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CHALLENGES FACED BY TRAINERS IN IMPLEMENTING THE CBET CURRICULUM IN TVET INSTITUTIONS IN UASIN GISHU COUNTY, KENYA

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Abstract

This study examined challenges faced by trainers in implementing the Competency-Based Education and Training (CBET) curriculum in Technical and Vocational Education and Training (TVET) institutions in Uasin Gishu County, Kenya. The study was guided by five objectives focusing on continuous trainer training, availability of training equipment and instructional materials, adequacy of infrastructure, trainers' attitudes, and motivation in CBET implementation. The Concerns-Based Adoption Model (CBAM) provided the theoretical framework. A descriptive research design was adopted, targeting 167 respondents comprising 145 trainers, 17 heads of departments, and five principals. A sample of 128 respondents was selected using purposive and random sampling. Data were collected using questionnaires and interview schedules, with an overall Cronbach's alpha reliability coefficient of 0.73. Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression in SPSS version 23. Findings showed significant positive relationships between CBET implementation and continuous training ($r = 0.379$), equipment and instructional materials ($r = 0.527$), infrastructure ($r = 0.350$), trainers' attitudes ($r = 0.569$), and motivation ($r = 0.410$), all at $p < 0.05$. The regression model explained 45.1% of variance in CBET implementation. The study recommends regular trainer capacity building, improved resources and infrastructure, positive attitudes, and stronger staff motivation.

Keywords: CBET curriculum; TVET trainers; Training challenges; Infrastructure adequacy; Trainers' motivation; Curriculum implementation

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1. Introduction

Technical and Vocational Education and Training (TVET) plays a pivotal role in addressing persistent challenges of poverty, unemployment, low technological development, and weak productivity in many developing economies. In Kenya, the Ministry of Education (2024) emphasized that achieving Kenya's Vision 2030 requires the development of a globally competitive and adaptive human resource base, with CBET reforms in TVET

institutions being central to this goal. The introduction of competency-based education and training (CBET) within TVET has become a priority in many countries, driven by the need to align skills development with labor market demands and sustainable development goals (Springer Nature, 2023).

Competency-based learning seeks to move away from rigid, time-bound classroom models where learners progress uniformly through content. Within TVET, CBET emphasizes clearly defined skills, knowledge, and attitudes that guide the achievement of competence standards, typically structured within national qualifications frameworks. Comparative studies in East Africa highlight that this approach prioritizes practical competencies and workplace relevance, while also underscoring challenges in aligning assessment practices with affective and psychomotor domains (Rarieya et al., 2026). The CBET curriculum, therefore, takes cognizance of the acquisition of competencies relevant to the requirements of companies and industry.

However, the effective implementation of the CBET curriculum in many countries has been impinged by numerous challenges. Countries such as the United Kingdom, Germany, the Netherlands, and Australia pioneered the implementation of competency-based education; however, adoption varies significantly across nations depending on their social, economic, and technological contexts (Deissinger, 2005). In Ethiopia, technical colleges continue to struggle with insufficient and delayed provision of learning materials, which undermines effective CBET implementation (Hailu, 2012). In Tanzania, CBET was introduced without relevant preparation since trainers in technical colleges have limited awareness and understanding about the CBET curriculum as well as little knowledge and skills on how to implement it (Kanyonga, Mtana, & Wendt, 2019).

Kenya is experiencing increasing unemployment among young people and the present TVET system has been characterized as a fragmented qualification system resulting in poor-quality output unable to respond to the expectations of employers. The National Curriculum Policy has invoked a deliberate effort to turn the Kenya education system into competence-based education and training at all levels of education (Mutua, Kimiti, & Mulwa, 2019). However, there is a substantial gap between the expectations of CBET and its actual day-to-day conception in the institutions (Wahungu, 2020).

The trainers implementing the CBET curriculum in other countries like Tanzania and Ethiopia have identified challenges facing its implementation as: poor linkages between training and industry; inadequate training infrastructure and lecturers; the high cost of CBET training; and inadequate equipment for workshops and fieldwork (Kanyonga et al., 2019; Hailu, 2012). In Kenya, recent studies emphasize that CBET reforms are central to addressing trainer preparedness, leadership, and institutional capacity in TVET institutions (Springer Nature, 2023).

This study was anchored on the Concerns-Based Adoption Model (CBAM) developed by Hall and Hord (1987), which is a theoretical model for facilitating change that helps leaders and researchers understand, lead, and monitor the complex process of change in education. CBAM represents a developmental process for adopting innovations in learning institutions, focusing on individuals' increased use of available resources. The diagnostic dimensions of CBAM include Innovation Configurations, Stages of Concern, and Levels of Use, which collectively enable leaders to identify staff members' attitudes and beliefs toward a new program or initiative and take actions to address specific concerns.

Based on the above, there is a clear need to determine the challenges facing trainers in implementing the CBET curriculum in Uasin Gishu County so that they can be addressed to ensure its effective implementation. The study sought to determine the challenges faced by trainers in implementing the CBET curriculum in TVET institutions in Uasin Gishu County, Kenya.

The study was guided by the following specific objectives:

i. To assess the extent of availability of continuous training of TVET trainers on implementing CBET curricula in Uasin Gishu County, Kenya.
ii. To evaluate the level of availability of training equipment and instructional materials used by CBET trainers on implementing CBET curricula in Uasin Gishu County, Kenya.
iii. To evaluate the adequacy of building infrastructure in TVET institutions used by trainers on implementing CBET curricula in Uasin Gishu County, Kenya.
iv. To find out the level of trainers' attitude and motivation on implementing CBET curricula in Uasin Gishu County, Kenya.

The study was guided by the Concerns-Based Adoption Model (CBAM), developed by Hall and Hord (1987), which provides a framework for understanding, facilitating and monitoring the implementation of educational innovations. The model focuses on individuals involved in implementing change and recognizes adoption as a developmental process influenced by their concerns, experiences and use of available resources. CBAM comprises three key dimensions: Innovation Configurations, which define effective implementation; Stages of Concern, which assess users' attitudes and concerns about the innovation; and Levels of Use, which determine how individuals apply the innovation in practice. Through these dimensions, CBAM enables leaders to identify

implementation challenges and provide appropriate interventions to strengthen the effective adoption and implementation of the CBET curriculum (Garrison, 2021).

Conceptual Framework

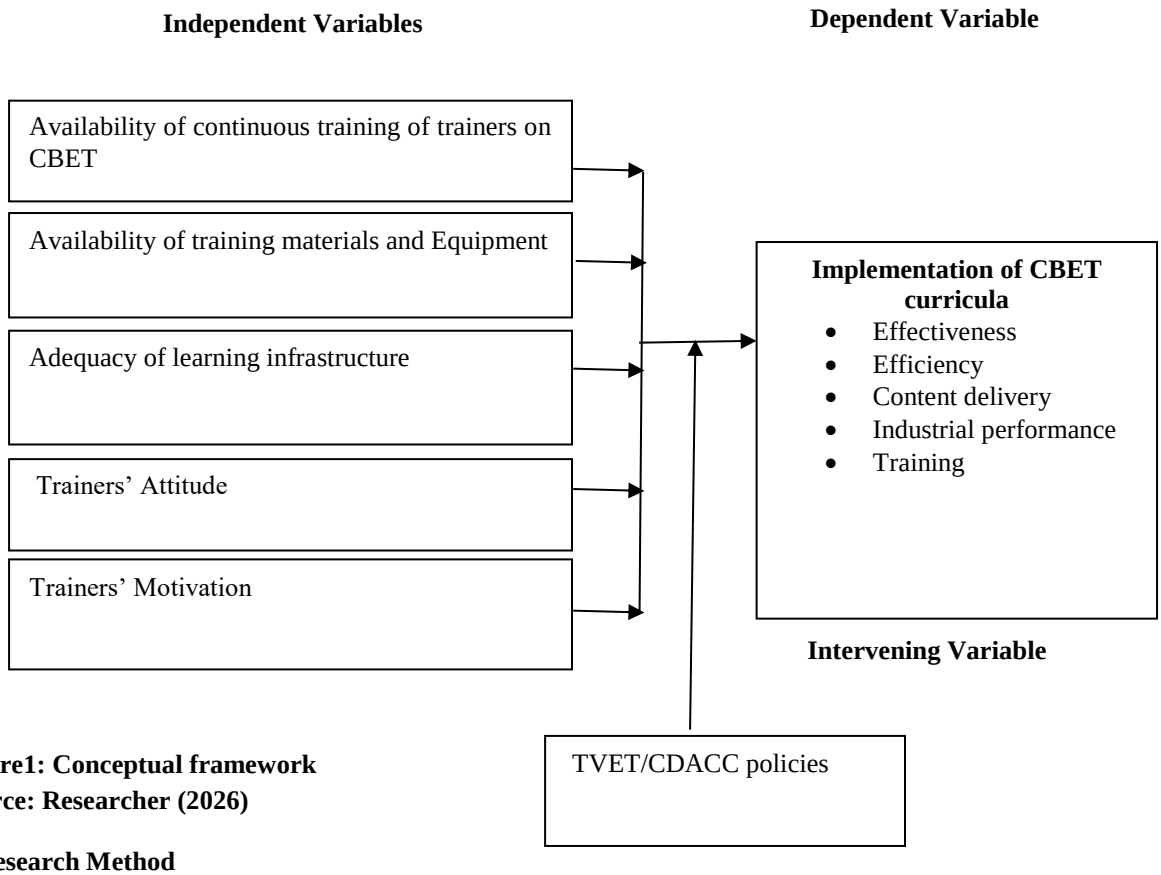


Figure1: Conceptual framework
Source: Researcher (2026)

2. Research Method

2.1 Research Design

A descriptive research design was adopted for this study. Descriptive research involves identification of attributes of a particular phenomenon based on observation basis or exploration of correlation between two or more phenomena (Mugenda & Mugenda, 2003). The descriptive survey design collected both quantitative and qualitative data. The advantage of adopting descriptive research design is that there was adequate description of existing conditions at the time of study.

2.2 Study Area

The study was conducted in Uasin Gishu County, Kenya. Uasin Gishu County has six sub-counties namely: Turbo, Soy, Moiben, Ainabkoi, Kesses, and Kapsaret. It lies between longitudes 34°50' East and 35°37' West and latitudes 00°03' South and 00°55' North, covering a total area of 3,345.2 km². The county is a highland plateau with an altitude of between 1500m – 2700m.

2.3 Target Population

The target population consisted of 145 CBET trainers, 17 heads of departments, and 5 principals of TVET institutions in Uasin Gishu County, as shown in Table 1. According to data from the Ministry of Education (2021), Uasin Gishu County has nine government registered and licensed TVET institutions. However, only five institutions had implemented the CBET curriculum: The Eldoret National Polytechnic, Rift Valley Technical Training Institute, Koshin Technical Training Institute, Kipkabus Technical and Vocational College, and Ziwa Technical Training Institute.

Table 1: Target Population

TVET Institution	Principals	Heads of Departments	CBET Trainers
The Eldoret National Polytechnic	1	5	50
Rift Valley Technical Training Institute	1	5	50
Koshin Technical Training Institute	1	2	10
Kipkabus Technical and Vocational College	1	2	15
Ziwa Technical Training Institute	1	3	20
Total	**5**	**17**	**145**

Source: Ministry of Education, Uasin Gishu County (2021)

2.4 Sampling Procedure and Sample Size

The sample size for the CBET trainers was determined using Slovin's formula (Adam, 2020):

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

Where n is sample size, N is study population (145), and e is coefficient (0.05):

$$n = \frac{145}{1 + 145(0.05)^2} = 106$$

Table 2: Sample Size

TVET Institution	Principals (N)	Principals (n)	HoD (N)	HoD (n)	Trainers (N)	Trainers (n)
The Eldoret National Polytechnic	1	1	5	5	50	37
Rift Valley Technical Training Institute	1	1	5	5	50	37
Koshin Technical Training Institute	1	1	2	2	10	7
Kipkabus Technical and Vocational College	1	1	2	2	15	10
Ziwa Technical Training Institute	1	1	3	3	20	15
Total	**5**	**5**	**17**	**17**	**145**	**106**

Source: Ministry of Education, Uasin Gishu County (2021)

2.5 Research Instruments

Questionnaires were the principal data collection instruments for trainers, containing both closed and open-ended items measured on a five-point Likert scale. Interview schedules were used for heads of departments and principals to encourage active participation and sharing of opinions. The instruments were validated through expert review by supervisors and piloted at Rift Valley Institute of Science and Technology.

2.6 Validity and Reliability

To ensure content validity, the instruments were presented to supervisors and experts who scrutinized them to ensure what they intended to measure was actually measured. Reliability was tested using Cronbach's Coefficient Alpha. Table 3 presents the reliability results.

Table 3: Pilot Study Results

Variable	N of Items	Cronbach Alpha Coefficient
Training of TVET trainers	5	0.710
Availability of Learning Materials and Equipment	3	0.722
Availability of Infrastructure	2	0.730
Trainers Attitude	3	0.754
Trainers Motivation	4	0.708
Overall Implementation of CBET	5	0.757
Overall reliability index		**0.73**

Source: Research Data (2026)

The overall reliability index of 0.73 exceeded the minimum acceptable threshold of 0.70, indicating that the questionnaire items were internally consistent and reliable for data collection.

2.7 Data Collection Procedures

The researcher obtained a research permit from NACOSTI after proposal approval from the University of Eldoret. A letter was written to principals of TVET institutions to seek permission to carry out research. Informed consent was obtained from participants, and confidentiality was ensured by not collecting identifying information.

2.8 Data Analysis

Quantitative data collected from questionnaires were coded and entered into SPSS version 23. Descriptive statistics such as mean, frequencies, and percentages were generated. Inferential statistics including Pearson correlation and multiple regression were used to determine the extent of the effect of independent variables on the dependent variable. Qualitative data from interview schedules were analyzed by arranging responses thematically and interpreting them. Findings were presented in tables and charts.

3. Results and Analysis

3.1 Response Rate

Out of 106 questionnaires distributed to trainers, 90 were returned, representing a response rate of 84.9%. This high response rate indicates that the results are reliable and representative of the target population.

3.2 Demographic Characteristics of Respondents

Table 4: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percent
Gender	Male	68	75.6
	Female	22	24.4
Age	20-30 years	7	7.8
	31-40 years	51	56.7
	41-50 years	16	17.8
	Over 50 years	16	17.8
Education	PhD	4	4.4
	Masters	16	17.8
	Bachelor	57	63.3
	Diploma	13	14.4
Experience	Less than 2 years	18	20.0
	More than 2 years	72	80.0

Source: Research Data (2026)

The results show that male trainers constituted 75.6% of respondents, while females were 24.4%. The majority (56.7%) were aged 31-40 years, indicating an energetic workforce capable of handling CBET implementation. Most trainers (63.3%) held bachelor's degrees, and 80.0% had more than two years of experience as CBET trainers.

3.3 Availability of continuous Training of TVET trainers at institutionallevel and implementation of CBET curricula in TVET institutions

The first objective of the study was to assess the extent of availability of continuous training of TVET trainers on implementing CBET curricula in Uasin Gishu County, Kenya. The results of the study are shown in Tables 5,6 and 7.

Table 5: Access to CBET Training

Response	Frequency	Percent
Yes	90	100.0
No	0	0.0

Source: Research Data (2026)

All trainers (100.0%) had received CBET training since the curriculum was introduced. The majority (68.9%) attended training more than twice a year, while 31.1% attended less frequently. The Ministry of Education organized training for 75.6% of respondents, while institutions organized for 24.4%. Training content focused on upgrading practical skills (100.0%), theory content (80.0%), and assessment tool preparation (42.2%). The mean adequacy rating was 3.78 (SD = 1.197), indicating trainers perceived the training as generally adequate.

Table 6: Content of CBET training

Content of CBET training	Frequency	Percent
Upgrading of practical skills	90/90	100.0
Theory content of the CBET curriculum	72/90	80.0
Preparation of assessment tools	38/90	42.2
Any other please write below	74/90	82.2

Source: Research Data (2026)

The findings indicate that CBET training strongly emphasized practical skills (100.0%), followed by theoretical content (80.0%) and other complementary areas (82.2%). However, training on the preparation of assessment tools was relatively limited (42.2%), indicating a significant gap in trainers' preparation for competency-based assessment. Overall, the results show that while trainers received substantial preparation in practical and theoretical aspects of CBET, greater emphasis on assessment practices is necessary to support effective and consistent curriculum implementation.

Table 7: Interview results on availability of continuous training of TVET trainers at institutional level

Emerging theme	Yes (f)	Yes (%)	No (f)	No (%)
Access to CBET training				
Widespread access to initial CBET training with a need for regular refresher training.	20	90.9	2	9.1
Frequency of CBET training				
There is regular CBET training and it supports curriculum implementation	21	95.5	1	4.5
There is need for more capacity building so as to strengthen competency assessment practices.	17	77.3	5	22.7
Continuous professional development is necessary to sustain effective CBET implementation.	21	95.5	1	4.5
Organizer of CBET training				
The Ministry of Education is the primary organizer of CBET training programmes.	18	81.8	4	18.2
Content of CBET training				
Institutional capacity building complements Ministry-led CBET training through departmental workshops and peer learning.	17	77.3	5	22.7
Adequacy of CBET training				
Continuous CBET training enhances trainers' practical competencies.	18	81.8	4	18.2
Continuous training improves trainers' understanding of the CBET curriculum.	19	86.4	3	13.6
CBET training has strengthened trainers' capacity to implement the curriculum effectively.	18	81.8	4	18.2
Sufficient CBET training supports curriculum implementation,	19	86.4	3	13.6

Source: Research Data (2026)

The interview findings revealed that all trainers had received CBET training, with most attending training more than twice a year, indicating relatively good access to continuous professional development. The training improved trainers' understanding of CBET philosophy, curriculum requirements, instructional approaches and practical competencies, thereby strengthening their capacity to implement the curriculum effectively. However, respondents identified competency assessment as an area requiring further capacity building, particularly in preparing assessment tools, designing practical tasks and evaluating learner competencies. Overall, although CBET training was considered adequate, the findings emphasized the need for regular refresher training and institution-based capacity building to sustain effective curriculum implementation.

3.4 Availability of training tools and equipment and implementation of CBET curricula in TVET institutions

The second objective of the study was to evaluate the level of availability of training equipment and instructional materials used by CBET trainers on implementing CBET curricula in Uasin Gishu County, Kenya. The result of the study was summarized in Tables 8 and 9

Table 8: Existence and Adequacy of Training Equipment

Item	Frequency	Percent	Mean	Std. Dev
Training equipment exists	Yes: 56	62.2		
	No: 34	37.8		
Adequacy of training equipment			3.23	1.061
Adequacy of instructional materials			3.23	1.061

Source: Research Data (2026)

The results show that 62.2% of respondents confirmed the availability of training equipment, while 37.8% reported otherwise. Training equipment was rated as moderately adequate (Mean = 3.23, SD = 1.061). Similarly, instructional materials were rated as moderately adequate (Mean = 3.23, SD = 1.061). Interview findings confirmed that although institutions possessed essential resources, they were insufficient to meet the increasing demand for practical training.

Table 9: Interview results for availability of training tools and equipment

Emerging theme	Yes (f)	Yes (%)	No (f)	No (%)
Existence of training equipment				
Training equipment available in the institution is adequate and readily available for CBET implementation.	14	63.6	8	36.4
Adequacy of training equipment	18	81.8	4	18.2
Inadequate equipment negatively affect implementation of the CBET curriculum.				
Adequacy of instructional materials	15	68.2	7	31.8
Instructional materials required for CBET implementation are sufficient and available.				

Source: Research Data (2026)

The interview findings revealed that training equipment and instructional materials were generally available, but their adequacy remained a major challenge in implementing the CBET curriculum. Although 62.2% of respondents confirmed the availability of training equipment, most considered the equipment only moderately adequate, mainly due to increasing enrolment and practical training demands. Similarly, instructional materials were available but insufficient, particularly consumable materials required for practical learning. Overall, the findings indicate that increased investment in training equipment and instructional materials is necessary to provide adequate practical exposure and enhance effective CBET curriculum implementation.

3.5 Availability of building infrastructure and implementation of CBET curricula in TVET institutions

The third objective of the study was to evaluate the adequacy of building infrastructure in TVET institutions used by trainers on implementing CBET curricula in Uasin Gishu County, Kenya. The results of the study are summarized in Table 10 and 11.

Table 10: Relevance and Adequacy of Building Infrastructure

Infrastructure	Relevance (%)	Adequacy Mean	Std. Dev
Classroom	100.0		
Science Laboratory	100.0		
Workshop	100.0		
Library	100.0		
Computer Laboratory	100.0		
Kitchen	33.3		
Drawing Room	30.0		
Overall Adequacy		**3.47**	**0.640**

Source: Research Data (2026)

Classrooms, science laboratories, workshops, libraries, and computer laboratories were identified by 100.0% of respondents as essential infrastructure. The available infrastructure was rated as moderately adequate (Mean = 3.47, SD = 0.640). Interview findings revealed the need for additional classrooms, workshops, and computer laboratories to accommodate increasing enrolment.

Table 11: Interview results on availability of building infrastructure

Emerging theme	Yes (f)	Yes (%)	No (f)	No (%)
Relevance of different building infrastructure required by trainers.	15	68.2	7	31.8
Existing institutional infrastructure adequately supports implementation of the CBET curriculum.				
There is need for new building infrastructure to adequately conform to the standards and support CBET implementation.	20	90.9	2	9.1
Adequacy of the available institutional infrastructure.	20	90.9	2	9.1
Existing building infrastructure requires expansion and upgrading to meet CBET implementation requirements.				
Limited infrastructure facilities remain a challenge in some institutions, particularly inadequate computer laboratories and classrooms.	18	81.8	4	18.2

Source: Research Data (2026)

The interview findings revealed that essential building infrastructure, including classrooms, workshops, laboratories, libraries and computer laboratories, was available in the sampled TVET institutions and supported CBET implementation. However, the facilities were generally rated as moderately adequate (61.1%), with participants identifying shortages of classrooms, computer laboratories and other specialized facilities. The findings further highlighted the need to expand and modernize existing infrastructure and provide advanced equipment to accommodate increasing enrolment and meet current TVET requirements. Overall, adequate and

modernized infrastructure was found to be essential for strengthening practical learning and enhancing effective implementation of the CBET curriculum.

3.6 Trainers attitude and implementation of CBET curricula in TVET institutions

The fourth objective of the study was to find out the level of trainers' attitude on implementing CBET curricula in Uasin Gishu County, Kenya. The result of the study are shown in Tables 12 and 13.

Table 12: Trainers' Attitude Towards CBET Curriculum

Item	Mean	Std. Dev	Interpretation
Relevance to training needs	3.92	0.738	Relevant
Workload allocation to trainers	4.23	0.704	Demanding
Workload allocation to trainees	4.54	0.501	Most demanding

Source: Research Data (2026)

Trainers viewed the CBET curriculum as relevant to training needs (Mean = 3.92). However, they considered it more demanding than the previous curriculum for both trainers (Mean = 4.23) and trainees (Mean = 4.54). Despite the increased workload, trainers maintained a positive attitude towards the curriculum.

Table 13: Interview results on the level of trainers' attitude

Emerging themes	Yes (f)	Yes (%)	No (f)	No (%)
CBET program as compared to the previous curriculum in terms of relevance to the training needs of trainers. Trainers have developed a positive attitude towards the CBET curriculum because they feel it is relevant to the training.	19	86.4	3	13.6
Comparison of CBET curriculum to the previous curriculum in terms of work load allocation to trainers. Trainers willingly embrace changes associated with CBET implementation since they feel it is better compared to the previous in terms of work load.	17	77.3	5	22.7
Comparison between the CBET curriculum and previous curriculum in terms of work load allocation to trainees. A positive attitude among trainees contributes to successful implementation of the CBET curriculum due to the nature of its work load.	21	95.5	1	4.5

Source: Research Data (2026)

The interview findings revealed that trainers generally had a positive perception of the relevance of the CBET curriculum, particularly because of its practical orientation and focus on workplace competencies. However, implementation of CBET was associated with a substantial increase in trainers' and trainees' workload, due to practical lessons, continuous assessment and supervision requirements, with 84.5% of respondents rating trainers' workload as demanding or most demanding. Despite these increased demands, trainers and institutional managers recognized that CBET enhances trainees' practical skills, employability and workplace readiness. Overall, the findings indicate that positive trainer attitudes contributed to effective CBET implementation, although adequate institutional support is necessary to manage the increased workload.

3.7 Trainers' Motivation and implementation of CBET curricula in TVET institutions

The final objective of the study was to find out the level of trainers' motivation on implementing CBET curricula in Uasin Gishu County, Kenya. The respondents were asked about the types of motivation they require, the extent to which their institutions provide such motivation, their level of motivation and the effect of motivation on implementation of the CBET curriculum. The results are presented and discussed in Tables 14,15,16 and 17

Table 14: Trainers response on type of motivation need to implement CBET curriculum

Type of motivation	Frequency	Percent
Allowance	90	100.0
Good working condition	90	100.0
Capacity building	59	65.6
Others	49	54.4

Source: Research Data (2026)

Table 15: Trainers' Motivation

Item	Mean	Std. Dev	Interpretation
Institutional motivation provision	2.23	1.132	Disagree
Level of motivation	2.84	0.539	Moderately motivated

Source: Research Data (2026)

Table 16: Trainers response on the extent of their general motivation as trainers on implementing the CBET curriculum.

Trainers' response on the extent of their general motivation in implementing the CBET curriculum	Frequency	Percent
Less motivated and therefore unable to overcome implementation challenges	21	23.3
Moderately motivated and therefore able to overcome some implementation challenges	62	68.9
Motivated and therefore able to overcome implementation challenges	7	7.8
Total	**90**	**100.0**

Source: Research Data (2026)

Allowances and good working conditions were identified by 100.0% of respondents as key motivators. However, respondents disagreed that their institutions provided adequate motivation (Mean = 2.23). Most trainers (68.9%) reported being moderately motivated, while 23.3% were less motivated. Interview findings confirmed that increased workload and limited incentives had affected staff morale. Further, the results indicate that trainers (76.7%) generally acknowledged that motivation influences their ability to overcome challenges encountered during implementation of the CBET curriculum. Trainers who reported higher levels of motivation indicated that they were better able to cope with the increased workload, continuous assessments and practical learning requirements associated with competency-based education. Conversely, trainers (23.3%) with lower levels of motivation reported greater difficulty in addressing implementation challenges. These results suggests that although many trainers continue to implement the curriculum successfully, strengthening motivation would further improve their commitment, performance and ability to overcome implementation challenges.

Table 17: Interview results on level of trainers' motivation on implementing CBET curricula

Emerging themes	Yes (f)	Yes (%)	No (f)	No (%)
Types of motivation				
Recognition and appreciation improve trainers' commitment to CBET implementation.	18	81.8	4	18.2
Good working conditions and opportunities for professional growth motivate trainers.	16	72.7	6	27.3
Trainer's level of agreement on how their institutions/employer provides motivation				
Institutional support and facilitation motivate trainers to implement the CBET curriculum.	15	68.2	7	31.8
Level of motivation in implementing CBET curriculum.				
Increased motivation enhances effective implementation of the CBET curriculum.	20	90.9	2	9.1
Effects of their general motivation as a trainer on implementation CBET curriculum.				
There is increased performance on various areas as a result of motivation by the institution.	18	81.8		18.2

Source: Research Data (2026)

The interview findings revealed that trainers' motivation was influenced by financial incentives, recognition, institutional support, favourable working conditions and professional development opportunities. However, 53.3% of respondents indicated that their institutions did not provide adequate motivation, while 68.9% reported moderate levels of motivation, mainly due to the increased workload associated with CBET implementation. Despite these challenges, motivated trainers demonstrated greater commitment, active participation in practical instruction and improved performance. Overall, the findings indicate that strengthening institutional support, incentives and professional development would enhance trainers' motivation and improve effective implementation of the CBET curriculum.

3.8 Implementation of the CBET curriculum in TVET institutions

The general objective was to assess the extent to which the curriculum has been successfully implemented based on effectiveness, efficiency, trainers' content delivery, industrial performance and access to curriculum guides and textbooks. The results were noted in Tables 18 and 19.

Table 18: Implementation of CBET Curriculum

Statement	Mean	Std. Dev	Agreement (%)
Effective implementation	4.09	0.920	62.3
Efficiency in implementation	3.68	0.732	52.3
Good content delivery capacities	4.21	0.954	87.8
Improved industrial performance	4.30	0.827	92.3
Improved access to curriculum guides	3.66	0.950	61.1

Source: Research Data (2026)

The results show that 87.8% of respondents agreed trainers possessed good content delivery capacities, and 92.3% agreed CBET implementation had improved industrial performance. However, only 52.3% agreed on efficiency in implementation, and 61.1% on improved access to curriculum guides.

Table 19: Interview results on the implementation of the CBET curriculum in TVET institutions

Emerging themes	Yes (f)	Yes (%)	No (f)	No (%)
The CBET curriculum is being effectively implemented in the institution.	18	81.8	4	18.2
Trainers possess adequate knowledge and skills to implement the CBET curriculum.	19	86.4	3	13.6
Institutional resources adequately support implementation of the CBET curriculum.	15	68.2	7	31.8
The implementation of the CBET curriculum has improved the quality of teaching and learning.	17	77.3	5	22.7
Additional institutional support is required to enhance successful implementation of the CBET curriculum.	20	90.9	2	9.1

Source: Research Data (2026)

3.9 Hypothesis Testing

The study used Pearson's product moment correlation in determining whether there was a significant relationship between each independent variable and the implementation of the CBET curriculum in TVET institutions in Uasin Gishu County. Pearson correlation analysis was appropriate because it measures the strength and direction of the relationship between two continuous variables. The hypotheses were tested at a 5% level of significance ($\alpha = 0.05$). A null hypothesis was rejected where the p-value was less than 0.05.

Table 20: Pearson Correlation Results

Independent Variable	Correlation (r)	p-value	Decision
Continuous training of TVET trainers	0.379	0.000	Significant
Training equipment & instructional materials	0.527	0.000	Significant
Building infrastructure	0.350	0.001	Significant
Trainers' attitude	0.569	0.000	Significant
Trainers' motivation	0.410	0.000	Significant

Source: Research Data (2026)

All independent variables had positive and statistically significant relationships with implementation of the CBET curriculum ($p < 0.05$). Trainers' attitude had the strongest correlation ($r = 0.569$), followed by training equipment and materials ($r = 0.527$).

3.10 Regression Analysis

The study carried out regression analysis to determine the level of significance between the challenges faced by trainers and implementation of CBET curriculum in TVET institutions in Uasin Gishu County, Kenya. Multiple regression analysis determines degree to which the independent variables jointly predict the dependent variable while controlling for the influence of the other variables in the model. The independent variables comprises continuous training of TVET trainers, training tools and equipment, training infrastructure, trainers' attitude and trainers' motivation, while implementation of the CBET curriculum was the dependent variable. Regression results are shown in Tables 21,22 and 23.

Table 21: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.671a	.451	.424	.37581

a. Predictors: (Constant), Training of TVET Trainers, Training Tools and Equipment, Training infrastructure, Trainers Attitude, Trainers Motivation

Source: Survey Data (2026)

The regression model produced $R^2 = 0.451$, indicating that the five independent variables jointly explained 45.1% of the variation in implementation of the CBET curriculum. The adjusted R^2 of 0.424 further confirms the model's explanatory power.

Table 22: ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9.498	4	2.375	16.813	.000b
Residual	11.581	85	.136		
Total	21.080	89			

a. Dependent Variable: Implementation of CBET curriculum

b. Predictors: (Constant), Training of TVET Trainers, Training Tools and Equipment, Training infrastructure, Trainers Attitude, Trainers Motivation

Source: Survey Data (2026)

An ANOVA analysis was done on the independent and dependent variables at 95% confidence level. The ANOVA results indicate that the regression model was statistically significant (F = 16.813; p = 0.000). Since the p-value is less than the significance level of 0.05, the overall regression model was significant. This means that the independent variables considered together, namely continuous training of TVET trainers, training tools and equipment, training infrastructure, trainers' attitude and trainers' motivation, significantly predict implementation of the CBET curriculum in TVET institutions. The results therefore demonstrate that the model provides a good fit for explaining implementation of the CBET curriculum and that the combined influence of the study variables is statistically significant

Table 23: Regression Coefficients

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.329	.606		.543	.588
	Training of TVET trainers	.267	.113	.217	2.362	.021
	Training Tools & Equipment	.282	.143	.251	1.977	.051
	Training Infrastructure	.210	.074	.240	2.848	.006
	Trainers Attitude	.222	.111	.268	1.996	.049
	Trainers Motivation	.275	.138	.250	1.993	.032

a. Dependent Variable: Implementation of CBET curriculum

Source: Survey Data (2026)

The study results are shown in the regression model below:

$Y= 0.329+0.267X_1 + 0.282X_2+0.210X^3+0.222X_4+.275X5+ \varepsilon$ …… Equation 1

Where: Y= implementing the CBET curriculum; X_1= Training of Trainers; X_2= Training Tools and Equipment; X_3= Training Infrastructure; X_4= Trainers Attitude; X_5=Trainers Motivation; and ε= the precision error (at 95% confidence level).

Training infrastructure was the most statistically significant predictor (β = 0.210, p = 0.006), followed by trainers' motivation (β = 0.275, p = 0.032), continuous training (β = 0.267, p = 0.021), and trainers' attitude (β = 0.222, p = 0.049). Training tools and equipment had a positive coefficient but was not statistically significant at the 5% level (p = 0.051).

4. Discussion

4.1 Availability of continuous Training of TVET trainers at institutional level and implementation of CBET curricula in TVET institutions

The finding that continuous training had a significant effect on CBET implementation (r = 0.379, p < 0.05) aligns with previous research. Kishwar (2017) recommended that teachers should be trained according to professional standards for effective curriculum delivery. Kanyonga et al. (2019) reported that regular capacity building enhances trainers' competence in implementing competency-based curricula. Mutua et al. (2019) observed that inadequately trained trainers experience difficulties in delivering CBET effectively. The interview findings revealed that although training was available, irregular refresher training affected trainers' preparedness, particularly in competency assessment. This supports Kanyonga et al. (2019), who observed that inadequate professional development limits effective implementation of competency-based education.

4.2 Availability of training tools and equipment and implementation of CBET curricula in TVET institutions

The moderate positive effect of training equipment and materials on CBET implementation (r = 0.527, p < 0.05) is consistent with Makeleni and Sethusha (2014), who observed that effective curriculum implementation depends on adequate teaching and learning resources. Mosha (2012) reported that institutions with insufficient teaching and learning materials experienced challenges in implementing competency-based curricula. Interview findings confirmed that shortages of equipment and instructional materials limited practical learning. This supports Mutai (2011), who established that inadequate instructional materials hinder effective content delivery and reduce opportunities for learners to acquire practical skills.

4.3 Availability of building infrastructure and implementation of CBET curricula in TVET institutions

The significant effect of building infrastructure on CBET implementation (r = 0.350, p < 0.05) aligns with Chepkonga (2017), who found a significant relationship between learning facilities and quality education provision. Yara and Otieno (2010) affirmed that there was an effect of availability of facilities on curriculum implementation. Indoshi, Wagah, and Agak (2010) observed that vocational schools lacked materials, equipment, and facilities vital for effective teaching and learning. Interview findings revealed the need for additional classrooms, workshops, and computer laboratories to accommodate increasing enrolment and the practical demands of competency-based education.

4.4 Trainers attitude and implementation of CBET curricula in TVET institutions

The strong positive effect of trainers' attitude on CBET implementation ($r = 0.569$, $p < 0.05$) is the most significant finding. This supports Geçit (2016), who pointed out that trainers' positive perception towards any educational change is vital for its successful implementation. Mutiso and Wambua (2025) argued that teachers' perceptions are important elements in the teaching and learning process. Interview findings showed that despite the increased workload, trainers maintained a positive attitude because they recognized the curriculum's relevance to improving graduate employability and addressing labour market needs.

4.5 Trainers' Motivation and implementation of CBET curricula in TVET institutions

The significant effect of trainers' motivation on CBET implementation ($r = 0.410$, $p < 0.05$) supports Hooker (2011), who found that TVET teachers' low motivation negatively impacted their overall performance. The interview findings confirmed that institutional support, capacity building, timely remuneration, and favourable working conditions encourage trainers to remain committed to implementing the curriculum. The low mean score for institutional motivation provision (2.23) indicates that trainers felt the motivation provided was inadequate. This suggests that improving financial incentives, recognition, and professional development opportunities would enhance trainers' commitment.

5. Conclusion

The study concludes that all five variables continuous training of TVET trainers, availability of training equipment and instructional materials, adequacy of building infrastructure, trainers' attitude, and trainers' motivation significantly influence implementation of the CBET curriculum in TVET institutions in Uasin Gishu County. The regression model explained 45.1% of the variance in curriculum implementation, with training infrastructure being the most statistically significant predictor, followed by trainers' motivation, continuous training, and trainers' attitude.

The study further concludes that although trainers had received CBET training, the frequency and content of training, particularly in assessment, needed improvement. While most institutions possessed essential training equipment and infrastructure, these were only moderately adequate, limiting practical training. Trainers maintained a positive attitude despite the increased workload under CBET, but motivation was compromised by inadequate institutional support and limited incentives.

Based on these findings, the study recommends: (1) regular capacity building for trainers focusing on practical skills, competency-based assessment, and new developments in CBET; (2) increased investment in training equipment, instructional materials, and institutional infrastructure; (3) promotion of positive trainers' attitudes through involvement in training, curriculum review, and continuous professional support; (4) strengthened staff motivation through better working conditions, fair reward systems, regular professional development opportunities, and manageable workloads; and (5) further research on the long-term effect of continuous professional development on trainers' competence and the sustainability of CBET implementation.

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