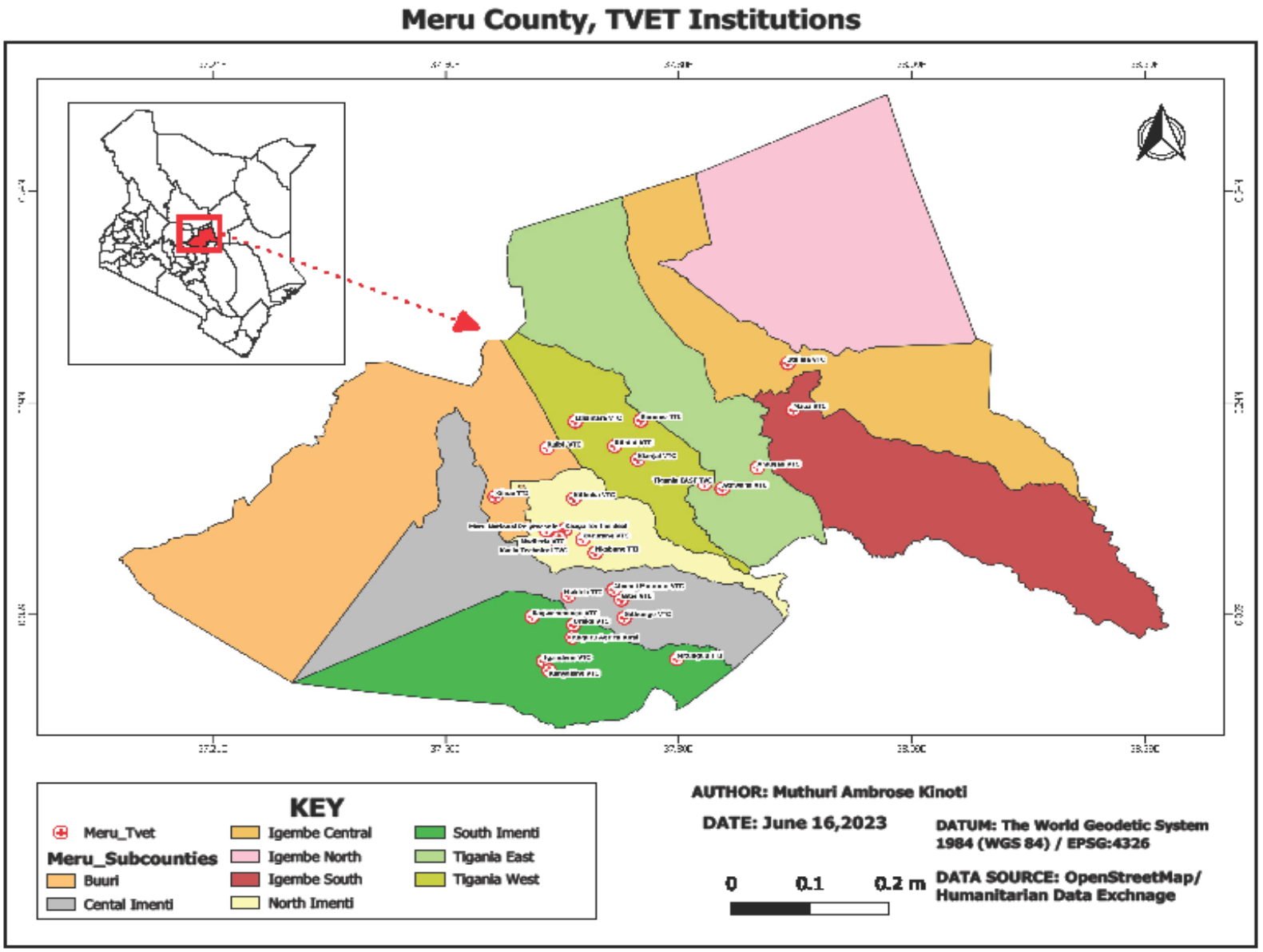
Authority is hereby granted to **Mr. Ambrose Kinoti Muthuri** to carry out research on ***"Determinants Of Implentation of Competency-Based Education and Training in Technical and Vocational Training Institutions in Meru County*** for the period ending 23rd September, 2023.

Kindly accord him the necessary assistance.

FOR: COUNTY DIRECTOR OF EDUCATION
MERU COUNTY
P. O. BOX 61- 60200
Tel: 064-32372 MERU

**KAMANDE MBURU**
**For: County Director of Education**
**MERU COUNTY**

**Appendix VI: Map of the Study Area**



## Appendix VII: Similarity Report

University of Eldoret

**Certificate of Plagiarism Check for Synopsis**

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| **Author Name** | Muthuri Ambrose Kinoti SEDU/TED/M/024/21 |
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| **Similarity** | 10% |
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