



# Quality Assurance Practices Influence on Implementation of Competency-Based Education and Training in Technical, Vocational Education and Training Institutions in Nairobi County

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**Abstract:** *The aim of this investigation was to examine influence of quality assurance practices on implementation of Competency-Based Education and Training in Technical, Vocational Education and Training Institutions in Nairobi County. This study adopted a mixed-method approach and a descriptive correlational and concurrent triangulation designs. The study targeted a sample population of 373 respondents that included 53 principals, 53 Board of Management chairs, 1 Curriculum Development Assessment and Certification Council chair, 265 Heads of Departments and 1 Technical and Vocational Education and Training County Director. Questionnaires were administered to Board of Management chairs and Head of Departments, while interviews gathered insights from Technical and Vocational Education and Training County Director and Curriculum Development Assessment and Certification Council chair. Qualitative data was analysed through thematic analysis where patterns and themes were identified in respondents' narratives and interpreted in relation to the study's objectives. Quantitative data was analysed using descriptive statistics. For inferential data Linear regression analysis was used to determine extent to which quality assurance practices influence implementation of Competency-Based Education and Training. The data was analysed using SPSS Version 30 and findings presented in form of tables and charts for clarity and ease of interpretation. Research findings demonstrated that when quality assurance practices are well executed, they promote instructional practices and assessment process within Technical and Vocational Education and Training institutions resulting to instructional practices and assessment processes being outcome-based, competency-based and aligned with industry needs.*

**Keywords:** *Quality Assurance, Practices, Implementation, Competency-Based Education, Training, Vocational Education*

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## 1. Introduction

Investigation of management practices concerning adoption of Competence-Based Education and Training within TVET institutions reveals critical factors influencing success. Effective leadership, strategic

planning and resource allocation emerge as key elements (Muthomi & Kinyua, 2020). Institutions that invest in staff development and engage stakeholders show better CBET implementation outcomes (Ooko, 2019). However, challenges persist, including resistance to change and funding constraints (Wanyonyi et al., 2022). Quality assurance mechanisms and industry partnerships

also play vital roles in aligning CBET programs with market needs (TVETA, 2020). However, overall adaptive management practices are crucial for managing intricate challenges of CBET implementation and ensuring its effectiveness in TVET institutions.

Quality assurance practices are crucial for managing intricate challenges. For instance, US approach emphasizes aligning educational outcomes with workforce needs, facilitated by government-developed competency frameworks that guide curriculum development across various sectors (Everhart & Bushway 2014). American TVET institutions are distinguished by their flexible learning models, which prioritize competency mastery over fixed timeframes, allowing for individualized student progression. As a result, several universities have implemented innovative Competency-Based programs that have gained recognition for effectively preparing work-ready graduates while providing personalized educational experiences (Kelchen, 2015; Daugherty et al., 2017). China's approach to CBET in TVET institutions is marked by strong government support and systematic implementation, driven significantly by Made in China 2025 initiative (State Council of China, 2015).

Chinese TVET institutions have developed extensive industry partnerships, exemplified by factory in school model, which provides students with hands-on experience in real production environments (Wang & Guo, 2019). Moreover, government has heavily invested in upgrading TVET facilities and equipment, as evidenced by Double Hundred Plan aimed at developing high-quality institutions and training bases (Ministry of Education, China, 2021). Therefore, a unique aspect of China's CBET implementation is integration of ideological and political education alongside technical skills training. Despite these advancements, China faces challenges including regional disparities in resources quality and the need to continuously update curricula to keep pace with rapid technological changes. Aligned with trends in Sub-Saharan Africa region, the implementation of Competence-Based Education and Training (CBET) in TVET institutions across African countries is progressing with varying approaches and challenges among nations. For instance, in Egypt, CBET adoption is part of broader educational reforms aimed at modernizing TVET system to meet economic needs and address youth employment. Key features of Egypt's CBET implementation include government initiatives like EU-supported TVET II program and strong industry involvement through sector skills councils and Enterprise TVET Partnership initiative (European Commission, 2020). However, Egypt faces challenges in implementing CBET including need for comprehensive teacher training, updating infrastructure and overcoming cultural biases favouring academic education over vocational training (El-Ashmawi, 2022).

Kenya has been at the forefront of CBET implementation in East Africa. The country introduced CBET in TVET institutions as part of its Vision 2030 development plan. As a result, The Authority for Technical and Vocational Education and Training (TVETA) has been instrumental in developing occupational standards and Competency-Based curricula (Muthomi & Ngari, 2020). However, challenges such as inadequate infrastructure, limited industry involvement and need for more trained instructors persist. Nairobi County, as Kenya's economic and educational centre, hosts numerous TVET institutions facing challenges and opportunities of CBET implementation. This is because, research indicates that effective management practices, including leadership styles, quality assurance and staff development programs, are crucial for successful CBET adoption in these institutions. Also, strategic planning aligned with CBET principles has been identified as a key management practice in successful implementation, with the Kenya Technical Trainers College in Nairobi cited as an exemplar in this regard (Muthomi and Kinyua 2020).

Quality assurance mechanisms aligned with CBET principles have been identified as a critical management practice with TVET providing guidelines that several Nairobi institutions have successfully adopted. Despite progress, challenges persist in some TVET institutions, including staff resistance to change, inadequate funding and difficulties in assessment processes, highlighting the need for adaptive management practices. Also, landscape of CBET implementation in Nairobi's TVET institutions shows both progress and challenges, with successful implementation characterized by strategic planning, effective resource management, staff development, stakeholder engagement and robust quality assurance mechanisms (Wanyonyi et al., 2022).

## 1.1 Statement of the Problem

One of the most important goals of Kenya's educational reform is establishment of competency-Based Education and Training (CBET) in country's technical and vocational training institutions (TVET) (Wambugu, 2020). However, despite significant efforts to adopt this approach, numerous challenges persist, hindering its effective implementation and impact. This study therefore focuses on influence of quality assurance practices in TVET institutions on CBET implementation. One of the primary challenges with CBET curricula is their misalignment with industry needs, resulting in graduates lacking necessary competencies to meet Labor market demands. A recent industry survey found that 60% of employers believe TVET graduates lack essential skills, primarily due to outdated curricula and inadequate industry linkages (Kenya National Qualifications Authority, 2023). Instructors also face difficulties in implementing CBET due to insufficient training, with 72% of TVET trainers reporting that they had not received adequate capacity-building programs for

competency-based instruction (Nairobi County Education Board, 2022).

Resource constraints further exacerbate these issues, as 65% of TVET institutions cite inadequate funding as a major barrier to acquiring essential equipment and facilities for hands-on training (Kenya TVET Authority, 2023). Additionally, ineffective assessment methods pose another challenge, with 55% of institutions lacking structured evaluation frameworks to measure students' competency acquisition effectively (Muthomi & Mbugua, 2019). The slow adoption of CBET is evident in Nairobi County, where a comprehensive survey of 50 TVET institutions revealed that only 40% have fully implemented CBET curricula, while 35% remain in partial implementation stages (Kenya TVET Authority, 2023). Institutions with robust leadership and strategic management practices were found to be 2.5 times more likely to achieve full CBET implementation compared to those with weaker management structures (Muthomi & Kinyua, 2020). However, despite 80% of TVET administrators acknowledging the importance of CBET, only 45% have a clear strategic plan for its implementation (Kenya TVET Authority, 2023).

Resistance to change within TVET institutions further complicates CBET implementation. Traditional educational paradigms and rigid institutional cultures slow down the transition, with 58% of TVET staff expressing concerns over shifting from traditional instructional methods to a Competency-Based model (Njengere, 2021). Additionally, inadequate monitoring and evaluation mechanisms create significant data gaps, making it difficult to assess CBET's actual impact on graduate employability. Oketch (2018) highlights that 70% of TVET institutions lack systematic tracking of graduate outcomes, leading to ineffective policy adjustments. Additionally, the challenge of equitable access to CBET remains unresolved, particularly in rural areas where resource constraints are more pronounced. Atchoarena and Delluc (2022) observed that only 30% of TVET institutions in rural Kenya have the infrastructure required for effective CBET implementation, compared to 75% of institutions in urban settings. This disparity underscores the need for more inclusive management strategies that address regional inequalities in vocational education access. Given these challenges, this study aims to investigate how institutional management practices in TVET institutions influence CBET implementation. By examining relationship between quality assurance practices and CBET outcomes, this research sought to identify effective approaches for overcoming these barriers and ensuring successful adoption of CBET in Nairobi County's TVET institutions.

## 1.2 Research Objective

The study sought to examine influence of quality assurance practices on implementation of Competency-

Based Education and Training in Technical, Vocational Education and Training Institutions in Nairobi County.

## 1.3 Research Hypothesis

**Ho1** There is no significant influence of quality assurance practices on implementation of Competency-Based Education and Training in Technical, Vocational Education and Training Institutions in Nairobi County.

## 2. Literature Review

Quality assurance processes are essential for maintaining integrity and effectiveness of CBET programs. These processes involve establishing standards and benchmarks for program delivery, curriculum design and assessment. By regularly reviewing and evaluating these aspects, institutions can ensure that their CBET programs align with both industry requirements and educational goals. For instance, accreditation bodies and regulatory agencies often conduct evaluations to verify that TVET institutions adhere to established quality standards. This scrutiny helps to identify any gaps or deficiencies in the programs and drives necessary improvements (Smith & Jones, 2022).

Continuous improvement is equally important in CBET framework. This concept involves a systematic approach to enhancing educational practices and outcomes based on regular feedback and performance data. However, in CBET, continuous improvement entails revising curricula, updating teaching methods and refining assessment techniques in response to stakeholder feedback, industry trends and emerging technologies. For example, feedback from employers regarding performance of graduates can lead to adjustments in training programs to better align with current job market needs (Brown & Green, 2023). This interactive process ensures that CBET programs remain effective and responsive to changing demands.

An illustrative case can be seen in application of quality assurance and continuous improvement in TVET institutions across various countries. In Australia, Australian Skills Quality Authority (ASQA) plays a crucial role in ensuring that TVET institutions maintain high standards of education. Through regular audits and assessments, ASQA helps institutions identify areas for improvement and ensures that CBET programs are of high quality and meet industry standards (White & Gray, 2021). In a similar vein, Ofsted, the UK's Office for Standards in Education, Children's Services and Skills, evaluates and promotes continuous improvement in CBET programs run by TVET institutions (Williams & Clark, 2022). Overall, the influence of quality assurance and continuous improvement on CBET implementation is profound. Therefore, by upholding rigorous standards and fostering an environment of ongoing enhancement, TVET institutions can ensure that their CBET programs

deliver high-quality education, meet industry needs and effectively prepare students for successful careers.

Quality assurance (QA) is a foundational element in maintaining standards and effectiveness of CBET programs. QA involves setting and monitoring educational standards, conducting regular evaluations and ensuring that TVET institutions adhere to established criteria. In Brazil, National Agency for Evaluation of Higher Education (INAES) is responsible for evaluating and accrediting educational institutions. INAES role extends to TVET institutions, where it ensures that CBET programs meet national quality standards. The agency conducts periodic assessments and audits, focusing on curriculum design, teaching quality and assessment methods.

For example, INAES has been instrumental in refining curriculum of technical courses to better align with industry requirements, thereby enhancing practical relevance of CBET programs (Silva & Costa, 2021). Argentina also emphasizes quality assurance through National Institute of Educational Technology (INTE), which monitors and evaluates TVET programs. INTE collaborates with industry stakeholders to ensure that educational content reflects current market demands. This collaboration helps in adapting CBET programs to include emerging technologies and industry trends, thereby maintaining their relevance and effectiveness (Fernández & Martínez, 2022).

Chile has a robust quality assurance system managed by Chilean Quality Assurance Agency for Higher Education (AQA). AQA evaluations not only ensure that TVET institutions meet national standards but also drive continuous improvements. The agency's assessments focus on various aspects of CBET, including curriculum content, pedagogical approaches and assessment practices. AQA recommendations often lead to significant updates in TVET programs, such as incorporating new industry certifications and adapting training to technological advancements (López & Vargas, 2022). Strong quality assurance and continuous improvement strategies are crucial for effective adoption of Competency-Based Education and Training (CBET) in Technical and Vocational Education and Training (TVET) Institutions across African nations.

In Ethiopia, quality assurance in CBET programs is managed by Ethiopian TVET Agency, which establishes standards and benchmarks for TVET institutions. The agency conducts regular evaluations and audits to ensure compliance with these standards, which cover curriculum design, teaching methodologies and assessment practices. This comprehensive method guarantees that CBET programs will continue to be of high quality and applicable. For instance, in order to raise the bar for technical and vocational education and training (TVET) in Ethiopia, the government has partnered with German Corporation for International

Cooperation (GIZ) to set up Centres of Excellence. According to Assefa and Bihonegn (2019), these centres provide training that is in line with worldwide standards in fields such as construction and automotive technology. In addition, continuous improvement is also a key focus in Ethiopia. This is because, the Ethiopian TVET Agency collects feedback from employers, graduates and other stakeholders to identify areas for improvement. This feedback is used to update curricula, enhance teaching methods and refine assessment tools. For example, the agency has introduced a modular training approach that allows for regular updates and adjustments based on industry feedback, ensuring that training remains relevant and effective (Mulugeta, 2021).

In Rwanda, Workforce Development Authority (WDA) plays a pivotal role in ensuring quality assurance in TVET programs. The WDA has established a comprehensive quality assurance framework that includes accreditation, regular inspections and performance evaluations. This framework ensures that TVET institutions adhere to national standards and continuously improve their programs. For example, WDA collaborates with industry stakeholders to develop occupational standards and competency frameworks that guide curriculum development and assessment practices (Nizeyimana & Nuwagaba, 2020). Rwanda also places a strong emphasis on continuous improvement. The WDA regularly reviews TVET programs and solicits feedback from various stakeholders, including employers, educators and students. This feedback informs continuous refinement of curricula and training methodologies. For instance, in response to feedback from ICT sector, WDA has updated its ICT training programs to include emerging technologies such as Artificial Intelligence and cyber security, ensuring that graduates possess skills needed in modern workforce (Mugiraneza & Rukundo, 2021).

The Vocational Education and Training Authority (VETA) is Tanzania's official agency for vocational education and training responsible for quality assurance in TVET institutions. VETA sets standards for curriculum development, teaching methods and assessment practices, and conducts regular evaluations to ensure compliance. The authority's quality assurance framework includes accreditation, monitoring, and evaluation processes that help maintain high standards in CBET programs (Kira & Komba, 2019). Continuous improvement is integral to VETA approach. The authority engages in ongoing dialogue with industry stakeholders to gather feedback on relevance and effectiveness of TVET programs. This feedback is used to make necessary adjustments and updates to curricula. For example, VETA implemented a Competency-Based modular training system that allows for flexibility and responsiveness to industry needs. This system enables TVET institutions to regularly update their training programs based on feedback and emerging industry

trends, ensuring that graduates are well-prepared for workforce (Mureithi & Mwangi, 2020).

African regional cooperation substantially enhances CBET quality assurance and continuous improvement efforts. Continental Education Strategy for Africa (CESA), an initiative of African Union, promotes sharing of successful practices and harmonization of educational standards between member states. Efforts like these raise the bar for technical education across the continent by bringing TVET programs in line with international standards. For instance, in order to facilitate implementation of CBET in various African states, African Development Bank (AfDB) finances a number of regional TVET programs that aim to improve quality and increase capacity (AfDB, 2021). To effectively apply CBET at TVET institutions in African countries, robust quality assurance and continuous improvement systems are necessary. These practices ensure that CBET programs are of high quality, relevant to industry needs and capable of preparing students for successful careers. By maintaining rigorous standards and fostering an environment of ongoing enhancement, these countries demonstrate the importance of robust quality assurance mechanisms and continuous improvement in achieving effective and sustainable CBET programs.

For Technical and Vocational Education and Training (TVET) institutions in Kenya to successfully adopt Competency-Based Education and Training (CBET), stakeholder engagement is crucial. An integral aspect of CBET creation and implementation is involvement of the government. Developing policies, allocating funds and supervising regulations are all responsibilities of Ministry of Education's Technical and Vocational Education and Training Authority (TVETA). According to Wanjohi (2020), TVETA collaborates with other government agencies to set competency standards and frameworks that are in line with the development goals of the country. One example is incorporation of key competencies into CBET curricula as a response to Kenya's economic priorities, which include the Big Four Agenda (Khaemba & Orwenjo, 2021): affordable housing, universal healthcare, food security, and manufacturing.

Industry quality assurance stakeholders are vital in shaping CBET programs to ensure they meet current and future labour market demands. Employers provide insights into the specific skills and competencies required in various sectors. This collaboration is often formalized through sector skills councils and industry advisory boards. For example, Kenya Association of Manufacturers (KAM) works closely with TVET institutions to develop curricula that address the skills gap in the manufacturing sector (Otieno & Ouma, 2021). However, a notable example is partnership between Kenya Utalii College and the Kenya Tourism Board, where industry experts contribute to curriculum design and provide practical training opportunities. This

collaboration ensures that graduates are well-prepared for the hospitality and tourism industry, which is a significant contributor to Kenya's economy (Otieno & Ouma, 2021).

TVET institutions themselves are key stakeholders in implementation of CBET. These institutions must adapt their teaching methods, curricula and assessment strategies to align with Competency-Based Approaches. The Kenya Technical Trainers College (KTTC) is a leading example, having implemented a comprehensive CBET framework that includes industry-driven curriculum development, Competency-Based Assessments and Continuous Professional Development for trainers (Karani & Wambugu, 2021). Successful implementation of CBET also relies heavily on community involvement and civil society organizations. To make sure that training programs are available and meet the needs of people, these organizations facilitate connections between schools and communities. To better serve underserved populations, including young people and women, local NGOs often partner with TVET universities to increase funding and support for CBET programs (Mureithi & Mwangi, 2020). International alliances also play a big role in making CBET work in Kenya. With the help of organizations like UNESCO and German Corporation for International Cooperation (GIZ), Kenyan TVET institutions have received funding, technical assistance and capacity-building programs. Omollo and Oundo (2022) found that several technical fields now have Centres of Excellence, which improve quality of training and make graduates more marketable.

For instance, one notable case is partnership between Rift Valley Technical Training Institute (RVTTI) and Toyota Kenya, where the company provides training equipment, internships and employment opportunities for students. This collaboration ensures that training provided is up-to-date with the latest automotive technologies and meets industry standards, resulting in high employability rates for RVTTI graduates (Mugiraneza & Rukundo, 2021). Another example is the partnership between National Industrial Training Authority (NITA) and various construction companies to address skills gap in construction sector. Through this collaboration, NITA has developed Competency-Based Training programs that include practical on-site training, ensuring that graduates possess necessary skills to thrive in industry (Fernández & Martínez, 2022). Stakeholders' engagement in Kenya is pivotal to the successful implementation of CBET in TVET institutions. The collaborative efforts of government bodies, industry partners, educational institutions, community groups, and international organizations ensure that CBET programs are relevant, effective, and responsive to the needs of the labour market. By fostering these partnerships, Kenya can enhance the quality of its TVET system and improve the employability of its graduates, thereby contributing to national development goals.

## 2.1 Theories

This study will be guided by three theories, namely: Institutional Theory, Contingency Theory and Curriculum Implementation Theory. These theories provide valuable frameworks for understanding how quality assurance management practices can impact implementation of CBET within TVET Institutions.

### 2.1.1 Institutional Management Theory

John Meyer and Brian Rowan established Institutional Management Theory in late 1970s to study the ways in which businesses fit into institutional environments and contribute to their local, regional, national and international environments. The theory delves into fundamentals of social structures, illuminating ways in which institutions form and adhere to preexisting schemas, regulations, conventions and practices. This theory was instrumental in understanding how TVET institutions in Nairobi County conform to established norms and practices when implementing CBET. One of the key concepts in Institutional Theory is isomorphism. According to this idea, companies in the same industry are likely to become more similar due to normative, mimetic and coercive influences. Within this framework of CBET, TVET institutions may mimic management styles of more successful institutions or follow regulations set out by organizations like Technical and Vocational Education and Training Authority (TVETA).

Another important aspect was legitimacy. Institutions seek legitimacy to enhance their survival and success. Effective management practices in TVET institutions can bolster their legitimacy by demonstrating adherence to high standards in CBET implementation. This legitimacy can attract more students, secure funding and garner support from stakeholders. Regulatory, normative and cultural-cognitive influences shape behaviour of organizations within Institutional Theory. For TVET institutions, the regulatory frameworks established by TVETA, the expectations of the industry, and societal perceptions of quality education all influence how CBET is implemented.

By aligning with these influences, institutions can ensure their programs remain relevant and respected. By applying Institutional Theory, researchers can explore how established norms and regulations influence management practices and implementation strategies of CBET in TVET institutions. For example, adherence to Technical and Vocational Education and Training Authority (TVETA) regulatory frameworks ensures that institutions maintain high standards, which can be observed in curriculum development and assessment practices that align with industry needs.

### 2.1.2 Contingency Theory

In his groundbreaking 1964 study, Austrian psychologist Fred Edward Fiedler presented the concept of contingency theory of leadership. An approach to management based on this philosophy recognizes the importance of contextual elements in good leadership. Leadership style, job design, participation in decision-making and organizational structure are some of the elements that are highlighted as affecting effective management practices. According to contingency theory, every company is different and needs a tailored strategy for management based on its specific internal and external factors.

This theory is particularly relevant for studying the diverse conditions under which different management practices impact CBET implementation in TVET institutions across Nairobi County. One of the core ideas in Contingency Theory is concept of environmental fit. Effective management practices must align with the external environment. For TVET institutions, this alignment involves adapting CBET implementation strategies to meet local labour market demands, comply with regulatory requirements and fulfill societal expectations. Another critical concept is internal fit. The internal conditions of an organization, such as its culture, leadership style, resource availability and technological infrastructure significantly influence the effectiveness of CBET implementation. Management practices must be tailored to these internal factors to ensure successful outcomes. Adaptability is also a key focus of Contingency Theory. Organizations need to be flexible and responsive to changes in their environment.

For TVET institutions, this means having adaptive management practices that allow for continuous improvement and alignment with evolving competency standards and industry needs. Contingency Theory provides a framework to examine how these institutions adapt their management practices to internal and external conditions to effectively implement CBET. For instance, TVET institutions in Nairobi might need to adjust their training programs to address the specific skill demands of the local job market or to incorporate new technologies and teaching methods based on available resources and infrastructure.

### 2.1.3 Curriculum Implementation Theory

The implementation of competency-Based Education and Training (CBET) is anchored on the philosophical premise that every individual is born with inherent talents and potential capabilities. These innate abilities, when properly identified and nurtured through structured training, can develop more effectively. CBET provides a learner-centered framework that emphasizes recognition, exposure and development of individual competences based on performance and mastery rather than time-based learning.

When learners are exposed to environments that align with their talents, competencies are developed faster and more meaningfully, leading to higher motivation and improved skills acquisition (Winch, 2013). CBET emphasizes practical, real-life tasks, ensuring that skills taught are directly aligned with needs of Labour market. This relevance ensures that training outcomes are applicable and beneficial in real work environments. By

### 3. Methodology

This study utilized a mixed-method approach, combining quantitative and qualitative methodologies, to fully comprehend research challenge. The ability to gather and analyse both numerical and narrative data in a single study made this method suitable. The researcher strengthened results by utilizing qualities of each method by combining them (Creswell, 2014). This exploration used questionnaires to collect measurable data from a large sample using quantitative technique, which entailed asking specified questions. Views of participants were also explored in order to gather qualitative data. This was done mostly through interviews that recorded detailed descriptions of individuals' experiences expressed in their own words.

To gather all necessary data about present state of affairs, investigation employed a concurrent triangulation design. According to Creswell (2009); Best and Kahn (2006), this design enables researcher to efficiently describe, analyse and evaluate data from many sources. Cohen, Manion and Morrison (2000) also acknowledge design's simplicity and ease of implementation, as well as its capacity to enable triangulation. It collected quantitative and qualitative data all at once to look at how different educational criteria are distributed and what links there are between them. The goal is to lay out current state of affairs, provide some standards for future comparisons and find some connections between certain occurrences (Orodho, 2005). Furthermore, this design was selected due to its ability to reduce bias within this research population, leading to comprehensive, insightful and important research results.

Target population constituted 1,967 participants drawn from 53 institutions situated in 5 Sub-Counties in Nairobi County. The participants included 53 principals, 53 BOM chairs, 265 HODs and 1 TVET County Director and 1 CDACC chairperson. According to Asiamah, Mensah and Oteng-Abayie (2017), when a researcher draws findings from a specific group, that group is referred to as target population. This study's participants were picked for their ability to contribute data that is directly

producing graduates with industry-relevant skills, CBET enhances employability and job readiness, particularly among youth and vocational trainees. As a result, the effective implementation of CBET can contribute to reduced unemployment, enhanced productivity and sustainable economic development.

related to research questions and aim of this study. Sample size of 201 participants was selected from five Sub-Counties in Nairobi County TVET institutions. Participants sampled included 20 principals, 20 BOM chairs, 159 HODs, 1 CDACC chairperson and 1 TVET Director. Researcher applied Yamane's Sampling Formula to guarantee that trainers sample dimension was adequate for purpose of investigation. Given that it is a technique that utilizes what target group is with a high degree of confidence, it was appropriate as it provided an exact and finite number of samples that were exceptionally representative. This formula was applied as shown below.

$$N_0 = N$$

$$\frac{1 + N(e^2)}{1 + N(e^2)}$$

Where  $N_0$  was intended sample size at 95% confidence interval,  $N$  as target numbers of individuals targeted and  $e$ , at 5% as confidence level (or 0.05 in decimal notation). Therefore, the ideal sample was:

$$N_0 = 265$$

$$\frac{1 + 265(0.05)^2}{\frac{265}{1.6625}}$$

$$N_0 = 159 \text{ HOD respondents}$$

A simple random sample of principals and BOM chairs was determined in accordance with the Central Limit Theorem. No matter design of population distribution, sampling distribution of the mean was approximate a normal distribution when sample size  $N$  was 30 or more, according to theory (Kothari, 2005). Central Limit Theorem enabled simple random selection of 20 principals and 20 BOM chairs. The Yamane Sampling Formula was used to get stratified random sample for HODs population which was 265 individuals which where number was not very large, 159 HODs were sampled. Simple random sampling was used to ensure that There was a level playing field for all members of subgroup. TVET County Director were purposively sampled from this County. Selected TVET institutions were targeted and CDACC chair was purposively sampled. Principals, BOM chairs as well as HODs were equally stratified proportionately as per the 5 strata of five Sub-Counties to meet threshold of the study as stipulated in table 1 below:

**Table 1: Sampling Grid**

<b>Respondent Categories</b>	<b>Target population</b>	<b>Sample Size</b>	<b>Sampling techniques</b>
Principals	53	53x30%=20	Stratified Random sampling
BOM chairs	53	53x30%=20	Stratified Random sampling
HODs	53x5= 265	159	Stratified Random sampling
TVET County Director	1	1	Censor sampling
CDACC Chairperson	1	1	Censor sampling
<b>Total</b>	<b>373</b>	<b>201</b>	

*Note.* Researcher (2025)

Questionnaires were administered to BOM chairs and HODs while interview schedules were used to gather insights from TVET County Director and CDACC chair. The data analysis process involved both qualitative and quantitative methods. Qualitative data was examined through thematic analysis where patterns and themes were identified in respondents' narratives and interpreted in relation to the study's objectives. Quantitative data was analysed using descriptive statistics such as frequencies and percentages to summarize data distribution. For inferential data Linear regression analysis was used to determine extent to which institutional management practices influence implementation of CBET. The Likert scale subjected to Cronbach's analysis to determine internal items consistency was used. In addition, Pearson's correlation analysis was applied to measure strength and direction of these relationships, offering insights into how institutional management factors predict success of CBET implementation. The data was analysed using SPSS Version 30 and findings presented in form of tables and charts for clarity and ease of interpretation. Considerations of ethical issues was also done where issues such as informed consent, voluntary participation, mien and decorum, data protection, research licensing by

National Commission for Science, Technology and Innovation (NACOSTI), research authorization by local authorities, freedom of participants withdrawal from research as well as research integrity and honesty in collection and reporting of findings.

## 4. Results and Discussion

Discussions of this section concerned major research findings quality assurance practices on implementation of CBET in TVET in Nairobi County

### 4.1 Quantitative Findings on Quality Assurance Practices Influence on Competency-Based Education and Training in Technical, Vocational Education and Training Institutions

Heads of Departments together with Board of Management Chairpersons participated in providing quantitative data on influence of quality assurance practices on implementation of CBET curriculum. BOM Chairpersons were examined on quality assurance practices whereby findings of investigation were recorded in table 2.

**Table 2: Board of Management Chairpersons Views on Influence of Quality Assurance Practices on Implementation of CBET in TVETs Institutions**

Key: SA-Strongly Agree A-Agree U-Undecided D-Disagree SD-Strongly Disagree, F-Frequency, %- Percentage, M-Mean, STD- Standard Deviation

<b>Quality Assurance Practices</b>		<b>SA</b>	<b>A</b>	<b>U</b>	<b>D</b>	<b>SD</b>	<b>M</b>	<b>STD</b>
		<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>		
Internal evaluation of trainer performance influence curriculum adoption	F	10	5	0	2	1	2.00	2.16
	%	55.56	27.78	0.00	11.11	5.56		
Departmental performance reviews influence trainer competence	F	9	6	1	2	0	2.25	2.63
	%	50.00	33.33	5.56	11.11	0.00		
Ongoing assessment of students' progress influence teaching methodology	F	4	10	1	2	1	3.5	4.36
	%	22.22	55.56	5.56	11.11	5.56		
Continuous programs evaluation influence competence-based assessment and certification	F	11	5	0	2	0	1.75	2.36
	%	61.11	27.78	0.00	11.11	0.00		
Internal evaluation of trainer performance influence trainer competence in TVET	F	12	5	0	1	0	1.5	2.38
	%	66.67	27.78	0.00	5.56	0.00		
External quality assurance influence curriculum delivery	F	7	6	1	2	2	2.75	2.22
	%	38.89	33.33	5.56	11.11	11.11		

Quality assurance practices influence implementation of CBET in TVET institutions	F %	11 61.11	4 22.22	1 5.56	2 11.11	1 5.56	2.00	1.41
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Source: Researcher, 2025

Responses gathered from BOM Chairpersons, regarding internal evaluation of trainer performance quality assurance practice influence curriculum adoption 55.56% (10) strongly agreed, 27.78% (5) agreed, there were no participants who remained neutral, 11.11% (2) disagreed, 5.56% (1) strongly disagreed. Departmental performance reviews influence trainer competence responses gathered indicated that 50.00% (9) strongly agreed, 33.33% (6) agreed, 5.56% (1) were undecided, 11.11% (2) disagreed but those who strongly disagreed were none.

Ongoing assessment of students' progress quality assurance practice influencing competence-based assessment and certification attracted 22.22% (4) strongly agreed, 55.56% (10) agreed, 5.56% (1) were undecided, 11.11% (2) disagreed, 5.56% (1) strongly disagreed with this observation. Continuous programs evaluation quality assurance practice influence competence-based assessment and certification within TVET institutions, 61.11% (11) of BOM chairpersons strongly agreed with this observation, 27.78% (5) agreed, none of participants were neutral but 11.11% (2) disagreed whereas none of participants who strongly disagreed with this observation.

Internal evaluation of trainers' performance influencing trainer competence in TVET, 66.67% (12) of participants strongly agreed with this observation, number of BOM chairpersons who agreed were 27.78% (5), none of respondent who remained neutral but 5.56% (1) disagreed but for strongly disagreed there was no participant who had this response. External quality assurance quality assurance practice was also examined among BOM chairpersons whereby responses demonstrated that 38.89% (7) strongly agreed, 33.33% (6) agreed, 5.56% (1) were undecided, 11.11% (2) disagreed while those respondents who strongly

disagreed were 11.11% (2). Regarding general view of participants on influence of quality assurance practices impacting implementation of CBET curriculum within TVET institutions, 61.11% (11) of BOM chairpersons strongly agreed, 22.22% (4) agreed, 5.56% (1) were undecided, 11.11% (2) disagreed while those who strongly disagreed were 5.56% (1).

Analysis of quantitative research findings from BOM chairpersons were however supported by research findings by Asres and Abebe (2024) who observed that assessment of quality in CBET is critical in promoting competence among graduates rather than merely credentialed. Also, findings supported that when Quality Assurance (QA) principals for Competency-Based Assessments such as sufficiency, validity and reliability are inadequately implemented they have a negative influence on ability to distinguish non-competent students from competent students (Asres & Abebe, 2024). These findings from research therefore suggested that QA practices ought to be effectively operationalized within process of assessment to support robust competence outcomes. Analysis of research findings further revealed that QA practices that are related to tools, trainer capacities and learning facilities are critical to effectiveness of CBET.

Supporting this observation are studies carried out within various TVET institutions contexts in Kenya such as Mwangunga and Kitainge (2024) who revealed that insufficient Competency-based teaching materials, equipment and tools impede successful CBET curriculum Implementation. Heads of Departments also participated in giving their views on how various quality assurance practices influences implementation of CBET curriculum. Regarding frequencies of occurrence of various quality assurance practices HODs views were recorded in table 3.

**Table 3: Heads of Departments Views on Influence of Quality Assurance Practices on Implementation of CBET curriculum in TVET Institutions**

Key: SA-Strongly Agree A-Agree U-Undecided D-Disagree SD-Strongly Disagree, F-Frequency, %- Percentage, M-Mean, STD- Standard Deviation

Quality Assurance Practices		SA 5	A 4	U 3	D 2	SD 1	M	STD
Internal evaluation of trainer performance influence curriculum adoption	F %	46 30.67	73 48.67	3 2.00	18 12.00	10 6.67	26.00	31.93
Departmental performance reviews influence trainer competence	F %	78 52.00	57 58.00	2 1.33	6 4.00	7 4.67	18.00	26.09
Ongoing assessment of students' progress influence teaching methodology	F %	82 54.67	58 38.67	2 1.33	5 3.33	3 2.00	17.00	27.36
Continuous programs evaluation influence competence-based assessment and certification	F %	54 36.00	84 56.00	5 3.33	4 2.67	3 2.00	24.00	40.01
Internal evaluation of trainer performance influence trainer competence in TVET	F %	78 52.00	51 34.00	6 4.00	11 7.33	4 2.67	18.00	22.20

External quality assurance influence curriculum delivery	F	46	87	3	7	7	26.00	40.71
	%	30.67	58.00	2.00	4.67	4.67		
Quality assurance practices influence implementation of CBET in TVET institutions	F	85	50	2	8	5	16.25	22.63
	%	56.67	33.33	1.33	5.33	3.33		

Source: Researcher, 2025

Heads of Departments in TVET institutions participated in research question on quality assurance practices. Regarding internal evaluation of trainer performance influence on curriculum adoption 30.67% (46) strongly agreed, 48.67% (73) agreed, 2.00% (3) were undecided, 12.00% (18) disagreed while 6.67% (10) strongly disagreed. Departmental performance reviews quality assurance practice influence on trainer competence 52.00% (78) strongly agreed, 58.00% (57) agreed, 1.33% (2) were undecided, 4.00% (6) disagreed whereas 4.67% (7) strongly disagreed.

Ongoing assessment of students' progress influence teaching methodology attracted 54.67% (82) of HODs to strongly agree with this observation, 38.67% (58) agreed, 1.33% (2) were undecided, 3.33% (5) disagreed whereas number of HODs who strongly disagreed were 2.00% (3). Continuous programs evaluation influence Competence-Based Assessment and certification, 36.00% (54) strongly agreed, 56.00% (84) agreed, those HODs who were undecided were 3.33% (5), number of HODs who disagreed were 2.67% (4) whereas 2.00% (3) strongly disagreed.

Internal evaluation of trainer performance influence trainer competence in TVET attracted 52.00% (78) to strongly agree, 34.00% (51) agreed, 4.00% (6) were undecided, 7.33% (11) disagreed while number of HODs who strongly disagreed contributed for 2.67% (4). External quality assurance influence curriculum delivery made 30.67% (46) of HODs to strongly agree, 58.00% (87) agreed, 2.00% (3) were undecided, 4.67% (7) disagreed while number of HODs who strongly disagreed contributed for 4.67% (7). Heads of Departments also participated in answering a general question on impact of quality assurance practices on implementation of CBET curriculum whereby among those respondents who participated, 56.67% (85) indicated that they strongly agreed with this observation, 33.33% (50) agreed, 1.33% (2) remained undecided,

5.33% (8) disagreed whereas 3.33% (5) strongly disagreed.

Quantitative findings from BOM chairpersons together with Heads of Departments suggest that there is a direct association between quality assurance practices on successful implementation of CBET Curriculum. This observation is supported by findings of research done by Manase & Nyamu, (2024) where it was reported that when quality assurance mechanisms require assessments as well as curricula to be mapped to industry standards, TVET institutions are more likely to deliver Competency-Based Training that aligns with needs of employer that consequently promotes TVETs graduates' employability opportunities.

Engagement of educational stakeholders as a QA practice were noted to have a significant prediction of improvement of CBET outcomes that reinforced need for collaborative QA practices in developing competency standards with inputs from industry This aligned with literature from research findings from Odjo et al., (2024) who revealed that QA facilitates alignment of labour market demands with training programs within TVET institutions that consequently aid in improvement of competency outcomes of CBET.

## 4.2 Inferential Findings on Quality Assurance Practices Influence on Competency-Based Education and Training in Technical, Vocational Education and Training Institutions

Responses from BOM chairpersons as well as Heads of Departments were analysed as in table 4 so as to facilitate inferential analysis of research findings on how quality assurance practices are likely to impact on implementation of CBET curriculum among public TVET institutions.

**Table 4: Analysis of Responses for Board of Management Chairpersons and Heads of Departments on Influence of Quality Assurance Practices on Implementation of CBET curriculum in TVETs Institutions**

Category	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
BOM Chairs	11	4	1	2	1
HODs	85	50	2	8	5

Source: Researcher, 2025

These findings were also subjected for analysis for linear regression analysis to test hypothesis on what kind of relationship that exists on quality assurance practices on

implementation of CBET whereby results obtained were recorded in table 5.

**Table 5: Regression Analysis of Findings on Influence of Quality Assurance Practices on Implementation of CBET in TVET Institutions**

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	5.628111	5.628111	30.26772	0.031486425
Residual	2	0.371889	0.185944		
Total	3	6			

Source: Researcher, 2025

Statement of hypothesis

**H<sub>01</sub>** *There is no significant relationship between quality assurance practices and implementation of CBET in TVET in Nairobi County.*

Significance value was set at  $\alpha = 0.05$  while level of confidence was set at 95% and  $P = 0.05$ . Decision rule was set at if value of  $P$  is less than 0.05 ( $P < 0.05$ ) results obtained are statistically significant therefore null hypothesis was rejected reason being these results were true and observed data was unlikely to have occurred. However, if  $P$  value obtained was greater than 0.05 ( $P > 0.05$ ) this was an indication that results obtained was not statistically significant therefore null hypothesis was accepted. From regression analysis value of  $p$  calculated was realized as  $P = 0.031486425$  which is lesser than 0.05 therefore null hypothesis was rejected and alternative hypothesis accepted that;

**H<sub>A1</sub>** *There is a significant influence of quality assurance practices on implementation of CBET in TVET in Nairobi County.*

This observations on findings were however supported by findings of research conducted by Niyonasenze et al., (2025) in Rwanda among TVET institutions. Research findings of this specific investigation revealed that multiple linear regression was applied to quantify how QA practices within TVET institutions influence on quality of training. This multiple linear regression model accounted for 17.95% of variance in outcomes of quality training ( $R^2 = 0.1795$ ) which demonstrated existence of a moderate explanatory power of QA factors on quality of training (Niyonasenze et al., 2025). Also, statistically significant regression coefficient at  $P = 0.05$  were highly associated with key Quality Assurance practices involving improved learning environments and practical skills acquisition demonstrating that QA specific practices had a significant influence on CBET implementation outcomes.

### **4.3 Qualitative Findings on Quality Assurance Practices Influence on Competency-Based Education and Training in Technical, Vocational Education and Training Institutions**

To have insights of qualitative findings TVET principals, TVET County Director as well as CDACC Chairperson participated in an interview on quality assurance practices and how such practices are likely to impact on implementation of CBET curriculum among TVET institutions. During an interview Respondent H observed that:

*“Within our TVET we have established our internal quality assurance framework such as lesson observation, Peer reviews as well as Continuous Monitoring of Trainers Delivery. This practices in this TVET institution have facilitated adherence to demands I market as well as implementing curriculum guided by CBET standards to ensure our graduates are responsive to prevailing conditions in Laboure market. For example, every department conduct quarterly internal audits to promote trainer’s adherence to assessment rubrics given by CDACC”* (Respondent H)

Observations made by Respondent H emphasizes on need of TVET institutions having mechanisms for internal audits as a framework of ensuring that quality assurance is adhered to during implementation of curriculum. These remarks were also confirmed by Respondent C who affirmed on significance of quality assurance during implementation of CBET curriculum. Respondent C reported that:

*“Where monitoring as well as provision of timely feedback has been highly considered within TVET institutions, such institutions have managed to effectively implement CBET curriculum among their students. Progressive evaluation of TVET institutions of assessment tools, instructional process and trainer performance is a critical milestone of assuring objectives of CBET are attained. Where there are limited follow ups within TVET institutions such institutions face difficulties in maintaining training standards of CBET”* (Respondent C)

According to respondents above it is indicative that for TVET institutions to realize improved curriculum implementation external and internal quality assurance practices are necessary to ensure that curriculum is being implemented with reference to national standards as well as expectations from industry. Regular feedback, monitoring as well as TVET institutional audits are

suggested to maintain quality of training in TVET institutions as well as promote accountability. However, although there exist several benefits related to quality assurance practices on successful implementation of CBET there still remains challenges that acts as barriers to effective curriculum implementation. For instance, Respondent A observed that:

*“Although there have been tremendous efforts to promote quality education in our institutions there are a number of challenges that we normally face which to an extent are likely to limit effectiveness of quality assurances well as successes in implementing CBET fully. Such challenges include; inadequate personnel to conduct quality audits, delays in getting feedback from external quality assurance agencies as well as limited financial resources that can be used to support monitoring activities within TVET institutions”* (Respondent A)

During an interview with Respondent B gaps were also reported on coordination of functions of quality assurance among different actors. Respondent B observed that:

*“Despite of CDACC establishing a framework as well as guidelines for quality assurance within TVET institutions, not all TVET institutions are fully complying due to limitations on financial resources as well as capacity. For instance, in some cases, TVET trainers are still yet to have an understanding of Outcome-based assessment, but it is at the core of CBET curriculum. This is highly likely to act as a barrier to effectiveness and consistency of CBET implementation across various TVET institutions”* (Respondent B)

According to respondents above it is suggestive that despite of quality assurance practices being very critical within TVET institutions certain barriers such as limited financial resources, inadequacies of qualified personnel for ensuring quality assurance, weak feedback systems, limited human capacity as well as weak coordination among various educational stakeholders all limits productivity of quality assurance in promoting successful implementation of CBET curriculum. However, respondents also highlighted that quality, well-structured feedback mechanisms as well as Continuous Professional Development are key promoters of quality assurance within TVET institutions.

Respondent C suggested that through Continuous Professional Development in TVETs trainers are always updated on new competency techniques on assessment, pedagogy as well as assessment skills needed for CBET assessment. These findings are therefore indicative that TVET institutional support that aims at development practices of trainers are significant in promoting

provision of high-quality delivery of CBET curriculum that is well aligned with industrial and Labour market dynamics.

In addition, research findings from this investigation have suggested that institutional leadership commitment is a significant contributor to success of quality assurance practices done within an institution. As noted by Respondent H, TVET institutions where leadership of institution actively support internal audits as a practice for quality assurance, engages significant educational stakeholders and conducts performance reviews normally attain better CBET curriculum implementation. Therefore, these can be suggestive that leadership of TVET institutions has a critical responsibility in fostering a culture of continuous improvements, accountability as well as quality provision of education and training. This underscores that CBET sustainability reforms does not only require quality assurance systems that are robust but also needs a strong Institutional leadership commitment and enhanced governance of TVET institutions.

Findings on quality assurance practices are in alignment of findings of research by Kariuki & Kinyua, (2020) who revealed that for quality assurance within TVET institutions to be effective, it has to ensure graduates meet industrial demands and Labour market demands. Also, Wanyama & Njoroge (2022) also during research emphasized that there is need for adequacy in financial resources provision, tutors' capacity building, collaborative partnerships with governments as well as other agencies and industry so as to maintain education quality as well as relevance of education being offered in TVET institutions.

However, agreeing with these observations is a study carried out by Asres and Abebe (2024) who noted that despite of existence of positive influence of Quality Assurance practices on CBET implementation several challenges were highlighted. For instance, challenges such as limited assessor competence, inadequate QA resources and inconsistencies in implementation of CBET assessment principals. Such deficiencies undermine potential for QA to fully realize CBET transformation promise, specifically where institutional commitment as well as capacity are lacking.

## **5. Conclusion and Recommendations**

### **5.1 Conclusion**

This investigation established that quality assurance practices carried out within TVET institutions are very critical in promoting successful CBET curriculum implementation. When quality assurance practices are well executed; both internal and external quality assurance practices, they promote instructional practices

and assessment process within TVET institutions resulting to instructional practices and assessment processes being outcome-based, competency-based and aligned with industry needs. However, productiveness of such practices depends on committed leadership, adequacy of institutional resources and Continuous Capacity Building of trainers. Therefore, promoting external and internal quality assurance systems, investing in trainers' professional development as well as enhancing collaboration with regulatory agencies are critical steps towards attaining sustainable as well as high-quality CBET implementation among TVET institutions.

## 5.2 Recommendations

The study makes the following recommendations:

1. TVET institutions leaders should take an active role in ensuring supervision, evaluation as well as coordination of quality assurance practices to promote accountability while at same time maintaining high standards of training.
2. Additionally, TVET institutions ought to institutionalize regular audits, departmental performance reviews as well as peer reviews to foster continuous improvement and effective implementation of CBET standards.
3. Ministry of Education should revise policies regarding quality assurance to promote timely feedback as well as regular external evaluations by agencies for quality assurance so as to promote accountability as well as alignment of curriculum needs with industrial standards.
4. Through TVET agencies and Ministry of Education, government can develop policies that facilitate increased funding for quality assurance practices.

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