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VTC Managers' Views on the Implementation of the Modularized Competency Based Education and Training (CBET) Curriculum by TVET CDACC in Kenya

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Abstract

The Government of Kenya, through the TVET Curriculum Development, Assessment and Certification Council (CDACC), has introduced modularized Competency Based Education and Training (CBET) in Vocational Training Centers (VTCs) to improve the relevance and responsiveness of technical education to the ever-demanding labour market. This study was conducted to find out perceptions by VTC managers on the implementation of the modularized CBET curriculum in selected counties in Kenya. The research wanted to get their perception regarding the significance of the curriculum, its effectiveness, barriers in its implementation, and how the participants were prepared and supported by their institutions to implement it. A descriptive cross-sectional research design was used, and 50 VTC officials were sampled purposively and at random from the sub-counties in each County. Data was obtained from structured questionnaires and key informant interviews and analyzed descriptively and by thematic analysis. In order to establish the validity of the instruments, they were validated by experts in TVET and educational research, while a pilot study was also undertaken to refine the instruments. Internal consistency assessment for the questionnaire was confirmed with Cronbach's alpha coefficient of 0.81, demonstrating good reliability. Results suggested that most VTC managers considered that the CBET curriculum was timely and industry-relevant, and that its modular design enabled flexibility in training and assessment. However, the research also identified substantial barriers to success. These includes the unpreparedness of the trainers, lack of instructional materials and equipment, lack of funding, and poor linkages between TVET CDACC and training institutions. Adaptation is also hindered by ambiguity and contradictions in policy communication and by the late arrival of the curriculum support materials. Nevertheless, when asked, the majority of managers are supportive of the curriculum and would be so long as the resources and training are in place. The research findings indicate that the modularized CBET curriculum can offer a potential reform agenda for technical training in Kenya, provided that it leverages improved human resource practices, enhanced resource allocation, and reinforced institutions. The research proposes focused capacity building for VTC managers, greater collaboration between VTC stakeholders, and ongoing government investment in infrastructure and learning resources to support successful teaching and learning of curricula.

Keywords: Competency Based Education and Training, CBET, VTC Managers, Modular Curriculum, TVET CDACC, Implementation, Technical and Vocational Education, Kenya

Introduction

Technical and Vocational Education and Training (TVET) in Kenya has also experienced massive reform for purposes of making TVET programs become relevant to the changing labor market needs. An important pillar of such reforms is the introduction and operationalization of the Modularized Competency-Based Education and Training (CBET) curriculum, managed by the Technical and Vocational Education and Training Curriculum Development, Assessment and Certification Council (TVET CDACC). The transition from content-based education to modularized skill-based education is hoped to increase the employability of graduates and encourage innovation and industrial growth (TVET CDACC, 2022).

Competency-Based Education and Training is dedicated to the attainment of specific, transferable skills which are directly related to the requirements of employers. It is based on a “learn-by-doing” approach, which means that students study at their own pace, and after successful completion of a few modules as determined by evaluation of competencies, they are allowed to proceed to the next block (Mulder, 2017). CBET design is modular, which allows it to be more flexible by dividing it into smaller, component units or learning modules. This makes to be better adapted to the varying needs of learners, particularly in informal or non-formal educational environments.

Successful application of CBET is influenced not so much by curriculum development as by the readiness and attitudes of institutional managers, specifically in VTCs. VTC administrators are central in policy interpretation, resource allotment, institution planning, staff overseeing, and communicating with outside constituents. Their acceptance and active commitment to the cause is crucial to developing institutional capacity and the sustenance of CBET application (Fullan, 2007). If managers are cynical or ignorant of the new way of doing things, they are very likely to block, misunderstand, or implement poorly.

Early reports from Kenyan counties reveal varied levels of readiness and VTC manager support for CBET. Some managers are excited about its potential to transform vocational education; others question whether the infrastructure is adequate, staffs are trained, funding is adequate, standards are established, and the stakeholders are sensitized enough (Wanjala & Ndung'u, 2020). Such worries can create delays in implementing and watering down the process, resulting in variation across institutions and regions.

Although VTC managers are central to the success of CBET, little empirical research has been conducted directly to explore their perceptions, attitudes, and readiness in the Kenyan TVET terrain. The majority of existing studies are concerned with teacher, curriculum, or student development issues and fail to take managerial concerns, which power strategic leadership and institutional change, seriously. Despite such initiatives, the implementation of CBET is partial and largely depends on the institutional leadership of VTC managers. There is limited empirical evidence concerning their willingness and readiness, which is an important void that this work focuses on.

Purpose of the Study

This research seeks to investigate the VTC managers' understanding of the modularized CBET curriculum that is being implemented by TVET CDACC in Kenya. The goal of the survey is to understand where their understanding of CBET principles currently lies, how ready these institutions are

to implement the CBET curriculum, what perspectives they have on the benefits and challenges of the curriculum, and what additional support is needed for implementation.

Objectives of the Study

1. To appraise VTC supervisors' understanding of the modularized CBET syllabus.
2. To study VTC managers' role in the importance and advantages of CBET.
3. To explore the difficulties encountered by VTC managers in executing the CBET curriculum.
4. To recommend and encourage the effective practice of CBET in VTCs.

Research Questions

1. How well do VTC managers understand the modularized CBET curriculum?
2. What value and utility of CBET is perceived by VTC administrators?
3. What are the difficulties encountered by VTC managers in the introduction of the CBET curriculum?
4. How can the implementation of CBET in VTCs be enhanced?

2. Literature Review

The examination of targeted issues in this study follows in relation to the literature on CBET, modularization in curriculum design, and the significance of institutional leaders when instituting curriculum, as well as on empirical studies of perception and challenge on TVET reform. This chapter is structured thematically to give a holistic basis for the appreciation of the context of inquiry.

2.1 The Conceptualization of Competence-Based Education and Training (CBET)

Competency-Based Education and Training (CBET) is a learner-centred, result- or outcomes-based approach that focuses on the achievement and demonstration of required workplace competencies (Mulder, 2017). Unlike the conventional educational system, which equates the coverage of content in a specified period of time with quality, CBET focuses on observable, measurable skills and mastery of tasks based on occupational standards (Sanghi, 2007).

Internationally, there has been growing interest in CBET as a way of addressing the gap between the skills of graduates and the demands of the labor market. Nations like Australia, Canada, and South Africa have integrated CBET models into their systems to ensure their vocational graduates are more employable and productive (Allais, 2010).

In Africa, and within the context of UNESCO and the African Union propagating CBET to reduce youth unemployment and skills development for technical workforce development (UNESCO, 2016), emphasis has been placed on the institution-based context (African Union, 2008). In the Kenyan situation, CBET came as part of a larger reform package in 2013 introduced under the Technical and Vocational Education and Training Act; and TVET CDACC was tasked with the responsibility of developing it. The CBET model as practiced in Kenya is intended to provide learners with occupational skills, soft skills, and entrepreneurial skills as relevant to a dynamic economy (TVET CDACC, 2022).

2.2 Modularization in Curriculum Design

Modularization is one of the main characteristics of CBET, as training is broken down into separate modules or learning units. Students study each module on its own and have an opportunity to be certified on its completion so that students can move through modules at their own pace and accrete qualifications sequentially (Kis, 2005). This flexibility renders modularized curricula more reachable, in particular for learners in the informal sector and/or with different depths of prior education. In Kenya, the envisaged

role of modularization shall be for lifelong learning and RPL as well as progression between levels of training. But for modularization to succeed, it needs clearly stated learning outcomes, sufficient lecture materials, and trained staff to interpret and deliver modular learning effectively (Ngure, 2013). Poorly executed, modularization can fragment learning or leave teachers and managers with complicated scheduling and assessment duties.

2.3 VTC Managers' Role in CBET Operation

Curriculum reforms, when implemented, need educational leadership to play their role. Fullan (2007) argued that in education, the fate of change initiatives is in large part decided by what leaders do at the level of the school and how leaders manage and support implementation. Within the TVET framework, VTC managers have the responsibility of interpreting policy in terms of action, mobilizing resources, organizing staff training, interacting with stakeholders, ensuring testing compliance, and certification with standards. Leadership buy-in and strategic direction are shown to be vital in driving systemic reform in TVET institutions (Sithole & Lumadi, 2012). Reforms like CBET may be resisted or incompletely adopted when VTC Managers are not well-prepared for and committed to the reforms. Also, it is important for the leaders to negotiate administrative requirements, facilitate change and cultivate innovation in order to achieve a successful transformation of the curriculum.

2.4 Attitudes and Perceptions of CBET

Implementation of educational reforms is influenced to a great extent by perceptions. Based on the Theory of Planned Behavior (Ajzen, 1991), individual attitudes and beliefs around a change initiative predict the intention to perform the behavior, which predicts actual behavior. Managers are more likely to support and push the adoption of a curriculum, under the CBET perspective, when they see it as both relevant, manageable, and effective. When it comes to perceptions of CBET by education stakeholders, the literature reports their differences according to the level of exposure, qualification, and institutional setting. For instance, in CBET, a study conducted by Ngure (2013) indicated that although the educators liked the program, the program was not well understood by a majority of the trainers and administrators who were skeptical of the program because of vague implementation guidelines and lack of resources in Kenya.

Additionally, VTC managers in selected Kenyan counties felt less engaged in the planning and the roll-out of CBET, thus causing confusion and lack of coordination (Wanjala and Ndung'u, 2020). Under the CBET project, similar difficulties have also been reported in other African countries like Ghana and Nigeria, and they were seen to emanate when managerial staff were not properly trained for the CBET when industry needs did not completely align with all expectations of the CBET, and where communities were unaware of the CBET (Oketch et al., 2021). Ajzen's (1991) Theory of Planned Behavior is used to guide the study as it enables us to interpret the reasons why the VTC managers are positive or negative about supporting the CBETA implementation.

2.5 The Challenges in Implementing CBET in Kenya

CBET and the Continuing Echoes

The advantages of CBET are many; however, the system applied in Kenya has experienced numerous systemic and institutional challenges. These include:

- a. **Poor Infrastructure:** A lot of VTCs do not have the facilities which include modern workshops, equipment, and ICT facilities required for delivery of CBET (MoE, 2021).

- b. **Trainer Capacity:** For most trainers in public VTCs, there had been no formal training on CBET; hence these trainers may have limitations in their capacity to implement modular content coherently and effectively (TVETA, 2020).
- c. **Restricted Stakeholder Participation:** Considerations are given more to industry partners, local communities, and employers in curriculum development and the nontechnical nature of curriculum affecting relevance and sustainability (UNESCO, 2016).
- d. **Assessment and Certification Bottlenecks:** The assessment process under CBET, which is heavily dependent on workplace-based evaluation, is being challenged by capacity limitations at TVET CDACC leading to delayed and unpredictable assessment outcomes (Wanjala & Ndung'u, 2020).

It is important to know how VTC center managers themselves comprehend these challenges as they are the ones that have to cope, mitigate, and manage these situations on the ground. The literature reviewed provides the basis for understanding those aspects that shape CBET theory and its practice with special emphasis on the influence of institutional leadership on educational change. Nevertheless, with no existing studies dedicated to VTC manager perspectives, empirical investigation is warranted. This research attempts to bridge this gap by investigating how VTC managers in Kenya understand and cope with the implementation of the modularized CBET curriculum.

2.6 Summary of Literature Gaps

Although there is considerable literature relating to the CBET concept and general challenges of implementation in Kenya, there is little that specifically addresses the perceptions and readiness of VTC managers who are key actors in institutional change. This article fills this gap by offering empirical insights into how VTC managers make sense of, respond to, and shape the implementation of the modularized CBET curriculum in Kenyan vocational institutes.

3. METHODOLOGY

This chapter will describe the research design, target population, sampling procedures, data collection instruments, procedures, and the techniques used for data analysis.

3.1 Research Design

The research used the descriptive survey design to find out the perceptions of Vocational Training Centre (VTC) managers on the CBET-based modularized curriculum. Data collected will be descriptive in nature and will allow the researcher to summarize and interpret participants' perceptions, experiences, and attitudes in an uncontrolled setting without manipulation of variables (Mugenda & Mugenda, 2003). The strategy allowed the researcher to understand how managers at VTCs perceive, read, and react to the CBET curriculum implementation.

3.2 Target Population

The population of interest was the public VTC managers in Kenya. These are managers such as principals or heads of institutions, deputy managers, and curriculum officers involved in the implementation of the CBET at the institutional level. The justification for targeting VTC managers is that they are key actors in the interpretation of policy, the distribution of resources, the management of instructor training, and the institutionalization of curriculum reforms.

3.3 Sampling Technique and Sample Size

The respondents were purposively selected in the study. As we wanted to include participants who were likely to provide rich information, purposive sampling was suitable, considering the level of specific knowledge and leadership roles of VTC managers with respect to the CBET curriculum. The study was

conducted in two purposively chosen counties. VTCs under county government in Bomet and Kericho were purposively chosen because they are in the same geographic and socio-economic contexts. The two counties have 46 public VTCs in all. From this figure, 18 VTCs and 7 VTCs were proportionately sampled from Bomet and Kericho Counties respectively, giving us 25 institutions. Managers from 25 different organizations were interviewed or responded to a survey (one from each institution, in places where there was more than one it was usually the principal/head). Threshold Criteria: Only VTC heads and assistant VTC heads from institutions where the CBET curriculum had been rolled out or awaited roll-out were included in the survey.

3.4 Data Collection Instruments

Both quantitative (largely descriptive and exploratory) and qualitative (open-ended and closed questionnaire with limited options and in-depth interviews) data collection tools were used to elicit the perceptions of VTC managers on the modular CBET curriculum. The two main tools utilized were:

3.4.1 Structured Questionnaire

A structured questionnaire was designed and utilized to collect quantitative data from VTC managers. The questionnaire included sections reflecting the study aims, as follows:

1. Demographic Information: Recording information such as age, gender, level of education, and work experience.
2. CBET Curriculum Perception: Elements related to whether managers believed that the modular curriculum was relevant, quality, and effective.
3. Challenges in Implementation: Questions looked at the institutional and systemic challenges involved in implementing CBET.
4. Readiness and Support at the Institutional Level: Items assessed the amount of training, resources, and institutional support available to support implementation. The questionnaire employed mostly a 5-scale Likert (1-strongly disagree, 5-strongly agree) to capture respondents' perceptions' intensity. Open-ended sections were also added to the guideline for further comments on specific aspects.

3.4.2 Interview Schedule

In-depth interviews, based on a semi-structured interview schedule, were conducted for the purposively sampled sub-sample of VTC managers for more in-depth exploration of their experiences and challenges. Interview questions were open-ended and covered the following topics:

1. Effectiveness of modularized CBET curriculum in the minds of the perceived users.
2. Institutional Specific bottlenecks to implementation.
3. Type of support from TVET and other stakeholders.
4. Suggestions for improving curriculum delivery. Interviews were scheduled face-to-face, over the telephone, or other virtual means when it was unsafe to gather for an in-person interview. Sessions were audiotaped (with permission) and later transcribed for thematic analysis.

3.4.3 Pilot Testing

Two VTCs not part of the main study group tested both instruments. Feedback from the pilot testing was incorporated to clarify ambiguous or vague items, improve sequence, and increase the reliability and validity of the instruments. These two instruments were complementary and therefore contributed to the breadth and depth of data collection, resulting in a well-rounded quantitative account and rich qualitative accounts of the perceptions and experiences of VTC managers in regard to the implementation of CBET.

3.5 Validity and Reliability of the Instruments

Relevance and appropriateness of the instruments were ascertained through pre-testing research instruments to experts in TVET curriculum and educational research and also university lecturers and curriculum developers in TVET CDACC to ensure validity. A pretest was done with 10 VTC managers in another neighboring Narok County not covered in the main study to improve the tools for clarity, appropriateness, and consistency. To ensure the reliability of the questionnaire, Cronbach's alpha coefficient was employed to measure its internal consistency and the value obtained was 0.82, which is high reliability (Fraenkel & Wallen, 2009).

3.6 Data Collection Procedure

Following full approval including permission from the National Commission for Science, Technology and Innovation (NACOSTI), County Education Offices and the TVET institution, the researcher visited each identified VTC physically. They are self-administration, facilitated by the research team to receive a high response rate. Interviews took place in quiet, private rooms, and that encouraged participants to openly discuss the topic. The study was conducted according to ethical guidelines for informed consent, confidentiality, and voluntary participation.

3.7 Data Analysis Techniques

The data was examined both quantitatively and qualitatively.

3.7.1 Quantitative Data Analysis

The responses from the questionnaires were then coded and input into the Statistical Package for Social Sciences (SPSS) V25. Summary statistics, including frequencies, percentages, means, and standard deviations, were used for describing the data. Chi-square tests and independent t-tests were used as needed to study associations among variables (e.g., training and perception levels).

3.7.2 Qualitative Data Analysis

The transcribed data from interviews were analyzed thematically with the content analysis method. Emergent patterns and themes were identified and classified to facilitate the quantitative analysis. Direct quotes from the participants were used to emphasize the important points and to enrich interpretation.

3.8 Ethical Considerations

Approval of the study was from relevant authorities including institutional research committees and NACOSTI. The sex workers were also informed about the study, were assured of confidentiality, and requested for informed consent prior to the administration of questionnaires. All of the information had been de-identified, encrypted and would only be used for academic purposes.

4. RESULTS AND DISCUSSION

This part describes the analysis of data via descriptive and inferential statistics. Findings are listed thematically according to research aims.

4.1 Demographic Profile of Respondents

Table 1: Demographic Characteristics of VTC Managers (n = 25)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	15	60.0

	Female	10	40.0
Age	Below 40 years	6	24.0
	40–49 years	11	44.0
	50 and above	8	32.0
Years in Management	Less than 5 years	10	40.0
	5–10 years	8	32.0
	Above 10 years	7	28.0
CBET Training Attended	Yes	14	56.0
	No	11	44.0

Key Insight: While a majority have undergone some form of CBET training, a significant number (44%) had not been trained at the time of the study.

4.2 Perception of CBET Curriculum

Table 2: Mean Scores of VTC Managers' Perceptions on CBET (n = 25)

Statement	Mean Score (1–5)	SD	Interpretation
CBET is relevant to Kenya's labor market needs.	4.36	0.74	Strongly Agree
CBET makes learning more practical and skill-oriented.	4.12	0.80	Agree
The modular structure allows for flexible learning and certification.	4.08	0.85	Agree
The implementation process is well-supported by CDACC and government.	2.64	1.10	Disagree
Our instructors are adequately trained to deliver CBET modules.	2.40	1.04	Disagree
Assessment under CBET is manageable and transparent.	2.88	0.97	Neutral

Figure 1 is the bar chart illustrating VTC managers' perceptions of the CBET curriculum based on the mean scores. Let me know if you'd like it formatted for publication or exported as an image or PDF.

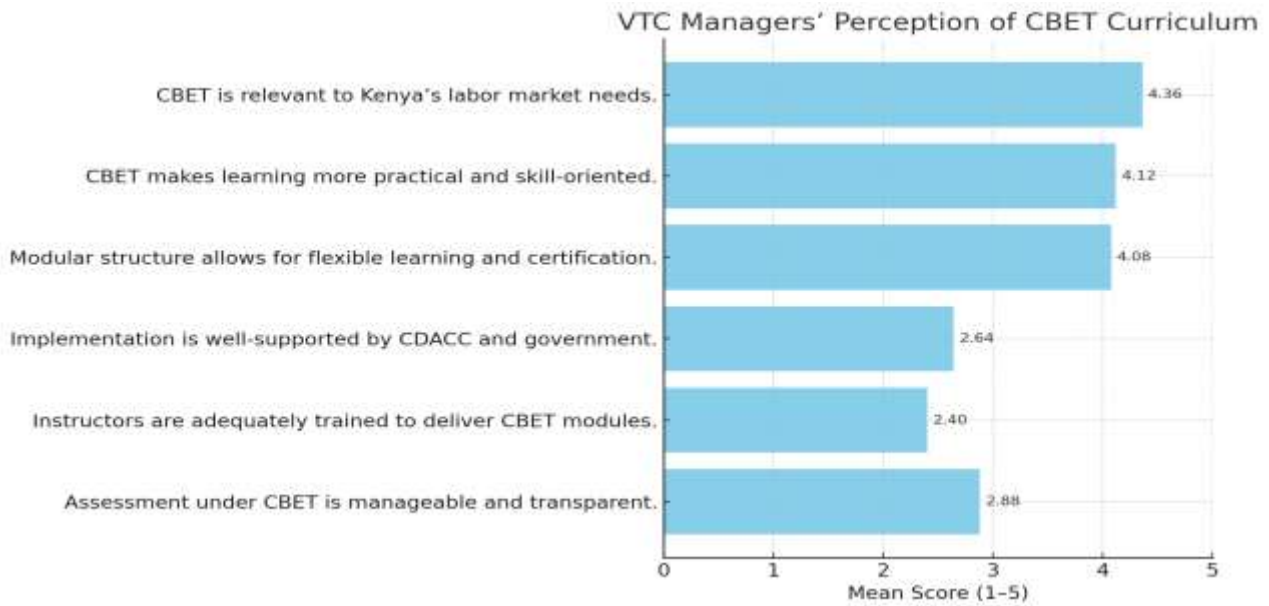


Figure 1: Summary of CBET Perception Scores per statement

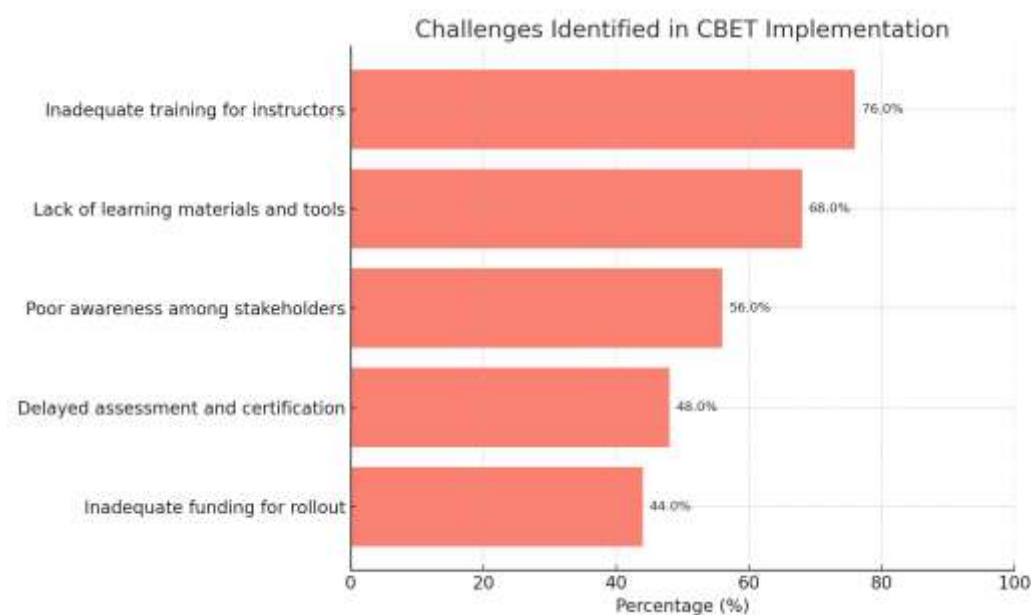
Key Insight: Managers generally view CBET positively in terms of relevance and flexibility, but express concern over implementation support and instructor readiness.

4.3 Challenges in CBET Implementation

Table 3: Major Challenges Reported by VTC Managers

Challenge Identified	Frequency	Percentage (%)
Inadequate training for instructors	19	76.0
Lack of learning materials and tools	17	68.0
Poor awareness among stakeholders (parents, etc.)	14	56.0
Delayed assessment and certification processes	12	48.0
Inadequate funding for institutional rollout	11	44.0

Key Insight: The most cited challenge is instructor inadequacy, followed by lack of resources and stakeholder awareness.



Main finding: The majority of instructors have received some form of CBET training, but a large portion (44%) were untrained at the time of the study.

Insight 1: Instructor inadequacy is the most frequently encountered challenge, followed by insufficient resources and awareness among stakeholders.

5. Discussion of Findings

The results indicate that, in general, the CBET curriculum is viewed positively by the VTC managers, particularly with regard to its labor market relevance and practical and applied emphasis. This is consistent with international literature, which acknowledges the position of CBET as a bridge between education and the demands posed by the world of work (Mulder, 2017; Allais, 2010). Managers appreciated the modular approach for its flexibility, supporting lifelong learning and upskilling.

However, the research raised major implementation concerns, such as a low mean rating of government and institutional support. This is similar to observations by Wanjala and Ndung'u (2020), who observed poor preparations by implementing agencies. Other deficiencies reported included the lack of training among the trainers (44%), which resonates with the study by Ngure (2013), revealing that a high number of the frontline TVET implementers are not well exposed to CBET principles and concrete teaching methodologies.

Furthermore, the challenges reported—inadequate resources, lack of stakeholder awareness, and financial constraints—affected the change of curricula for Kenya's TVET sector, underscoring systemic problems that stifle TVET curricula changes in Kenya, in general. Related concerns have been raised in Nigeria and South Africa, where top-down reforms floundered in the absence of concomitant investments in human capital and infrastructure (Oketch et al., 2021).

From a change management view, Fullan (2007) points out that the leadership of the school is central to how educational reform can be orchestrated. This study, however, demonstrates that in VTCs, the managers may have an understanding of CBET, but their capacity to lead the implementation is curtailed by systemic challenges that are outside their control, as a result of limited collaboration with TVET CDACC and unclear timelines for assessments. These findings highlight the importance of a multi-tier

support system in CBET implementation (clear policy, adequate funding, organized teacher training, and sustained supervision).

6. Conclusion and Recommendations

6.1 Conclusion

In Kenya, VTC managers could also have perceptions about the modularized CBET-Kenya curriculum. The contents are considered pertinent and practical, and the organization is properly structured. However, important obstacles exist for their successful application. Critical issues include poor training, lack of teaching aids, late assessment, and poor stakeholder sensitization.

The success of CBET is related not only to the curriculum itself but also to the ability and the mechanisms to support institutional leaders. The VTC administrators are key players, but it is important that the national agencies such as TVET CDACC, TVETA, and the Ministry of Education support and engage with the VTC.

6.2 Recommendations

Recommendations reflecting the findings were made by ITC-2 among the Dominican secondary students.

1. Strengthen Managerial and Instructor Capacity: Scale up focused training programmes on CBET principles and modular delivery to managers and trainers.
2. Enhance Resource Allocation: The government and counties must allocate more funds to provide VTCs with the necessary tools, workshops, and learning materials.
3. Improve Stakeholder Sensitization: TVET CDACC and MoE should initiate advocacy activities for parents, students, employers, and local leaders on the value of CBET and pathways.
4. Streamline Assessment and Certification: TVET CDACC needs to devolve and expedite assessment procedures to minimize delays and the credibility gap.
5. Establish Feedback and Monitoring Mechanisms: Integrate VTC managers in policy feedback loops via regional consultative forums to make reforms reflect local needs.
6. Foster Industry Partnerships: Facilitate increased partnerships between VTCs and local industries for CBET to keep pace with evolving labor market needs.

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