

**THE KENYA JOURNAL OF TECHNICAL
AND VOCATIONAL EDUCATION
AND TRAINING
VOL. 6**



**PUBLISHED BY TECHNICAL AND VOCATIONAL
EDUCATION AND TRAINING AUTHORITY
ISSN 2227 - 5088
COPYRIGHT AND REGULATIONS**

Website: www.tveta.go.ke

Email: info@tveta.go.ke

Mailing Address: KJ – TVET, TVETA, P. O. Box 35625 – 00100, Nairobi, Kenya

© Technical and Vocational Education and Training Authority, Nairobi. All rights reserved

June, 2023

No part of this Journal may be printed, reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without permission in writing from the publisher

Extracts from this Journal may be quoted if the source is duly acknowledged.

ISSN 2227 – 5088

The ideas expressed in the articles in this Journal are those of the author(s) and do not necessarily reflect the views of the Editorial Board or Technical and Vocational Education and Training Authority.

Design/Layout:

Kenya Literature Bureau Publishers and Printers

Bellevue Area, Off Mombasa Road, KLB Road, Off Popo Road

P. O. Box 30022 - 00100 Nairobi, Kenya

Tel: 020 3541196/7

Mobile: +254 711318188/ +254 732344599

Email: info@klb.co.ke

Website: www.klb.co.ke

TABLE OF CONTENTS

KJ-TVET	vi
EDITORIAL TEAM.....	vii
MESSAGE FROM THE CHIEF EDITOR	viii

PART 1 | INNOVATIVE APPROACHES TO TVET MANAGEMENT AND DELIVERY1

Training Needs Analysis of Technical and Vocational Education and Training (TVET) Middle Level Managers on Governance of TVET Institutions in Kenya.....	2
--	---

***Mwanicha, B. O & Tarno, E.**

Kenya Technical Trainers College, P.O. Box 44600-00100, Nairobi, Kenya

email of corresponding Author: benmwanicha@gmail.com

Assessment of Kenyan TVET Institutions' Preparedness to Implement Competency Based Education and Training Programmes.....	15
---	----

***Osawa, W. O., Langat, K., Ambuli, M. A., Wato, U. B.**

Technical and Vocational Education and Training Authority, P. O. Box 35625 – 00100, Nairobi

email: ottaosawa@yahoo.com

Trainee's Challenges in Accessing Online Training on Technical Courses in Selected Institutions in Nandi County, Kenya.....	26
---	----

Kipkoech, F., Kerre, B. & Kanyeki G.

University of Eldoret, Department of Technology Education, P. O. Box 1125-30100, Eldoret, Kenya

email: fkoech@gmail.com

Determinants of Implementation of Quality Audit Recommendations in Kenyan Technical and Vocational Colleges	38
---	----

***Langat, K., Osawa, W. O., Ambuli M. A., Masai, L. K. Wato B. U & Muli, J. M.**

Technical and Vocational Education and Training Authority, P. O. Box 35625 – 00100, Nairobi

email of corresponding author: langat.langat@gmail.com

Factors Influencing Implementation of TVET-CDACC Courses in TVET Institutions. A Case Study of Nyandarua National Polytechnic Nyandarua County, Kenya.....	51
--	----

***Ododa, F. O. & Kariuki, P.**

Nyandarua National Polytechnic, P. O. Box 2033 – 20300, Nyahururu

email: ododafred@yahoo.com

Status of Implementation of Competency Based Education and Training Programs in Kenyan TVET Institutions 66

**¹Langat, K., ¹Masai, L. K., ²Kisaka, S. T., ¹Omboto D. B;*

¹Technical and Vocational Education and Training Authority, P. O. Box 35625 – 00100, Nairobi

² TVET – Curriculum Development and Assessment Certification Council (TVET-CDACC), P. O. Box 15745 – 00100, Nairobi

email:langat.langat@gmail.com;

PART 2 | TVET AND THE FUTURE OF WORK77

Tertiary Tourism Education Quality Model for Predicting Tourism Destination Service Quality in Kenya 78

Kimeto, J. C.

University of Kabianga, P.O. Box 2030-20200, Kericho, Kenya

email: janetkimeto@kabianga.ac.ke

TVET and the future of Work: Exploring the Role of Social inclusivity Innovations..... 90

Musau, E.

Kisii University, School of Business and Economics, Department of Management Science, P. O. Box 408- 40200, Kisii, Kenya

email: enockmusau@kisiiversity.ac.ke

Enhancing Trainees’ Competency Nutraceutical Skills: Nutrition Trainers’ Perspective..... 106

Odhiambo W. A.

Mawego Technical Training Institute, P. O. Box 289-40222, Oyugis, Kenya

email: achiengodhiambo84@gmail.com

PART 3 | ROLE OF TVET IN NATURAL RESOURCES FOR SUSTAINABLE DEVELOPMENT117

Evaluation of intra-row spacing and trellis on the yield potential of Indian spinach (Basella Alba L.) in Busia and Bungoma Counties, Kenya..... 118

Masombo, B.

¹Kitale National Polytechnic, P.O. Box 2162-30200, Kitale, Kenya. Agriculture Department

email: bwabimasombo@gmail.com

Ecotourism Practices and Sustainable Development in Tourism: The Moderating Influence of Greening Technical and Vocational Education and Training in Kenya 130

Walaba P.

Maseno University, School of Business and Economics, Department of Ecotourism, Hotel and Institution Management, P.O Box. Private Bag, Maseno, Kenya

email: phylliswalas@gmail.com

PART 4 | BEYOND TECHNICAL: ROLE OF TRANSFERABLE SKILLS IN TVET TRANSFORMATION.....147

Factors Promoting Acquisition of Employable Skills Among Students in Technical and Vocational Education and Training Institutions in Kenya. 148

****Okumu, G. J & Kenei, J. K.***

Public Service Commission of Kenya, P. O. Box 30095 – 00100, Nairobi, Kenya

email: gjokumu@gmail.com

Impact and Role of Transferable Skills to the TVET Graduates towards the Job Market in the 21st Century in the Kisumu National Polytechnic, Kenya..... 164

Mboya, S.

The Kisumu National Polytechnic, P.O Box 143 – 40100, Kisumu, Kenya

email: mboyats@gmail.com

KJ-TVET

The Kenya Journal of Technical and Vocational Education and Training (KJ-TVET), ISSN 2227–5088 is a peer reviewed Journal published by TVET Authority. Technical and Vocational Education and Training Authority is a state corporation established by TVET Act, 2013 to regulate and coordinate Technical and Vocational Training in Kenya. The Authority was established to address evolving trends and reforms in the TVET sector and provide overall regulatory services to all TVET providers by promoting access, equity, quality and relevance. The mandate of TVET Authority includes *inter alia*, Advising and making recommendations to the Cabinet Secretary on matters related to training; Promoting access and relevance of training programmes within the framework of overall national socio-economic development plans and policies; Establishing training system which meets the needs of formal and informal sectors; Collecting, examining and publishing information relating to training; Assuring quality and relevance in programmes of training; Liaising with the national and county governments, public and private sector on matters relating to training. In order to achieve these mandates, the Authority requires reliable data to make informed decisions and recommendations. The Authority is promoting TVET research and dissemination of findings through periodic knowledge sharing and annual publication of KJ-TVET.

EDITORIAL TEAM

CHIEF EDITOR: Prof. Bonaventure W. Kerre

MANAGING EDITORS: Dr. Kipkirui Langat
Dr. Osawa W. Otta

EDITORIAL BOARD MEMBERS

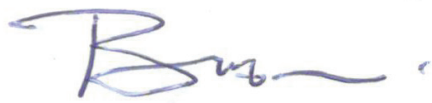
Prof. Kisilu Kitainge	University of Eldoret
Dr. Edwin Tarno	Kenya Technical Trainers College
Dr. Lawrence Mukhongo	Technical University of Mombasa
Dr. John Mugo	Zizi Afrique Foundation
Dr. Alex Awiti	World Agroforestry Centre (ICRAF)
Agnes Rono	Sterling Insight Consult International
Dr. Angeline Kasina	Bexhill College, UK
Dr. Frida Simba	Jomo Kenyatta University of Agriculture and Technology
Dr. Benedicto Mwanacha	Kenya Technical Trainers College
Dr. Purity Ngina	Zizi Afrique Foundation
Daniel Mogonchi	Rift Valley Technical Training Institute

MESSAGE FROM THE CHIEF EDITOR

The creation of new knowledge and skills through research and innovation provides an important avenue for improving TVET systems to develop relevant skills and knowledge required by the labour market. This will ensure that the TVET graduates have qualifications and skills that enhance their competitiveness in the local and international job markets. Research can also play a crucial role in determining current and future skill requirements in all sectors of the economy.

Despite the numerous political activities that dominated most parts of 2022, I am pleased to note that many authors were still able to set aside time to undertake research and contribute to this publication. The Vol. 6 of the KJ-TVET is the third edition of the journal under Technical and Vocational Education and Training Authority, the first three volumes of the journal having been published by the Rift Valley Technical Training Institute. The theme of this publication is **TVET for Sustainable and Transformative Development**, while the sub-themes are Beyond Technical: Role of transferable skills in TVET transformation; TVET and the future of work, Role of TVET in natural resources for sustainable development; and Innovative approaches to TVET management and delivery. Fifteen papers were recommended by reviewers for publication in this volume of the journal.

The KJ-TVET Editorial Board is working closely with some stakeholders to synthesise, translate and disseminate the findings, conclusions and recommendations from these studies for effective utilisation by all stakeholders. I also encourage all researchers and stakeholders in TVET to read the journal and consider publishing their research papers in subsequent volumes of the journal. Lastly, I hereby express my sincere gratitude to all the Editorial Board members and secretariat for their commitment and authors whose papers met the conditions set by the Editorial Board for publication in this edition of the Journal. Special congratulations are also expressed to authors and reviewers for working tirelessly within the set timelines.



PROF. BONAVENTURE W. KERRE, PhD
CHIEF EDITOR, KENYA JOURNAL OF TVET

1

INNOVATIVE APPROACHES TO TVET MANAGEMENT AND DELIVERY

Training Needs Analysis of Technical and Vocational Education and Training (TVET) Middle Level Managers on Governance of TVET Institutions in Kenya

***Mwanicha, B. O & Tarno, E.**

Kenya Technical Trainers College, P.O. Box 44600-00100, Nairobi, Kenya

email of corresponding Author: benmwancha@gmail.com

Abstract

The purpose of this survey was to determine the training needs of middle level managers in the public TVET institutions. The main objective was to establish the existence of training needs and the training required to fill the gaps with respect to financial and governance components. This was a cross sectional descriptive survey that employed interviewing as a method for data collection. The target population comprised Registrars, Deans of Students and Heads of Department. All the 12 National polytechnics were included in the study and simple random sampling was used to select 38 Technical and Vocational colleges from the total of 188 institutions countrywide. The officers were purposefully selected from the selected institutions. The data collected was edited, coded and analysed with the use of SPSS software. The findings indicated that the middle level managers had training needs in areas including: Risk management and compliance, Human resource management, Inventory management, managing training and learning programs, Strategic and result-based planning, financial management, Quality management and evaluation, Leadership and governance. In conclusion, the gaps established through the training needs analysis can be addressed through capacity building which will result in improved service delivery and, therefore, enhancing the TVET institutions fulfilling their mandate of supplying high quality technical manpower in the country. This study recommends development of modularised programmes for training to mitigate the gaps identified. Because the middle level officers perform different functions, some modules will be made core in line with the functions of the officers while others will be elective. Given that there were varied training needs even within similar positions of middle level managers, the modules should be self-paced so that the officers with greater needs would have enough time to interact with the capacity building experiences. In order to unify financial and governance practices in TVET institutions, the envisioned capacity building should target all middle level managers be they beginners or novices or seasoned practitioners.

Key words: Training needs analysis, capacity building, governance

1. Introduction

1.1. Background information

Technical and Vocational Education and Training (TVET) is critical for producing middle level manpower that is needed to drive Kenya's economy towards the attainment of Vision 2030 (Republic of Kenya, 2016). The TVET sector envisions providing skilled and globally competitive employable human resource with the right attitudes and values required for growth and prosperity of the various sectors of the economy (Republic of Kenya, 2005, 2012, 2016). TVET is envisaged to play a pivotal role in the social, economic and technological development of the country. Therefore, TVET is necessary for laying a foundation for the vocational skills required for socio-economic development, equipping students with entrepreneurial skills and positive attitudes for self or formal employment, and providing practical training that is responsive and relevant to the country's sustainable economic and industrial development (Republic of Kenya, 1999).

At present, several government departments in addition to the Ministry of Education provide TVET. The government has established an independent TVET authority (Technical and Vocational Education and Training Authority, TVETA) that coordinates all TVET activities in the country. TVET Curriculum Development, Assessment and Certification Council (CDACC) and the TVET Funding Board were established under TVET Act, 2013 to play a key role in standardizing accreditation, quality assurance, curriculum, assessment, certification and resource mobilisation. In addition, the Kenya National Qualification Authority (KNQA) has been established by the Kenya National Qualification Framework Act of 2014 with the mandate to establish and regulate national qualifications framework.

Currently, TVET is provided through state and non-state sources including: Technical Universities, National Polytechnics, Technical Training Institutes, Institutes of Technology, Industrial Training Centres, National Youth Service, Government Training Institutes (e.g. Kenya School of Government), National Industrial Training Agency, Youth Polytechnics, *Jua Kali*, Non-Governmental Organisations and private TVET institutions. These various providers are broadly categorised into: Youth Polytechnics /Vocational Training Centres (VTCs), Technical and Vocational Colleges (TVCs), National Polytechnics and Technical universities (Akala and Changilwa, 2018). The number of TVET institutions was 723 in 2013, a figure that rose to 2301 in 2020. Similarly, the enrolment of students in TVET rose from 148,000 in 2013 to 451,200 in 2020 and the upward trend evident (Kamer, 2022).

1.2. Governance of TVET Institutions

The TVET Act 2013 spells out the governance structures for TVET institutions. Boards of Governors for vocational training centers; Boards of Governors for technical and vocational colleges; Councils for National Polytechnics; and Councils for teacher trainer college. The principal is identified as the chief executive officer. TVETA guidelines of 2019 on leadership in TVET institution, has two levels, the Board and the top management. The two have different roles and functions. The role of the board is purely to provide resources and strategic directions usually contained in the various policies and strategic plan and ensuring the targets are met. The role of management is to undertake implementation of the board decisions in the most efficient and effective manner ensuring that statutory and regulatory provisions are followed.

The TVETA guidelines identify the Principal and Deputy Principal offices as top management. In this study, the Registrar, Dean of students, Finance Officer, Human Resource Officer, Supply Chain Management Officer, Estates Officer and Heads of Departments are considered as middle level management. The role of middle level management is to ensure that services are efficiently and effectively delivered in their areas of concern.

1.3. Desirable Practices in Governance of TVET Institutions

The management standards for TVETs in Kenya are outlined in the TVET Standards (TVETA, 2019). The standards are meant to remove disparities encountered when services are rendered within the TVET sector. Given the complex and dynamic operating environment of TVETs, it would be a reasonable assumption that those responsible for supporting and leading the workforce are equipped to do so. Educational Middle Managers in particular operate as buffers between senior leaders and their teams (Gleeson & Shain, 1999).

Competencies required of middle level managers are categorised into stages (Boocock, 2014; Humphreys & Hoque, 2007; Simmons & Thompson 2008). The first stage is that of student-centred competencies which facilitate students' educational provision. The competencies, which make up this stage, are developing and sustaining service for learners, managing quality in the delivery of services, knowledge of quality assurance in TVETs, knowledge of reflective practice and managing and developing self and own performance.

The second stage is staff-centred competencies. Researchers in education have pointed out that inconsiderate management actions can have a negative impact on teaching staff (Avis, 2005; O'Leary & Smith, 2005; Simmons & Thompson, 2008). Educational Middle Level Managers manage teachers, trainers and assessors, who are directly involved in the quality of educational provision for students, highlighting the importance of competences related to the support and

management of staff. Therefore, staff-centred competencies should closely follow student-centred competencies. The competencies, which make up this stage, include managing human resources to support service provision, managing and developing team and individual performance, building and maintaining productive working relationships, knowledge of employment law and appropriate practice and knowledge of motivation theory and practices.

The third stage is executive competencies. There are multiple challenges presented to educational managers working in a dynamic sector such as TVET. They will need to have an understanding of strategy (Lambert, 2012) and think entrepreneurially to operationalise their organisation's strategy (Briggs, 2005). The competencies, which make up this stage are: Developing a vision, planning to achieve a vision, managing change and continuous improvement, knowledge of strategy, knowledge of change management.

The fourth (and final) stage is resource competencies. The competencies, which make up this stage, include planning resource requirements, managing finance, managing physical resources, Knowledge of resource management, Knowledge of health & safety legislative requirements and Knowledge of management accountancy.

In parallel to each of the stages in the competency framework are skills and traits. These constitute the soft skills that is the intrapersonal skills necessary to work well with and manage others (Laker & Powell, 2011). Unlike each of the stages, skills and traits are not delineated to specific aspects of the role. The competencies, which make up these skills and traits include future thinking, critical thinking, emotional maturity, planning & organisation, literacy & numeracy, positivity, reflective, resilient, Approachable, achievement focused, conscientious.

1.4. Background of Training Needs Analysis

Training needs analysis and training needs assessment are phrases used interchangeably. (Rikkua and Chakrabartyb, 2013). "Training Needs Assessment" (TNA) is the method of determining if a training need exists and, if it does, what training is required to fill the gap (Barbazette, 2006). A needs assessment is a systematic process for determining and addressing needs, or "gaps" between current conditions and desired conditions or "wants". The discrepancy between the current condition and wanted condition should be measured to appropriately identify the need. The need can be a desire to improve current performance or to correct a deficiency (Kizlik, 2019). Training needs assessment is a systematic inquiry of training needs within an organization for the purposes of identifying priorities and making decisions, and allocating finite resources in a manner consistent with identified program goals and objectives. JICA (2013) summarised training needs

definition in an equation form as Training Needs = Desired Capability – Current Capability of the Participants.

There are a number of models, which guide the theory, and practice of training needs assessment (McGehee and Thayer, 1961; Mager and Pipe, 1984; Leigh et al. 2000). The conspicuous model in the last four decades is the Organisation – Task – Person (OTP) model. Following the OTP model, there are three levels of conducting training needs.

(1) Organisational level in which an evaluation is done to ascertain the level of organizational performance. This helps to determine the knowledge, skills, ability, and other characteristics (KSAOs) needed within the organization. It also identifies what is required to alleviate the problems and weaknesses of the agency as well as to enhance strengths and competencies (2) Occupational level or task level in which the assessment examines the knowledge, skills, abilities, and other characteristics (KSAOs) required for affected occupational groups. The occupational assessment identifies how and which occupational discrepancies or gaps exist, as well as examining new ways to do work that could fix those discrepancies or gaps.

(3) Individual level in which the assessment analyses how well an individual employee is doing a job and determines the individual's capacity to do new or different work. An individual assessment provides information on which employees need training and what kind.

The diagnosis of training needs helps to identify the discrepancies between the knowledge held by potential training/education participants and the knowledge which is desirable for some specific reasons. Worth noting in training needs assessment is a twofold scenario. Firstly, people who are not aware of their incompetence just do not realise that they do not know something. This is why it is very hard to assess that they need any educational support and, the more so, to specify the kind of support needed. If people are not aware of their own incompetence, asking them what they should learn does not make much sense (Regulski, 2014). Secondly it cannot be assumed that the development of competence can have a final point, especially in a situation of changing governance practices, transformations of government systems or constant evolution of the society's needs. Someone who is an expert today can easily become an ignoramus in future for failure to notice the changes in the surrounding world. In order to carry out valid training needs assessment, awareness of the status of the participants with respect to unconscious incompetence, conscious incompetence, conscious competence and unconscious competence is the starting point in collecting evidence in decision making on the methodology to use.

Some scholars have pointed out that lack of knowledge and skills may not be the only factor contributing to shortfalls in performance. A host of other factors include not having the right equipment or resource, not being encouraged by managers and colleagues to do the right thing, nonexistence of standards or expectations that are set and communicated and bad workplace morale or conditions (MOI/DOLA, 2004). It was evident that credible needs analysis requires inputs from multiple elements considered essential to anchor the necessary decision-making. These are mainly analysis of competencies of knowledge and skills, performance analysis, career development analysis and job analysis. In early 2020, the Ministry of Education in collaboration with the African Development Bank carried out a training needs analysis for TVET top management. Subsequently a training was launched for top management. The middle management in TVET provides a link between top management, staff and clients. It is therefore critical that the middle managers are continuously trained in order to facilitate effective and efficient governance of TVET institutions. Training needs analysis is the starting point that ensures the middle level managers are trained appropriately to enable them to improve their financial management, capacity in leadership and governance and efficiency in their operations.

1.5. Objectives

This study set out to establish the training needs of TVET middle level managers with respect to governance in terms of:

- a) Strategic and results-based planning.
- b) Leadership and governance.
- c) Inventory management.
- d) Human resource management.
- e) Risk management and compliance.
- f) Quality management and evaluation.
- g) Managing training and learning programmes.
- h) Financial management.

2. Methodology

The study adopted a cross-sectional survey design that combined descriptive and exploratory strategies. Both quantitative and qualitative approaches were used to collect and analyse data. The target institutions considered were those under the Ministry of Education, State Department of Vocational and Technical Training. According to TVETA (2022), there are 12 National Polytechnics and 188 Technical and Vocational Colleges following the TVET act 2013 on classification of TVET institutions. The number of National Polytechnics is considerably smaller and accessible hence all of them were included in the study. The sampled institutions were picked using the simple random sampling technique as shown in Table 1

Table 1: *Population and sample sizes for institutions*

Type of institution	Population size	Sample size	%
National Polytechnics	12	12	100.0
Technical and Vocational colleges	188	38	20.2
Total	200	50	25.0

The middle level management officers included Registrars, Deans of Students and Heads of Departments. With respect to individual middle level management officers, there is normally one officer in each institution with the exception of heads of departments. In this respect the officers were purposively picked from the sampled institutions. In the case of Heads of departments, only three heads of departments were sampled which approximates 50% of departments in most TVET institutions. The population and sample sizes of the middle level managers is presented in Table 2.

Table 2: *Population and sample sizes for middle level managers*

Description	Population size	Sample size	%
Registrars	200	50	25.0
Deans	200	50	25.0
Heads of Departments	1200	150	12.5

Interview schedules were developed and specifically tailored for each cadre of staff yielding three different interview schedules. The items in each schedule were a mix of closed ended items requiring a Yes or No response and open-ended items, which formed a basis for further probing. The reliability level of each instrument was determined at pre-test. In all the interview schedules, the Cronbach's Alpha was greater than 0.7 suggesting high internal consistency as a measure of reliability for dichotomous questions (Brown, 2002). Ten interviewers in a face-to-face format administered the interview schedules within a period of five days. Data analysis was done using the Statistical Package for Social Sciences (SPSS)

3. Results and discussions

3.1 Response rates

The data was analysed based on the objective of the study. The response rates of the sampled interviewees were as shown in Table 3

Table 3: Response Rates

Description	Sample size	Response	%
Registrars	50	31	62.0
Deans	50	14	28.0
Heads of Departments	150	147	98.0

3.2. Training Needs Analysis for Registrars

The study targeted 50 registrars randomly from the 200 Technical and Vocational Education Training Institutions countrywide. The registrars reached for interview were 31 giving a response rate of 62%. The overall results on the needs for training in the identified eight components of Public Finance Management and Governance of TVET Institutions in Kenya is presented in Figure 1.

The component of human resource management was ranked the highest (60.2%). The specific responses on the component of human resource management are presented in table 4.

Table 4: Key Aspects of Human Resource Management

Aspect	%Yes	%No
Conduct staff training needs assessment	32.3	67.7
Have attended soft skills training (Protocol, Etiquette, Public speaking etc)	35.5	64.5
Have attended a training on occupational health and safety at work workplace	40.0	60.0
Ensure work life balance among staff	51.6	48.4

Specifically, majority of the registrars expressed the need for training on how to conduct staff training needs assessment (67.7%), soft skills including protocols, etiquette and public speaking (64.5%). Training on occupational health and safety at work place was identified as an aspect of need (60%) and skills on ensuring work life balance among staff (48.4%).



Figure 1: Training Needs Analysis for Registrars

The second component in ranking was inventory management (54.8%). The registrars expressed the need to understand and operationalise inventory management policies (74%), develop the ability to use inventory management systems such as ERP, MRP (54.8%) and manage inventory risks (35%).

The third component in ranking was management of training and learning programmes. This component is one of the core functions of training institutions. The indicators considered critical and hence unfolding the training needs for registrars included: capacity to enrol students for online learning. The COVID 19 Pandemic was instrumental to institutions rethinking about learning and training deliver systems. The online training has been found to be a novel solution. In this respect many registrars (77.4%) acknowledged that they do not have students enrolled in online classes. There may be many variables coming into play with this concern but sensitization could be one of them. More critically is following up the success and challenges of graduates. The registrar's office has the required data on graduates and therefore better placed to carry out labour market surveys. The fact that 64.5% confirmed that they do not regularly carry out labour market surveys is an indicator for a training need on how to do it.

The fourth component was on financial Management. Majority of the registrars (71%) confirmed they were not formally trained in financial management. Some concerns were expressed on skills for budgeting (41.9%) and development of procurement plans (29.0%). The other components where a need for training was identified include strategic and result based planning, risk management and compliance, quality management and evaluation, leadership and governance

3.2 Training Needs Analysis for Deans of Students

The pattern of responses for the Deans of Students was similar to those of the registrars in many respects. A run of the Chi square to determine if the responses are dependent on the job position indicates p Values far greater than 0.05. For many of the items, the responses took a similar pattern as shown in Figure 2. A comparison was made possible since the instrument used had similar items for the two positions.



Figure 2: Comparative Training Needs Analysis for Registrars and Deans

3.4. Training Needs Analysis for Heads of Departments

From a sample of 150 heads of departments, 147 were interviewed. The data is presented Figure 3. There were two items under managing training and learning programmes that were specific to Heads of Departments only. They were asked if they have implemented Competency Based Education and Training Programmes in their departments. From the responses only 35.3 % confirmed implementation. They were also asked if they have ability to assess competency Based Education and Training programmes in their departments of which 78.4 % said Yes. Additionally, the study established that the respondents needed further training on modern technologies in their areas of specialisation.



Figure 3: *Training Needs Analysis for Heads of Departments*

4. Conclusions and recommendations

4.1. Conclusion

This survey has identified gaps in the competencies of middle level managers with respect to governance in TVET institutions. The performance gaps can be addressed through capacity building which will result in improved service delivery and therefore enhancing the TVET institutions fulfilling their mandate of supplying high quality technical manpower in the country.

4.2. Recommendations

The following recommendations are made:

1. Modularised programmes are developed for training to mitigate the gaps identified
2. Because the middle level officers perform different functions, some modules will be made core in line with the functions of the officers while others will be elective
3. Given that there were varied training needs even within similar positions of middle level managers, the modules should be self-paced so that the officers with greater needs would have enough time to interact with the capacity building experiences. In this arrangement, the officers with less needs will be able to cover the experiences quickly.
4. In order to unify financial and governance practices in TVET institutions, the envisioned capacity building should target all middle level managers be they beginners or novices or seasoned practitioners

References

- Akala, W., & Changilwa, P. (2018). Status of Technical and Vocational Education and Training (TVET) in Post-secondary Education in Kenya. *Journal of Popular Education in Africa*, 2(7), 15-25.
- Avis, J. (2005). Beyond performativity: Reflections on activist professionalism and the labour process in further education. *Journal of Education Policy*, 20(2), 209– 222.
- Barbazette, J. (2006). *Training needs assessment: Methods, tools, and techniques*. John Wiley & Sons.
- Boocock, A. (2014). Increased success rates in an FE college: The product of a rational or a performative college culture. *Journal of Education and Work*, 27(4), 351– 371.
- Briggs, A. R. J. (2005) Middle managers in English further education colleges. *Educational Management Administration & Leadership*, 33(1), 14.
- Brown, J. D. (2002). The Cronbach alpha reliability estimate. *JALT Testing & Evaluation SIG Newsletter*, 6(1).
- Gleeson, D., & Shain, F. (1999). Managing ambiguity: Between markets and managerialism: A case study of ‘middle’ managers in further education. *The Sociological Review*, 47(3), 461– 490.
- Humphreys, M., & Hoque, K. (2007). Have the lecturers lost their voice? Involvement and participation in the devolved further education sector. *The International Journal of Human Resource Management*, 18(7), 1199– 1213.
- JICA (2013) Project on Improvement of Local Administration in Cambodia (PILAC) Ministry of Interior and Japan International Cooperation Agency. Retrieved November, 9, 2022) from https://www.jica.go.jp/project/cambodia/0601331/pdf/english/3_TNA_01.pdf
- Kamer, L. (2022). Number of students enrolled in Technical and Vocational Education Training (TVET) in Kenya from 2013 to 2020 Retrieved November, 6, 2022 from <https://www.statista.com/statistics/1237853/students-enrolled-in-tvet-institutions-in-kenya/>
- Kizlik, B (2019). Needs Assessment Information (Wants determine needs). Retrieved November, 9, 2022 <https://www.adprima.com/needs.htm>
- Laker, D. R., & Powell, J. L. (2011). The differences between hard and soft skills and their relative impact on training transfer. *Human Resource Development Quarterly*, 22(1), 111– 122.
- Lambert, S. (2012). The perception and implementation of sustainable leadership

- strategies in further education colleges. *Journal of Leadership Education*, 11(2), 102– 120.
- Leigh, D., Watkins, R., Platt, W.A., and Kaufman, R. (2000) . Alternative Models of Needs Assessment: Selecting the Right one for your Organization. *Human Resource Development Quarterly*. Vol. 11, No. 1. Spring. pp 87 94.
- Mager, R.F., and Pipe, P. (1984), *Analyzing Performance Problems, or, You Really Oughta Wanna*, Belmont, CA: Lake Publishing
- Mcgehee, W., and Thayer, P.W. (1961), *Training in Business and Industry*, New York: Wiley.
- MOI/DOLA, (2004) *Training Needs Assessment*. Phnom Penh
- Regulski, J. (2014) *Life intertwined with history*. Wrocław: Zakład Narodowy im
- Republic of Kenya (1999). *Totally integrated quality education and training: TIQET. Report of the commission of inquiry into the education system of Kenya*. Nairobi: Government Printers.
- Republic of Kenya (2005). *Report on the rapid appraisal on the status of TVET in Kenya*. Nairobi: MOEST.
- Republic of Kenya (2016). *2017/18-2019/20 Education Sector Report*. Nairobi: Government Printers
- Rikkua, R. & Chakrabarty, N. (2013). *Training Needs Analysis: A Case Study of Loco Pilots. Procedia - Social and Behavioral Sciences* 104. pp. 1105 – 1111.
- Simmons, R., & Thompson, R. (2008). *Creativity and performativity: The case of further education. British Educational Research Journal*, 34(5), 601– 618.
- TVETA (2022). *Governance and Management for VTCs and TVCs*. Retrieved November, 5, 2022 from <https://www.tveta.go.ke>

Assessment of Kenyan TVET Institutions' Preparedness to Implement Competency Based Education and Training Programmes

**Osawa, W. O., Langat, K., Ambuli, M. A., Wato, U. B.*

Technical and Vocational Education and Training Authority, P. O. Box 35625 – 00100, Nairobi

email: ottaosawa@yahoo.com

Abstract

Competency Based Education and Training (CBET) implementation is a resource intensive venture. Proactive provisioning of both pecuniary and non-pecuniary resources and continuous capacity development programmes could play a significant role towards seamless transition to CBET. The aim of this study was to establish the preparedness of Kenyan TVET Institutions to implement CBET programmes. Institutions' preparedness was based on a three point criteria; availability of sufficient physical resources, trainers' capacity and availability of partnerships to support CBET implementation. Descriptive research design was employed. The target population was administrators and trainers in the 2,178 registered TVET institutions. Stratified random sampling technique was used to obtain a sample of respondents. A sample of 369 institutions which represented 17% of all registered TVET institutions in the country was selected to participate in the study. A structured questionnaire was developed and pretested to ascertain its reliability before being deployed for data collection. The number of institutions that responded to the questionnaire were 325 which represented a response rate of 88.1%. Collected data was sorted, edited, coded, analyzed and presented in the form of frequency tables. Findings from the study revealed that; physical facilities in 57.7% of National Polytechnics (NPs), 55.2% of Technical and Vocational Colleges (TVCs) and 35.8% of Vocational Training Centres (VTCs) were adequate to support CBET implementation, majority of trainers in NPs (69.2%) and TVCs (60.9% public and 54.5% private) met the minimum requirements for trainers as per the CBET trainer qualification framework (TQF) and most institutions (55.4% public and 63.6% private) had established limited partnerships with industry. This study recommended that TVET institutions should; be supported to acquire state of the art training equipment, engage only qualified and licensed trainers, and lastly, explore more forms of partnerships with industry for successful implementation of CBET.

Keywords: Training resources, preparedness, CBET implementation, trainers' capacity, partnerships

1. Introduction

1.1. Background

Competence-Based Education and Training (CBET) is a practical approach to education which emphasises trainees need to gain necessary knowledge, skills and attitudes to work successfully in their trade areas (Miseda, C., & Kitainge, P. K., 2021). This approach allows trainees to progress from one level to the next based on demonstrated mastery of predetermined competences. Successful Implementation of CBET has the potential to improve productivity, increase access to employment opportunities and raise the standard of living. Countries world over have endeavoured to reform their training approaches from ones that over emphasize content recall and examinations to ones that emphasises the trainees' ability to perform tasks according to set standards.

According to Makunja (2016), implementation of Competence-Based Education is not a new concept in education systems of the world. The United States of America (USA) in 1957 was among the pioneers of Competence-Based Education. This was in reaction to the space race that saw the Soviet Union launched the first satellite (Hodge, 2007). By the late 1980s the concept shaped many programs of vocational education and training in the USA. Germany introduced CBET at vocational level training in the 1970s (Mulder M. et al, 2007) with a view of addressing the issue of high rates of unemployment especially among the youths, while the United Kingdom (UK) adopted it a decade later (Harris R. et al, 1995).

Implementation of CBET approach in Africa started in South Africa in 1998 to address the acute shortage of professionals such as engineers, technicians and artisans. Other African countries such as Malawi, Ghana, Ethiopia, Tanzania and Rwanda followed suit. In Ethiopia, competence-based TVET was implemented under severe challenges which included lack of adequately prepared trainers and resources, frequent curricula changes, lack of employers' cooperation, discontent of trainers and administrators (Solomon, 2016). In Tanzania, the CBET approach started in technical colleges in the year 2002 and was marred with various challenges including low understanding of CBET concept, lack of support facilities and resources, large number of trainees in classrooms, lack of motivation to some trainers due to unfavorable working conditions and low trainees' cooperation attitude (Tambwe, 2019) In the quest to build a knowledge based economy with a particular emphasis on science and technology as an engine for development, competence based curriculum was introduced in Rwanda in the year 2015. Urunana (2018) however cites various challenges such as insufficient teaching and learning materials, large classes, lack of parental support and inadequate qualified teachers in the Rwandan case.

The decision to transition the Kenyan system from knowledge-based approach to CBET was informed by the findings of the Odhiambo report which recommended

a review of TVET curricula and the establishment of national standards as well as a quality assurance system. The report further recommended industry participation in curricula development, training and assessment (Republic of Kenya, 2012). This was with the realization that a skilled and competent workforce would serve as an enabler for the achievement of vision 2030 and transform the country into a globally competitive economy providing a high quality of life to all its citizens.

CBET implementation has proven to be a resource intensive venture. Fullan (2015) posits that curriculum reforms are demanding in terms of implementation since they require changes in many aspects that might challenge the existing beliefs and subjective realities deeply embedded in individual and organizational contexts. Seamless implementation of CBET requires adequate and broad preparation by all the stakeholders. A robust implementation framework with the necessary prerequisites in terms of policies, stakeholder engagement, conducive implementation context and realistic timelines need to be considered. This study sought to establish the preparedness of Kenyan TVET Institutions to implement CBET programmes. The level of institutions' preparedness was gauged based on the availability of sufficient physical resources, trainers' capacity and availability of strong partnerships with industry as per the Kenya TVET Quality Assurance Framework.

1.2. Problem Statement

Since the enactment and implementation of the TVET Act, 2013, substantive reforms have taken place in the TVET sub-sector in Kenya especially in the areas of access, inclusivity, quality and relevance. Curriculum reforms are among the major reforms that have been witnessed. Although it is now about four years since the first CBET curricula were rolled out for implementation, very few institutions seem to be keen on embracing the new programmes casting doubts on TVET institutions' readiness to effectively transition.

1.3. Objectives of the Study

The main objective of the study was to establish the preparedness of Kenyan TVET Institutions to implement CBET programmes. The specific objectives of the study were to:

- i. Establish whether available infrastructure in TVET institutions was sufficient for CBET Implementation
- ii. Determine capacity of trainers to implement CBET programmes
- iii. Identify existing partnerships for CBET implementation

1.4 Scope of the Study

This study was limited to determining the status of preparedness of Kenyan TVET institutions to seamlessly transition to CBET programmes. Respondents were administrators and trainers from sampled institutions.

2. Methodology

This study used descriptive research design. Two questionnaires, one for administrators and another for the trainers, composed of both structured and open-ended questions, were used to collect data. The questionnaire was scripted using Kobo-collect data collection software. The study targeted 2,169 accredited TVET institutions (12 NPs, 311 public TVCs, 855 private TVCs and 991 VTCs).

Stratified random sampling was employed to obtain a sample of respondents. Institutions were classified by category, type and county to give every institution an equal opportunity to be sampled. A sample of 369 which represented 17 percent of all registered TVET institutions in the Country was selected to participate in the study. A maximum of four respondents were selected per institution, with one being an administrator, and three trainers randomly picked from different academic departments. The instrument was pre-tested by administering it to a sample of respondents not included in the study. This ensured its reliability as well as enhancing its usability and clarity of items.

A team of officers visited the sampled institutions to collect the data. Quantitative data was sorted, coded, cleaned, analyzed, and presented in the form of frequency tables. Quantitative data was analyzed using advanced Excel features.

3. Results and Discussion

The number of institutions that responded to the questionnaire from 46 out of 47 counties were 325 (88.1%). Institutions' preparedness was based on three-point criteria; availability of sufficient infrastructure, trainers' capacity and availability of partnerships to support CBET implementation.

3.1. Infrastructure in TVET Institutions for CBET Implementation

The study sought to establish whether infrastructure in TVET institutions was sufficient for CBET implementation. Respondents were asked to indicate their level of agreement on a 5-point Likert scale. A score above 3 denoted agreements while a score below 3 signified respondents' disagreement with a given statement. A score of 3 denoted the respondents were uncertain on the subject and for purposes of simplicity and ease of comparison has not been shown in Table 1.

Table 1: Availability of training Infrastructure to Support CBET Implementation

Statement	NP		Public TVC		Private TVC		VTC	
	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree
Theory rooms in the institution are sufficient to support CBET implementation	12(34.3%)	20(57.1%)	77(27.2%)	169(59.7%)	17(7.8%)	196(89.9%)	107(30%)	173(54%)
Workshops in the institution are sufficient and adequately equipped to support CBET implementation	7(20%)	21(60.0%)	87(30.8%)	142(50.2%)	42(19.2%)	141(64.7%)	136(38%)	140(39%)
Laboratories in the institution are sufficient and adequately equipped to support CBET implementation	6(17.1%)	22(62.7%)	83(40.1%)	114(40.2%)	50(22.9%)	129(59.1%)	185(52%)	98(27%)
Electronic equipment such as digital cameras, computers, projectors in the institution are sufficient to support CBET implementation	7(20%)	20(57.1%)	77(27.3%)	140(49.5%)	32(14.7%)	161(73.8%)	133(37%)	138(38%)
Institution has a spacious and adequately equipped library to support CBET implementation	9(25.7%)	18(51.5%)	132(36.6%)	95(33.6%)	15(6.9%)	69(31.6%)	214(59%)	72(21%)
Average	23.42%	57.68%	32.4%	46.64%	14.3%	63.82%	43.2%	35.8%

From Table 1, 57.1%, 59.7%, 89.9% and 54% of respondents from NPs, public TVCs, private TVCs and VTCs respectively stated that the theory rooms in their institutions were sufficient to support CBET implementation while 34.3%, 27.2%, 7.8% and 30% of the respondents from the same institutions respectively were of the contrary opinion. The rest of the respondents were uncertain of the adequacy of theory rooms. From the foregoing discussion, we can deduce that theory rooms in private TVCs were sufficient relative to those in other categories of institutions. This could be attributed to the enrolment boom witnessed in NPs and public TVCs courtesy of the incentives available to students in public institutions that creates a strain on physical resources. On the other hand, private institutions are relatively under enrolled due to lack of similar incentives.

The findings show that 60%, 50.2%, 64.7%, 39% of respondents from NPs, public TVCs, private TVCs and VTCs respectively noted that workshops in their institution were sufficient and adequately equipped to support CBET implementation while 20%, 30.8%, 19.2% and 38% of the respondents from the same institutions respectively noted otherwise. It can be deduced that the workshops in NPs and TVCs were fairly sufficient and well-equipped to support CBET implementation while the workshops in VTCs were not. This finding is

consistent with records available at the TVET Authority on status of physical facilities in Institutions.

Further, 62.7%, 40.2%, 59.1%, 27% of respondents from NPs, public TVCs, private TVCs and VTCs respectively agreed that laboratories in their institutions were sufficient and adequately equipped, while 17.1%, 40.1%, 22.9% and 52% of respondents from the same institutions respectively felt that laboratories were neither sufficient nor adequately equipped. Few institutions in this case reported to have had adequate and well equipped laboratories. There is need for all institutions to develop and adequately equip laboratories for programmes on offer based on the available standards.

The findings showed that 57.1%, 49.5%, 73.8% and 38% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively stated that electronic equipment such as digital cameras, computers and projectors in their institution were sufficient to support CBET implementation while 20%, 27.3%, 14.7% and 37% of respondents from the same institutions respectively were of the contrary opinion. These results showed that a large proportion of private TVCs had adequate electronic equipment, NPs and public TVCs had fairly adequate electronic equipment while a substantial number of VTCs did not have adequate electronic equipment.

Lastly, on adequacy of infrastructure, 51.5%, 33.6%, 56.8% and 21% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively reported that their institution had a spacious and adequately equipped library to support CBET implementation while 25.7%, 46.6%, 25.7% and 59% of respondents from the same institutions respectively were of the contrary opinion. From the results we can deduce that about a half of the NPs and private TVCs had invested in spacious and adequately equipped libraries while most public TVCs and VTCs had made little investments in the same.

From the foregoing discussion, it can be concluded that most institutions across board were still grappling with readying themselves for CBET implementation based on the five parameters (statements) considered. These findings corroborate Makunja (2016) who found that inadequate teaching and learning resources were the major impediments to implementation of competence-based curriculum. Similarly, Ratuynunga (2012) posits that CBET is a resource intensive system as it needs a lot of human and material resources.

3.2. Capacity of Trainers to Implement CBET Programmes

Respondents in this study were asked questions based on the requirements of the trainer qualification framework developed and gazetted by TVETA. A score above 3 denoted agreements while a score below 3 signified respondents' disagreement with the given statement. A score of 3 denoted the respondents were uncertain on

the subject and for purposes of simplicity and ease of comparison has not been shown in Table 2.

Table 2: Capacity of Trainers

Statement	NP		Public TVC		Private TVC		VTC	
	Disagree	Agree	Disagree	Agree	Disagree	Agree	Disagree	Agree
Trainers have a qualification a level higher than what they teach	2(5.7%)	28(80%)	35(12.4%)	242(85.6%)	19(8.7%)	193(88.2%)	55(16%)	265(74%)
Trainers have pedagogical training	3(8.6%)	23(65.7%)	58(20.5%)	151(53.3%)	59(26.8%)	104(47.3%)	138(39%)	126(35%)
Trainers have attended a workshop/ seminar on CBET implementation in the last 2 years	8(22.8%)	25(71.5%)	76(26.9%)	168(59.4)	81(38.8%)	104(42.3%)	203(57%)	118(32%)
Trainers have undergone capacity building on Competency based assessment	7(20%)	26(74.3%)	86(30.4%)	159(56.2%)	82(37.3%)	105(47.8%)	217(61%)	105(29%)
Trainers are conversant with the CBET implementation policy/ framework	8(22.8%)	19(54.3%)	74(26.2%)	142(50.2%)	86(39.1%)	103(46.8%)	202(56%)	105(30%)
Average	15.98%	69.16%	23.28%	60.94%	30.14%	54.48%	45.8%	40%

From Table 2, 80%, 85.6%, 88.2% and 74% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively were of the opinion that all trainers in their institutions had qualifications a level higher than what they taught, on the contrary 5.7%, 12.4%, 8.7% and 16% of respondents from the same institutions respectively believed that trainers in their institutions had qualifications lower or equal to the levels they taught. The CBET trainer qualifications framework (TQF) requires trainers to possess qualifications that are at least a level higher than the level they teach (TVETA, 2019). This finding therefore, implies a relatively lower level of compliance in VTCs on this parameter which could impact negatively on the quality of education and training in this category of institutions (Kigwilu, P. & Githinji, J., 2015).

Additionally, 65.7%, 53.3%, 47.3% and 35% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively were of the opinion that trainers in their institutions had pedagogical training while 8.6%, 20.5%, 26.8% and 39% respondents from the same institutions respectively held a contrary opinion. These levels of compliance are low given that trainers require licensing by TVETA for them to offer training services. Pedagogy is a key requirement for effective training delivery and for licensing purposes (TVETA, 2019). The study indicated low levels of compliance on this parameter in private TVCs and VTCs relative to NPs and public TVCs. Implementation of CBET essentially depends on the trainers' awareness, knowledge, skills and the general understanding on the curriculum change (Komba, S. C., & Mwandaji, M., 2015), a key ingredient that these trainers lack. The county governments and private institution owners

should initiate mechanisms for building the capacity of trainers in the VTCs and private TVCs respectively.

This study showed that 71.5%, 59.4%, 42.3% and 33% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively were of the opinion that trainers in their institutions had attended a workshop on CBET implementation in the last two years whereas 22.8%, 26.9%, 38.8% and 57% of respondents from the same institutions respectively disagreed with the claim. We could deduce that NPs and public TVCs had invested substantial resources in capacity building of their trainers compared to the other institution categories. Little effort had been directed towards capacity building private TVCs and VTC trainers on CBET implementation which calls for the stakeholders in charge to prioritize capacity building programmes for these categories of trainers for meaningful change. Individuals are the core unit of change and without adequate skills, change may not occur (Fullan, 2015).

On competence-based assessment training, 74.3%, 56.2%, 47.8% and 29% of respondents from NPs, public TVCs, private TVCs and VTCs respectively reported that trainers had undergone capacity building in competency-based assessment whilst 20%, 30.4%, 37.3% and 61% of respondents from the same institutions respectively had a contrary opinion. The high proportion of NPs respondents agreeing that trainers had undergone this kind of training corroborates with records at TVET CDACC that shows that a substantial number of trainers from NPs had been trained on CBET assessment. Nonetheless, the observation indicated that more capacity building of TVCs and VTCs trainers on competence-based assessment was necessary and urgent.

Finally, 54.3%, 50.2%, 46.8% and 30% of the respondents from NPs, public TVCs, private TVCs and VTCs respectively stated trainers in their institutions were conversant with the CBET implementation policy/framework while 22.8%, 26.2%, 39.1% and 56% of respondents from the same institutions respectively had a contrary opinion. Awareness efforts need to be intensified in order to enable actors in the TVET space aware of existing policies that are meant to guide CBET implementation in the country.

3.3. Partnerships to Support CBET Implementation

Findings from this study showed that 55.37% and 63.57% of public and private institutions respectively had established partnership(s) to enhance CBET.

Table 3: Forms of Partnerships with Industry

Forms of Partnership	Public	Private
Industrial attachment	259(77%)	165(89%)
Dual training	75(22%)	71(39%)
CBET assessment	68(20%)	56(30%)
Internship	126(38%)	85(46%)
Mentorship	103(31%)	89(48%)
Job placements	68(20%)	65(35%)
Sponsorships	160(48%)	72(39%)
Financial aid	113(34%)	42(23%)
Workshops/seminars	107(32%)	69(37%)

Table 3 shows the various forms of partnerships established by TVET institutions which reported to have established partnerships with industry. It can be seen that 77% and 89% of public and private institutions respectively had industrial attachments as a form of partnership. Industrial attachment is a critical component in training as it serves to offer trainees exposure to the real work environment and also provides an avenue for establishing networks with potential employers. Much focus seems to have been laid only on industrial attachment as a form of partnership. Kufaine and Chiera (2013) posits CBET approach demands collaboration with industries during training so that the competences that students develop become more relevant to the industry. There is need therefore for institutions to diversify areas/forms of partnerships in order to strengthen CBET implementation.

4. Conclusions and Recommendations

4.1. Conclusions

Physical facilities in 57.7% of National Polytechnics (NPs), 55.2% of Technical and Vocational Colleges (TVCs) and 35.8% of Vocational Training Centres (VTCs) were adequate to support CBET implementation. In some TVCs and VTCs physical facilities such as workshops, laboratories, electronic equipment and libraries were inadequate. Majority of trainers in NPs (69.2%) and TVCs (60.9% public and 54.5% private) met the minimum requirements for trainers as per the CBET trainer qualification framework (TQF). Lastly, 55.37% and 63.57% public and private institutions respectively had established partnerships with industry.

Most of these partnerships were however limited to industrial attachment. It was therefore concluded that NPs and TVCs were fairly well prepared to implement CBET programmes while the VTCs were lagging in preparedness.

4.2. Recommendations

- i. The national, county governments and private colleges' owners should support training institutions operating under them to acquire state of the art training tools and equipment and also support the upgrading of general infrastructure.
- ii. Institutions should ensure that they engage only qualified and licensed trainers.
- iii. TVET institutions should develop capacity building plans and ensure that all their staff undergo CPD.
- iv. Institutions should explore more forms of partnerships with industry for successful implementation of CBET.

References

- Fullan, M. (2015). *The New Meaning of Educational Change*, Fifth Edition, Teachers College Press, <https://books.google.fr/books?id=YxGTCwAAQBAJ>.
- Harris R, Hobart B, Lundberg D. *Competency-based education and training: Between a rock and a whirlpool*. Macmillan Education AU; 1995.
- Hodge S (2007). The origins of Competency-Based Training. *Australian Journal of Adult Learning* 47:179–209.
- Kigwilu, P., & Githiji, J. (2015). Teachers factors influencing effective implementation of artisan and craft curriculum in community colleges in Kenya.
- Komba, S.C., Mwandangi M. (2015). Reflections on the Implementation of Competence Based Curriculum in Tanzanian Secondary Schools. *Journal of Education and Learning* 4/2:73-80, <http://dx.doi.org/10.5539/jel.v4n2p73>,
- Kufaine N, Chitera N (2013). Competence based education and training in technical education problems and perspectives. *International Journal of Vocational and Technical Education* 5(3):37-41
- Makunja, G. (2016) Challenges facing teachers in implementing competence-based curriculum in Tanzania: The case of community secondary schools in Morogoro Municipality. *International Journal of Education and Social Science*, 3(5): 30-37.
- Miseda, C., & Kitainge, P. K. (2021). The Effects of Instructional Design Processes on the Quality of Implementing Electrical Installation CBET System in Kenya. *Africa Journal of Technical and Vocational Education and Training*, 6(1), 35-45. Retrieved from <http://afritvet.org/index>.

php/Afritvet/article/view/121

- Mulder M, Weigel T, Collins K. The concept of competence in the development of vocational education and training in selected EU member states: a critical analysis. *Journal of Vocational Education & Training*. 2007 Mar 1;59(1):67-88.
- Republic of Kenya (2012). Task Force on the Re-Alignment of the Education Sector to the Constitution of Kenya 2010
- Rutayuga A.B. (2012). The emerging Tanzania concept of competence: Condition for successful implementation and future development, PhD Dissertation, Institute of Education: University of London.
- Solomon, G. H. (2016). Towards competence-based technical-vocational education and training in Ethiopia. Wageningen University. <https://doi.org/10.18174/388252>
- Tambwe, M. A. (2019). Challenges facing the implementation of a competency-based education and training (CBET) system in Tanzanian technical institutions. *Education in Tanzania in the era of globalization: Challenges and opportunities*, 242-255.
- TVETA (2019) TVET Standard- CBET Trainers Qualification Framework. Nairobi: Kenya
- Urunana R. (2018). Implementing CBC: Successes and Challenges. Kigali: Rwanda Issue 006 July, 2018.

Trainee's Challenges in Accessing Online Training on Technical Courses in Selected Institutions in Nandi County, Kenya

Kipkoech, F., Kerre, B. & Kanyeki G.

*University of Eldoret, Department of Technology Education, P. O. Box 1125-30100, Eldoret, Kenya
email: fkoech@gmail.com*

Abstract

Due to the ever-changing technological environment, trainees need Information and Communication Technology (ICT) equipment and skills to fit in a knowledge-based society successfully. Regardless of the availability of technology in the lecture rooms, the knowledge and skills on how trainees use ICT infrastructure and related technologies are essential. This study sought to assess trainees' Challenges in accessing online learning in selected technical institutions in Nandi County, Kenya. In addition to the slow implementation of eLearning within the institutions, the challenge of offering technical courses that require hands-on skills on e-platforms is a challenge to trainees who were already struggling to access the e-platforms due to infrastructural challenges. A purposive sampling was used to select the institution, and a descriptive research design was used in this study. A sample size of 475 student participants in six selected technical training institutes in Nandi was used in this study. Data was collected using structured open and closed-ended questionnaires. The findings indicated that 47.14% of the respondents had basic ICT-related troubleshooting skills. The trainees noted that online sessions did not provide opportunities for gaining practical skills for courses such as mechanical engineering, automotive, electrical, and building. Trainees from these departments reported challenges in skill acquisition. Despite the presence of YouTube tutorials, they needed their technicians' guidance to help them acquire the skills. The study concluded that eLearning was not effective for trainees undertaking technical courses. The study recommended that implementing online learning on technical courses require hybrid programs to allow practical sessions for mastery of the hands-on skills successfully.

Keywords: Online learning, trainees challenges, technological expertise

1. Introduction

1.1 Background information

According to UNESCO (2020), more than 1.755 billion students in approximately 188 countries worldwide were affected by the closure of learning institutions due to the preventive measures taken by countries against the spread of COVID-19. Health experts noted that self-isolation, social distancing, and prohibition of

persons from assembling in large numbers were confirmed as the main measures to combat the spread of COVID-19. The use of technology was therefore considered the most appropriate alternative to keep educational systems functional in many parts of the world (Mbunge *et al.*, 2020).

Unlike the developed world that had embraced e-learning, this is not the case in Africa. The adoption of eLearning has been slow in Africa since a few scholars are familiar with online teaching (Houlden & Veletsianos, 2020). Further, the absence of a reliable internet connection, technical incompetence, and negative attitudes contributed to the limited adoption of eLearning (Kasse & Balunywa, 2013). Inadequate training and heavy workloads as the key reasons for reading materials being uploaded to e-learning platforms rather than having actual audio-visual online teaching (Tarus, Gichoya & Muumbo, 2015). Various studies have advocated for improved funding, policy, and infrastructure as the key pillars for e-learning success (Kashorda & Waema, 2014; Bagarukayo & Kalema, 2015). Most technical training institutions in Kenya have blended online learning with face-to-face learning and have lagged in its full implementation since they are experiencing particular challenges in using the platform.

Online learning adoption in Kenya brought about a paradigm shift in the education context. Different cadres of education sectors adopted different platforms to offer e-learning. According to UNESCO (2020a), the closure of universities, technical institutes, and schools had several adverse consequences on students, such as interrupted learning, which results in students and youth being deprived of opportunities for growth and development. Therefore, online digital learning systems address this problem with easy access and offer fast internet connections. E-learning systems can assist learning providers in managing, planning, delivering, and tracking the learning process (TVET, (2020). Furthermore, it facilitates student learning during technical institutions and school closure periods. However, the provision and usage of online learning materials in an e-learning system is becoming the main challenge for many learners taking technical courses. An e-learning system is an essential source of information due to its ubiquity (availability anywhere and anytime), low cost, ease of use, and interactive character. E-learning systems such as Blackboard, moodle, Zoom, and Google meet have several fantastic features that would be valuable for e-learning. However, the content of delivery in some cases was not fit for e-delivery. Therefore, this study sought to assess the challenges students encountered when attending e-learning lessons of technical courses in selected technical institutes in Nandi County.

1.2. Problem statement

The education sector in Kenya adopted e-learning as a mitigation measure during the pandemic period in 2020. E-learning offers efficient and effective course content delivery and is used to offer hybrid lessons, post-pandemic. Technical

and Vocational Education and Training (TVET) allowed the implementation of e-learning in technical institutes. Despite the slow implementation of e-learning within the institutions, the challenge of offering courses that require hands-on skills on e-platforms was a challenge to students who were already struggling to access the e-platforms due to infrastructural challenges. This study sought to assess the challenges students encountered when attending e-learning lessons of technical courses in selected technical institutes in Nandi County.

1.3. Objectives of the study

The main objective of this study was to assess the challenges encountered by trainees while attending online technical lessons in selected technical training institutes in Nandi County. The specific objectives of the study were to:

- i. Determine trainee's competencies in assessing eLearning;
- ii. Determine accessibility of ICT resources by trainees;
- iii. Identify challenges faced by trainees during eLearning.

2. Methodology

The study adopted a descriptive research design. The study targeted trainers, trainees, technicians, and principals of the respective selected institution. The study target population included; Aldai, Emsos, Kaiboi, and Ol'lessos Technical Training Institutes. The data collection instruments used were questionnaires for trainers, trainees, and technicians and interviews for Principals. The study was carried out on students undertaking technical courses who participated in online learning and trainers involved in online teaching. A sample size of n=475 students were used in the study. The data was managed, entered, cleaned and analyzed using the Social Statistical package (SPSS) version 23.

3. Results and Discussions:

3.1. Response rate

The study was conducted in five Technical and Vocational Colleges in Nandi County; Ol'lessos, Kaiboi, Aldai, Tinderet, and Emsos. The overall response rate for this study was 99% (n=473) for students from all institutions. The study findings indicated that the response for trainees' gender was male 44.4% (n=210) and females 55.6% (n=263). The age of the respondents is shown in Figure 1.

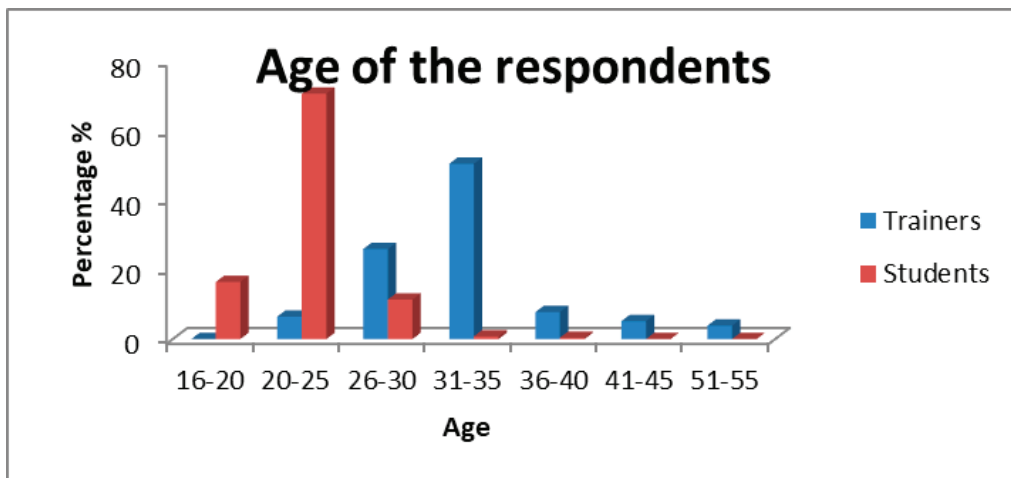


Figure 1: Age groups of trainee respondents

The study showed the age of trainers' respondents ranged to be between 20-25 years 6.5% (n=5), 26-30 years 26% (n=20), 31-35 years 50.6% (n=39), 36-40 years 7.8% (n=6), 41-45 years 5.2% (n=4), and 51-55 years 3.9% (n=3). The trainees' respondents' age during the study ranged between 16-20 years 16.5% (n=78), 21-25 years 70.8% (n=335), 26-30 years 11.4% (n=54), 31-35 years 0.8% (n=4) and 36-40 years 0.4% (n=0.4%).

3.2. Education level

According to this study, 10.4 % (n=49) of student respondents were pursuing higher diploma, 70% (n=33) diploma, 18.4% (n=87) certificate, and 0.8% (n=4) artisan courses. 73.2% (n=346) of the student respondents reported taking technical courses, while 26.6% (n=126) were taking business courses, as shown in Figure 2

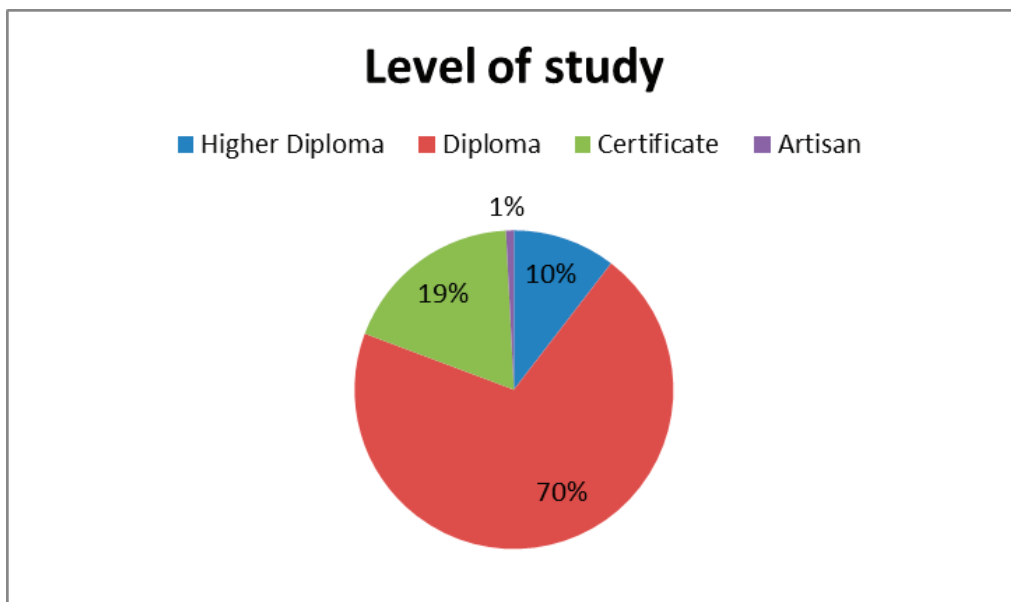


Figure 2: Figure showing student respondents' level of study

3.3. Trainees' competences in ICT

The trainees' competency in ICT was assessed to determine their ability to attend and effectively participate in online learning. The study sought to determine the students' availability of online learning training and ICT resources such as smartphones and personal computers. The study found out student respondents' ownership of ICT resources and accessibility to troubleshooting skills. The interview with the principals revealed that technical institutions had minimal computer laboratories, not enough for the student population.

According to the interview sessions, the study found that the institution mainly depended on the library and ICT laboratories to offer students opportunities to access the e-learning platforms and use the computers for personal use. It was also noted that each student was allowed to use the computers for a maximum of 30 minutes to give other students an opportunity to use the same computer. This time limit was not adequate for students to appropriate skills on the use of computers, especially those who did not have personal computers.

3.4. Students Access to ICT-related resources

According to the study, 91.3% (n=432) of the respondents had smartphones, where 52% (n=227), were from Ol'lessos, 11% (n=48) were from Aldai, 2% (n=9) were from Emsos, 3.4% (n=15) Tinderet, and 30.7% (n=133) Kaiboi technical training institutes respectively. Student respondents reported that 38.4% (n=182) had training in online learning. According to the study finding; 52% (n=153) of the

respondents were from Ol'lessos, 13% (n=38) Aldai, 1.3% (n=4) Emsos, 3.4% (n=10) Tinderet and 29.5% (n=86) Kaiboi technical training institutes respectively.

Respondents revealed that they encountered technical difficulties while using ICT resources. The frequency of technical occurrences was reported as frequently follows 27.5 % (n=130), very frequently 15.2 % (n=72), not at all 14.2%(n=67), rarely 36.2% (n=171), and very rarely 7% (n=33). Only 47.14% had basic ICT-related troubleshooting skills, as shown in Figure 3. Despite owning a smartphone, it was evident that students only used the phones for communications and social media platforms and minimally used the phone to access educational content.

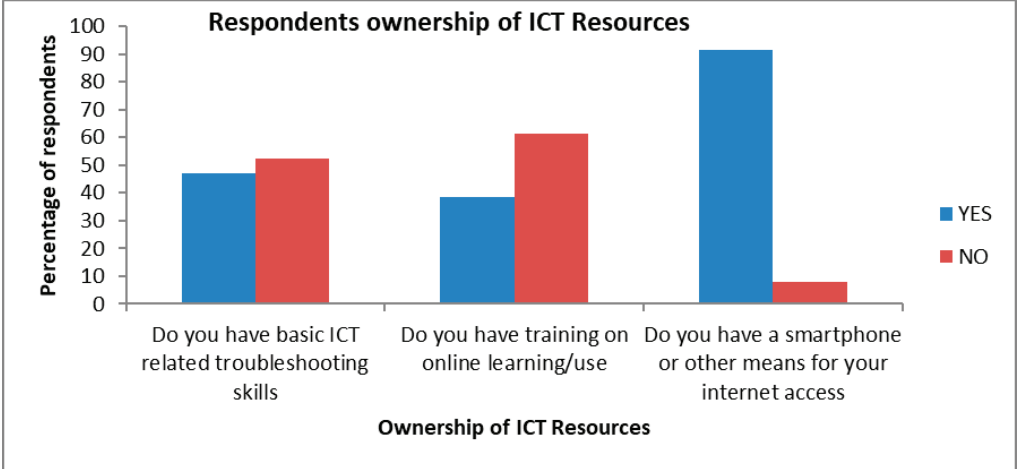


Figure 3: Respondents' ownership of ICT Resources

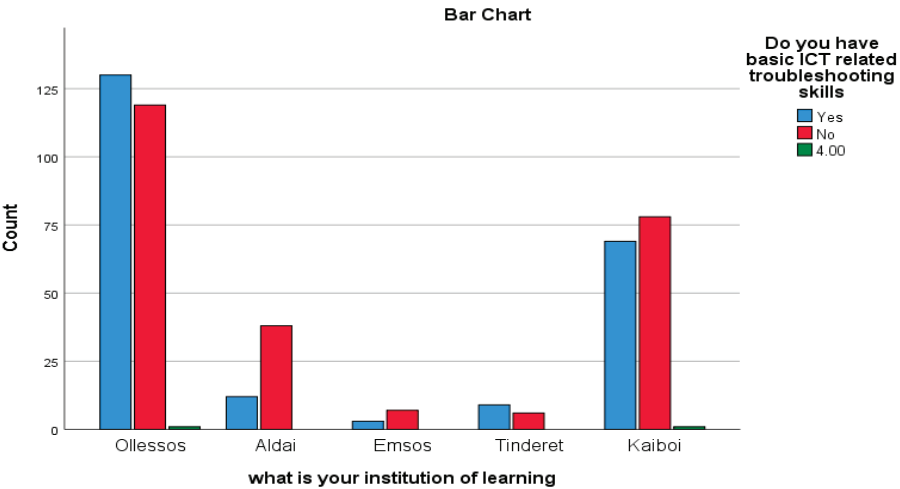


Figure 4: Basic ICT troubleshooting skills among students

According to Figure 4, 58% (n=130) of the student respondents had ICT-related troubleshooting skills; 5% (n=12) Ollessos, 1%(n=3) Aldai, 4%(n=9) Tinderet,

and 31%(n=69) from Kaiboi technical training institutes respectively. Based on the study finding, less than half of the student population has the knowledge and skills to troubleshoot or solve ICT-related challenges. For example, some students reported issues such as password reset to be challenging and often sought third-party assistance to reset their institutional or Gmail passwords. Other students reported challenges in sending and receiving emails and usually seek cyber cafe assistance when applying for internships or sending their assignments to their lecturers for marking.

3.5. ICT usage among students

Table 1 shows internet usage among trainees in sampled institutions. According to this study, 21.4 % (n=101) of the respondents downloaded educational content from the internet frequently, and 14.8 % (n=70) downloaded it more frequently. Based on these findings, 36.2% (n=171) had the knowledge and expertise on internet usage to access learning materials, while 25.4 % (n=120) not at all, 27.5 % (n=130) rarely and 10.8% (n=51) veryrare, of the respondents, respectively reported not being able to download the educational material from the internet.

Table 1: *Internet usage among trainees in institutions*

	Frequently	More frequently	Not at all	Rarely	Very rarely
How often do you download educational content from the internet?	21.4% (n=101)	14.8% (n=70)	25.4% (n=120)	27.5% (n=130)	10.8% (n=51)
How often do you use messaging and discussion tools	54.5% (n=258)	16.7% (n=79)	8.9% (n=42)	16.5% (n=78)	3.4% (n=16)
How frequently do you use your social communication tools online? (e.g., Facebook and WhatsApp)	63.6% (n=301)	19.9% (n=94)	5.3% (n=25)	9.5% (n=45)	1.7% (n=8)
How frequently do you encounter technical difficulties using ICT resources	27.5% (n=130)	15.2% (n=72)	14.2% (n=67)	36.2% (n=171)	7% (n=33)

The respondents' data per institution are shown in Figure 5. According to the figure, Ol'lessos technical training institute had the highest number of student respondents, n=55 and n=36, followed by Kaiboi technical training institute, with n=33 and n=26 students downloading educational content frequently and more frequently, respectively. Other institutions, such as Aldai, had n=7 and n=5, Emsos had n=3 and n=0, and Tinderet, had n=3 and n=3, had their students download educational content frequently. The data shows that students from Ol'lessos technical had the competence to access the educational content from the internet, whereas Aldai, Emsos, and Tinderet had the majority of their students reporting their inability to download educational content online.

The results showed that approximately 70% of the respondents had used messaging and discussion tools; 54.5% (n=258) used frequently, 16.7% (n=79) used more frequently, 8.9% (n=42) did not use them at all, 16.5% (n=78%) rarely, and 3.4% (n=16) very rarely (Table, 1). A total of 71% (n=336) of respondents used messaging and discussion tools frequently and more frequently were from Ollessos technical training institute, 6% (n=29) were from Aldai technical training institutes, 1.2%(n=6) were from Emsos technical training institutes, 2.95%(n=14) were from Tinderet technical training institutes, and 23%(n=112) were from Kaiboi technical training institutes respectively.

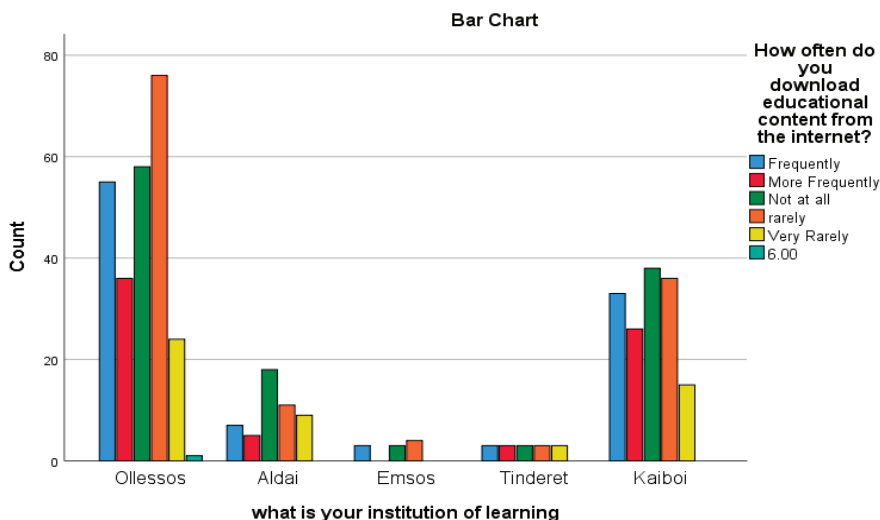


Figure 5: *Students' ability to download educational content from the internet.*

The majority, 83.5% (n=395) of the respondents, used online social communication tools such as Facebook and WhatsApp (Figure 6). Of the respondents, 43.5% (n=205) were from Ollessos technical training institutes, 9 % (n=43) were from Aldai technical training institute, 1.2% (n=6) were from Emsos technical training institutes, 2.9% (n=14) were from Tinderet technical training institutes, and 26.85% (n=127) were from Kaiboi technical training institute.

The study attributed the student competence in using tools such as WhatsApp groups, emails, and Facebook groups to share educational content such as lecture notes, assignments, and information from the administration, such as milestone requirements of units such as business plans, proposals, and project reports. The students reported that these messaging platforms were important since they received real-time information and allowed them to work towards meeting the deadlines with ease.

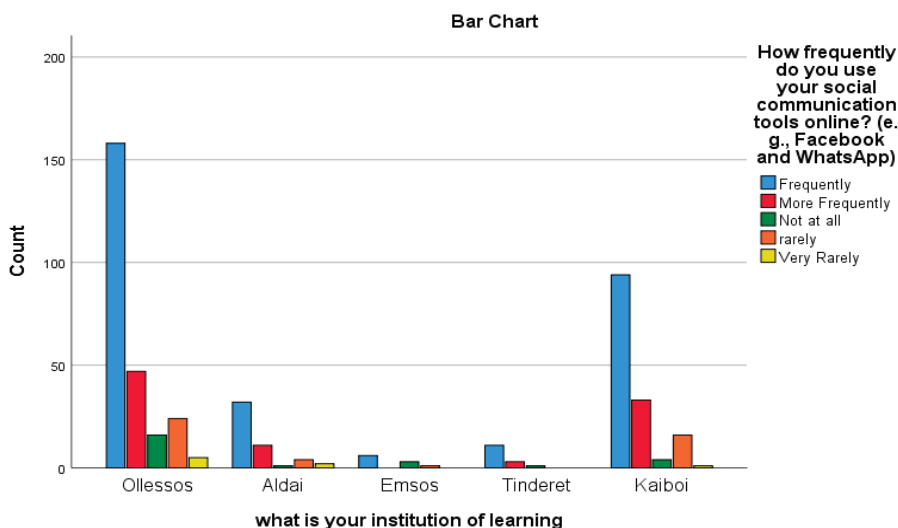


Figure 6: *Frequency on use of online social communication tools*

3.6. Use of internet for online learning

Table 1 shows the respondents' ability to utilize the internet for educational content. The study noted that 32.1% (n=152) strongly agreed, and 46.7% (n=221) agreed that the respondents had experience searching and accessing information from the internet. A large proportion, 15.2% (n=72) strongly agreed, and 35.5% (n=168) agreed to always posting questions on online blogs/portals. Approximately 60% of the respondents, 32.8% (n=155) strongly agreed, and 35.5% (n=168) agreed to always download and upload notes and assignments from the learning portal. 15.9% (n=75) strongly agreed, and 35.1% (n=166) agreed to have participated in online discussions (for example, using a chat box and blogs) to search for educational content relating to their respective courses. Approximately 79% of the respondents use their social networks daily (Table 1). Jung (2017) observed that learner motivation (intrinsic and extrinsic) is crucial to the learners' success in online learning environments.

3.7. Challenges faced by students during online learning

The study sought to understand the challenges faced by students during online learning in selected technical training institutions in Nandi County. The students

reported that some of them did not have basic ICT skills, and thus it was hard for them to access the lessons. Technological expertise is important to ensure success in e-learning. Inadequate literacy on computers hindered many learners from being able to access learning materials and join online classes on time.

Technical training institutions offer courses requiring students to use their handwork; offering online sessions barred the students from gaining the practical skills of courses such as mechanical engineering, automotive, electrical, and building. Students from these departments reported challenges in understanding the concepts independently, despite the presence of YouTube tutorials; they needed their technicians' guidance to help them understand the skill. For example, when conducting practicals for carpentry, masonry, plumbing, survey work, setting out, and panel beating, students require the practical demonstrations of the tutor for them to understand and also successfully implement in their future careers.

The lack of personal computers and adequate computers within the institutions' computer laboratories to provide easy access to e-learning platforms and discussion posts hindered students from participating wholly in online learning. The study revealed that students used their smartphones to access online lectures, emails, and lecture notes. However, phones do not offer good student visibility, with limited features compared to using a computer. Students noted that when using the phone to join an online lecture via zoom or Skype, there are many disruptions such as phone ringing, message notifications, and email alerts, which increases their anxiety levels of accessing the information in the said notification, thus reducing their concentration in class.

Another challenge reported by student respondents indicated the inability to procure adequate bundles or access stable internet bandwidth. The students reported weak internet speed within their institutions, forcing them to buy their data bundles to access the materials and join lectures. The challenges identified in this study were in agreement with those identified by other researchers such as Kara, et al., 2019 and Faize & Nawaz, 2020.

4. Conclusions and Recommendations

4.1. Conclusion

The findings from this study showed that most trainees did not have related ICT skills and had not undergone any training to equip them with relevant skills for online learning. The study also showed that most common forms of communication used by learners included online social tools such as messaging, WhatsApp, discussion, and emails. If well utilised, online communication can greatly contribute to the success of online teaching and learning in technical institutions. Further, the research showed that poor network coverage by internet service providers led to low access to assignments by trainees on various websites. The study

also indicated that most trainees did not have appropriate troubleshooting skills, commonly used in e-learning platforms. Trainees also had difficulty in uploading and downloading notes from the internet. Only a small percentage of learners could comfortably access information from the internet.

4.2. Recommendations

For the success of e-learning, there should be comprehensive training of trainers and trainees on e-learning skills. Training of trainees and trainers shall ensure that both trainers and trainees are familiar with the e-learning platform. Additionally, online training of technical courses should be implemented through hybrid programs to allow for practical sessions for successful mastery of hands-on skills.

References

- Bagarukayo, E., & Kalema, B., (2015). Evaluation of e-learning usage in South African universities: A critical review. *The International Journal of Education and Development using Information and Communication Technology*, 11(2), 168-183.
- Faize, F. A., & Nawaz, M. (2020). Evaluation and Improvement of students' satisfaction in online learning during COVID-19. *Open Praxis*, 12(4), 495-507.
- Houlden, S., & Veletsianos, G. (2020). Coronavirus pushes universities to switch to online classes – but are they ready? Retrieved 12th July 2020. The Conversation. <https://theconversation.com/coronaviruspushes-universities-to-switch-to-online-classes-but-are-they-ready-1327284>.
- Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education*, 84(1).
- Kara, M., Erdogdu, F., Kokoç, M., & Cagiltay, K. (2019). Challenges faced by adult learners in online distance education: A literature review. *Open Praxis*, 11(1), 5-22.
- Kashorda, M., & Waema, T. (2014). E-Readiness survey of Kenyan Universities (2013) report. Nairobi: Kenya Education Network.
- Kasse, J. P. & Balunywa, W. (2013). An assessment of e-learning utilization by a section of Ugandan universities: Challenges, success factors and way forward. In: Paper presented at the International Conference on ICT for Africa 2013, Harare, Zimbabwe.
- Krishnakumar, B. & Rana. S. (2020). COVID 19 in INDIA: Strategies to combat the threat of life and livelihood, *Journal of Microbiology, Immunology and Infection*, 3.

- Mbunge, E., Fashoto, S., Akinnuwesi, B., Gurajena, C., & Metfula, A. (2020). Challenges of Social distancing and self-isolation during COVID-19 pandemic in Africa: *A Critical Review*. Available at SSRN 3740202.
- Tamrat, W. & Teferra, D. (2020) COVID-19 poses a serious threat to higher Education. Retrieved on 9th October 2021 from University world news https://www.universityworldnews.com/page.php?page=UW_Main.
- Tarus, J., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A of Kenyan public universities. *The International Review of Research in Open and Distributed Learning*, 16(1)
- TVET, (2020), Technical and Vocational Education and Training Authority Newsletters. <https://www.tveta.go.ke/wp-content/uploads/2020/04/TVETA-NEWSLETTER-APRIL-2020-min.pdf>. Accessed on 9th Oct, 2021.
- UNESCO (2020a). COVID-19 Webinar: A new world for teachers, Education's frontline workers. Marrënga Retrieved 11th July 2020 from <https://en.unesco.org/news/covid-19-webinar-new-worldteachers-education-frontline-workers>. 2
- UNESCO (2020b). COVID-19 Educational Disruption and Response. <https://en.unesco.org/covid19/educationresponse/225.5>.

Determinants of Implementation of Quality Audit Recommendations in Kenyan Technical and Vocational Colleges

**Langat, K., Osawa, W. O., Ambuli M. A., Masai, L. K. Wato B. U & Muli, J. M. Technical and Vocational Education and Training Authority, P. O. Box 35625 – 00100, Nairobi*

email of corresponding author: langat.langat@gmail.com

Abstract

Technical and Vocational Colleges (TVCs) are established to provide quality and relevant training to trainees in various skill areas of the labour market. Section 38(b) of the Technical and Vocational Education and Training (TVET) Act 2013 puts the mandate of establishing and managing a credible quality assurance system to individual training institutions. The TVET Authority periodically undertakes inspection of TVET institutions to establish their level of compliance with standards and guidelines. The periodic monitoring often yields recommendations that, if implemented, can greatly improve the institutions' quality management systems. However, there are no reliable records at the Authority that show the extent of implementation of quality audit recommendations. This study investigated the factors that affect implementation of quality audit recommendations in TVCs in Kenya. The specific objectives were to determine; the effect of audit follow-up, institutional leadership, staff competencies and financial resources on execution of quality audit recommendations. Both qualitative and quantitative research designs were used in this study. The target population was all accredited TVCs that had been quality audited by TVETA in the previous four financial years (2018/2019 to 2021/2022). Stratified random sampling was employed to identify TVCs in 41 counties that were considered for the study. A sample size of 93 institutions that represented 22.9% of the 406 TVCs quality audited in the reference period was considered. Data was collected using a questionnaire, edited, coded and checked for quality, accuracy and completeness. The Statistical Package for Social Scientists (SPSS) software was used to analyse the data. Binary logistic regression analysis was used to determine the effect of predictor variables (audit follow-up, institutional leadership, staff competences and financial resources) on the response variable (implementation of audit findings). Results from this study showed that enhanced follow-ups, provision of adequate financial resources, responsive/active institutional leadership and improved staff competencies improves the probability of implementing quality audit recommendations by 2.644, 1.822, 1.814 and 1.213, respectively. The study recommended frequent follow-ups by institutions' top management and TVETA to enhance execution of quality audit recommendations.

Keywords: Audit recommendations, Leadership, competences, follow-up, monitoring.

1. Introduction

1.1. Background information

The fourth Sustainable Development Goal (SDG) identifies Quality education and training as a key driver for progress of any nation. Continual improvement of quality is one of the main objectives of the TVET system. Due to the vital role played by Quality Assurance in ensuring the commonality and consistency of knowledge and skills acquired by trainees and graduates in respective courses, TVETA established the department of compliance and enforcement to undertake periodic audits of the institutions. The rapid increase in enrolment in TVET institutions due to increased investment in the sub-sector and complaints from the labour market on mismatch of skills have intensified the demand for quality assurance mechanisms and agencies. Good frameworks for the quality assurance are crucial for building trust in graduate's qualifications as well as protecting academic standards and integrity. The quality assurance frameworks also provide underlying pillars for mutual regional and international recognition of qualifications by different countries (Global Education Monitoring Report 2021).

Before the enactment of the TVET Act, 2013, the regulation of the TVET subsector in Kenya was largely fragmented. The TVET Act, 2013 established a framework for regulating and harmonizing training in the country. Section 31(1) of the Act empowered TVET Authority to develop and implement training standards for continual maintenance and/or improvement of quality, access and relevance in all aspects of training within the Kenyan TVET subsector. All institutions are expected to establish internal quality assurance systems to continually improve training standards and ensure quality and relevance of training programmes (GoK, 2013). The Act also mandates TVET Authority to undertake regular inspection of all TVET institutions to evaluate the quality of training offered by each institution. It is on this background that the Authority conducts biennial audits in TVET institutions so as to guarantee all stakeholders that quality training is offered by the institutions. The Authority's institutional audit is based on seven-point criteria that include: Management and governance; Institutional leadership; Availability of training resources; Qualifications and adequacy of human resources; Delivery of Training; Evaluation of training programmes; Support provided to trainees, and Research, innovation and incorporation of stakeholders (TVETA, 2018).

1.2. Quality Audit in Technical and Vocational Colleges

The past few decades have witnessed increased interest in quality assurance in many education and training institutions. Despite debates on quality education and training throughout the world, the concept of quality in its application to higher

education has yielded inconclusive results (Asif, 2015). To provide assurance to stakeholders that TVET institutions are producing skilled graduates with relevant competences, it is necessary to undertake regular audit inspections. The audit findings and recommendations provide crucial information for good governance that can help institutions to mitigate identified weaknesses and deficiencies promptly and appropriately (IIA, 2012). According to IIA (2012), the mandate of an auditor is to motivate institutional administrators and trainers to embrace change through provision of new knowledge, comprehensive analysis, and well-founded recommendations for improvement. The recommendations stated in audit reports give clear guidelines on ways of improving achievement by addressing or mitigating identified risks to achieve intended results. The total benefit of an audit inspection can be achieved through full execution of the audit recommendations by the institutional management in collaboration with relevant stakeholders and/or partners (Abebe, 2018).

Various studies have established different frameworks in an attempt to explore the determinants of implementation of quality audit recommendations. Wadesango *et al.* (2017) identify financial constraints, staffing issues, complex issues, and non-feasible recommendations made by auditors as factors influencing the implementation of audit findings. A study by Abebe, (2018) identified inadequacy of competence, lack of top management support, monitoring, and follow-up as critical determinants of implementation of audit findings. The study borrowed from the existing models and examined the effects of the nature of quality audit recommendations, audit follow-up, management commitment, staff, and auditor competencies on implementing audit recommendations in The Technical and Vocational Colleges in Kenya.

1.3. Quality Audit

According to TVETA Annual Comprehensive Quality Audit Reports, TVETA conducts regular quality audits in registered TVET Institutions using a standard tool that cover seven key areas of Leadership, Governance and Management; Physical Resources; Human Resources; Training delivery; Program evaluation; Trainee support; and Innovation, research and cooperation. The reports highlight the recommendations made for implementation. The Audit findings and recommendations represent critical input to good governance that can lead Organisations to remedy identified weaknesses and deficiencies promptly and appropriately (IIA, 2012) hence the implementation of the audit recommendations is the last point of the audit process that realizes the attainment of the audit objectives. The Institute of Internal Auditors (2012) opines that the objective of audit is creating incentives for change by providing new knowledge, comprehensive analysis and well-founded recommendations for improvement. Recommendations in audit reports highlight actions that are expected to improve performance when implemented and generally address risks to the successful delivery of outcomes.

Therefore, the appropriate and timely implementation of recommendations that have been agreed by organization management is an important part of realizing the full benefit of an audit (Abebe, 2018).

Wadesango, *et al.*, (2017) noted that audit recommendations are not implemented as a result of financial constraints, staffing issues, complex issues, non-feasible recommendations made by auditors as well as management's ignorance as to how their Organisations can be affected as a result of non-implementation of audit recommendations. A study by Abebe (2018) on challenges of implementation of audit recommendations finds inadequacy of competency, lack of top management support, monitoring and follow-up as the main challenging factors for implementation of audit recommendations in Oromia Regional state five basic service providing sectors Regional Bureaus. The study recommends that the auditee should capacitate their employees to make them competent in order to implement audit recommendations and top management should support, monitor and follow up the implementation of the audit recommendations. In addition, the house of people's representatives and the regional Auditor General should perform effective follow up on the implementation of the audit recommendations.

Tesega (2021) studied determinants of successful implementation of audit report recommendations, the case of the office of the Federal Auditor General in the Northern Branch. It was revealed that conflict of interest, lack of follow up, employee instability and management resistance were significant factors that affected successful implementation of audit recommendations. Management and employee negligence and remoteness had negative and insignificant effect on the implementation of the audit in Northern Branch. The study recommended strengthening of follow up mechanisms for previous audits, creation of awareness on legal punishment related to conflict of interest and designing proper information exchange systems during employee turnover to improve implementation of audit recommendations. Regulatory authorities should also exercise legal measures for management negligence to improve successful implementation of audit recommendations.

Gobosho (2019) investigated factors affecting the implementation of Auditor General's recommendations, a case of Oromia Regional state and finds that the nature of audit findings, massive corruption, lack of powers to take actions against malpractices and deviations, political pressures and lack of top management cooperation are the factors affecting implementation of Auditor General's recommendations in Oromia Regional state. The study explains that audit recommendations should be action oriented, convincing, well supported and effective.

1.4. Conceptual Framework

Studies on the determinants of implementation of quality recommendations have generated several frameworks. This study has adopted a variable framework where the independent variables were audit follow-up, institutional leadership, staff competencies and financial resources while the dependent variable is implementation of quality audit findings. This is illustrated in Figure 1;

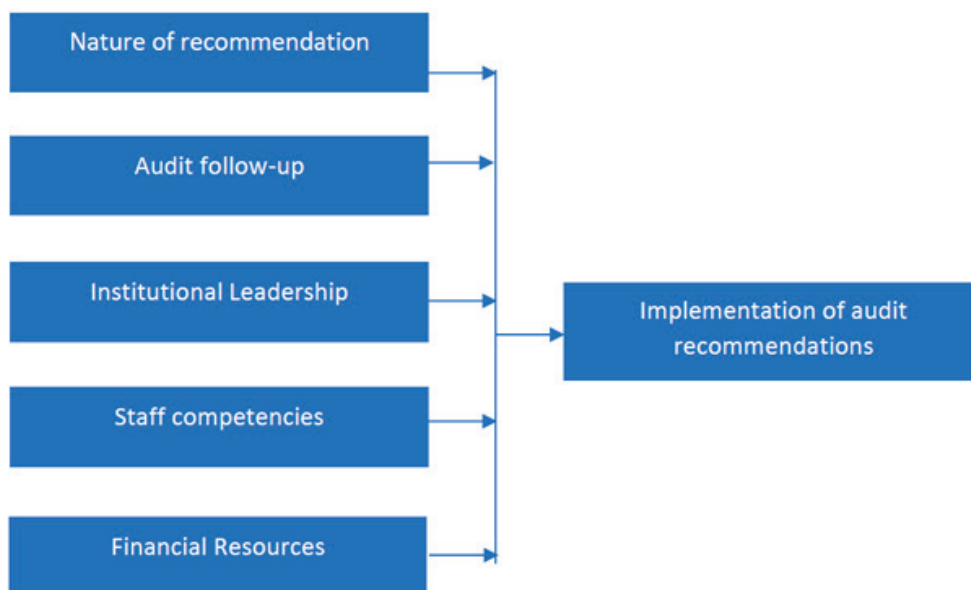


Figure 1: Conceptual Framework

1.5. Problem Statement

The TVET Authority has been conducting periodic Quality Audit (QA) inspections in accredited TVCs since 2016 to ensure that all institutions maintain high standards of training in compliance with established standards. The QA reports are sent to the respective institutions to make improvements on the identified weak areas. Comprehensive QA reports are also shared with the Cabinet Secretary (CS), Ministry of Education. Due to financial constraints, it has not been possible for the Authority to monitor the implementation of the recommendations as made in the QA reports. In a number of cases, subsequent quality audits have shown that some institutions have not been implementing the recommendations that had been recommended in previous quality audit inspections, implying that the weaknesses identified earlier were still persistent. Therefore, recommendations were repeated showing that little or no action had been taken. Whereas some institutions have made significant progress in improving the standards of training through recruitment of qualified trainers and provision of appropriate training facilities, others have placed very little investment to improve the training standards. Concerns have therefore been raised on the implementation

of QA recommendations in TVCs despite the enormous resources used for the audits. This study was to investigate the determinants of implementation of QA recommendations in TVCs in Kenya.

1.6. Research Objectives

The general objective of the study was to investigate the determinants of implementation of quality audit recommendations in Kenyan TVCs. The specific objectives of the study were to:

- i. Determine the effect of audit follow-up on the implementation of quality audit recommendations in Kenyan TVCs;
- ii. Determine the effect of institutional leadership on implementation of quality audit recommendations in TVCs in Kenya;
- iii. Determine the effect of staff competencies on implementation of quality audit recommendations in TVCs in Kenya;
- iv. Determine the effect of financial resources on implementation of quality audit recommendations.

2. Research methodology

This study used qualitative and quantitative research designs. Primary data was obtained from TVCs through questionnaires. The target population was 406 TVCs which had been audited for quality within the last four financial years (2018/2019 to 2021/2022). Stratified random sampling was employed to obtain a sample size of 93 (22.9%) TVCs. Institutions were classified by type and county to give every member equal opportunity to be sampled.

Questionnaires were the main data collection instruments. The questionnaire consisted of both structured and open-ended questions and was administered through Kobo collect. Before the instruments were administered, they were pre-tested on a sample of respondents not included in the study to ensure their reliability. This enhanced the usability and clarity of items. The instruments were then reviewed to ensure the alignment of data collected to the objectives of the study. This enhanced the validity of the instruments and ensured that all errors were eliminated. A team of officers visited the sampled institutions to collect the data. The questionnaire was scripted using KoBo collect data collection software. The scripted questionnaire was deployed for data collection.

Data collected was edited, coded and checked for quality, accuracy and completeness. Data was analyzed using the Statistical Package for Social Scientists (SPSS) tool which provided descriptive outputs. Binary logistic regression model was used to determine how the predictor variables (Audit follow-up, Institutional Leadership, staff competences, and Financial Resources) could explain the dependent variable (Implementation of audit findings).

3. Results And discussions

Out of the 406 TVCs that had been audited by TVETA within the four financial years (2018/2019 to 2021/2022) in 41 counties, 93 TVCs (47 public, 46 private) which represented 22.9% were sampled through stratified random sampling for this study. The number of institutions that responded to the questionnaires were 82 (42 public, 40 private). This represented a response rate of 88.2%.

3.1. Effect of audit follow-up on the implementation of quality audit recommendations

Most respondents in public TVCs (57%) agreed that lack of top management follow-up affected implementation of audit recommendations, 8% were undecided while 35% disagreed. Whereas in private TVCs 51 % agreed, 11% undecided and 38% disagreed. This showed that follow-up played an important role in the implementation of the audit recommendations. Figure 2 shows the effect of audit follow-up on the implementation of quality audit recommendations.

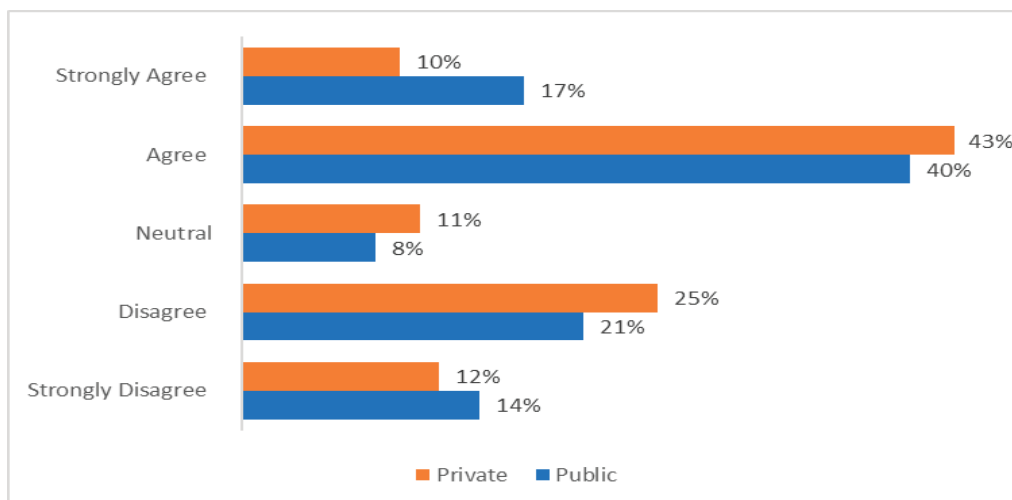


Figure 2: Effect of audit follow-up on execution of quality audit recommendations in TVCs

3.2. Effect of institutional leadership on execution of quality audit recommendations in TVCs

Most trainers, 74% and 78% from public and private TVCs respectively noted that lack of support and commitment from institutional leadership affected implementation of quality audit recommendations while 11% from both public and private TVCs were of contrary opinion. In addition, the majority of the respondents from both public and private TVCs agreed with the statement that employee's motivation affects implementation of quality audit recommendations. It was also noted that 68% and 67% of the respondents from public and private TVCs respectively stated that active Internal Quality Assurance (IQA) units support

implementation of quality audit recommendations. From the findings it is clear that institutional leadership affects the implementation of audit recommendations. These findings support Abebe (2018) which found that lack of top management support was the main challenging factor affecting implementation of audit recommendations. The findings further support Tesega (2021) which revealed that management negligence could lead to a negative effect on execution of audit recommendations. Table 1 shows the effects of institutional leadership on implementation of audit recommendations in TVCs.

Table 1: *Effect of institutional leadership on implementation of audit recommendations in TVCs*

Statements	Type	Strongly Disagree	Dis-agree	Neutral	Agree	Strongly Agree
Lack of commitment and support from institutional management affects implementation of quality audit recommendations	Public	0%	11%	15%	50%	24%
	Private	2%	9%	11%	53%	25%
Employees motivation affects implementation of quality audit recommendations	Public	4%	11%	27%	40%	18%
	Private	5%	20%	2%	52%	20%
Active IQA Unit supports implementation of quality audit recommendations	Public	7%	15%	10%	34%	34%
	Private	7%	12%	14%	38%	29%

3.3. Effect of staff competencies on implementation of quality audit recommendations in TVCs

The results revealed that a large proportion of respondents, 95% and 86% in public and private TVCs respectively felt that staff qualification affects implementation of quality audit recommendations. Similarly, 88 % and 87 % in public and private TVCs respectively agreed that staff experience affects implementation of quality audit recommendations. These findings corroborate Langat et al (2021) who concluded that trainer qualifications and experience influence their effectiveness. The findings further showed that, in both public and private TVCs, 34% of

the trainers concurred that high turnover of knowledgeable employees affected implementation of audit recommendations while 53% and 49% respectively were of the contrary opinion. Based on these findings, it can be concluded that high turnover of knowledgeable employees did not adversely affect implementation of audit recommendations in TVCs. The findings were consistent with Abebe (2018) which found that inadequacy of competency among the staff affected implementation of audit recommendations.

Table 2: *Effect of staff competencies on implementation of quality audit recommendations in TVCs*

Statements	Type	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Staff qualification affects implementation of quality audit recommendations	Public	0%	1%	4%	57%	38%
	Private	0%	4%	10%	56%	30%
Staff experience affects implementation of quality audit recommendations	Public	0%	6%	6%	64%	24%
	Private	0%	4%	10%	63%	24%
High turnover of knowledgeable employees affected implementation of quality audit recommendations	Public	16%	37%	13%	21%	13%
	Private	12%	37%	17%	22%	12%

3.4. Effect of financial resources on implementation of quality audit recommendations in TVCs

A significant proportion, 31% and 46% from the public and private TVCs respectively confirmed that the institutions had adequate financial resources to implement QA recommendations, an equally significant number 47% and 32% from the public and private TVCs respectively were of contrary opinion while. Additionally, majority of the respondents, 52% and 58% from public and private TVCs respectively, agreed that institutions had budgeted for implementation of audit recommendations while 19% and 24% from public and private TVCs

respectively were of contrary opinion. These findings were consistent with that of Wadesango *et al.*, (2017) which found that financial constraints greatly hindered the execution of audit recommendations. Table 3 shows the effect of financial resources on execution of quality audit recommendations in TVCs

Table 3: *Effect of availability of financial resources on execution of quality audit recommendations*

Statements	Type	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Institution has adequate financial resources to implement audit recommendations	Public	7%	40%	22%	24%	7%
	Private	5%	27%	22%	36%	10%
Institution has budgeted for implementation of audit recommendations	Public	8%	11%	29%	44%	8%
	Private	6%	18%	18%	51%	7%

3.5. Binary Logistic Regression

The study used Binary Logistic Regression to determine the quantitative association between the variables. Scores above 3 denoted that respondents had implemented the audit recommendations while scores below 3 signified that respondents had a contrary opinion. In the logit model, implementation of audit recommendations takes two possible outcomes (1- if the institution implemented the recommendations and, 0-otherwise). The findings were as shown in table 4

Table 4: *Binary Logistic Regression results on factors affecting recommendations of quality audit*

	B	SE	Wald	df	Sig.	Exp(B)
Follow-up	0.428	.114	18.540	1	.000	2.644
Financial Resources	0.319	.128	7.052	1	.003	1.822
Leadership	.581	.421	3.615	1	.037	1.814

Staff Competencies	0.443	.395	4.605	1	.044	1.213
Constant	-2.777	1.229	39.605	1	.000	.000

Table 4 shows the results for logistic regression with log odds estimates. From the findings all the coefficients had the value of $p < 0.05$, hence the null hypothesis was rejected since all the coefficients are statistically significant at 5% significance level. The odd ratio ($\text{Exp}(B)$) denotes the quantitative association between the dependent and independent variables. The findings showed that regular follow-ups, institutional leadership, financial resources and staff competencies influenced the execution of quality audit recommendations. The odds ratio of follow-ups, financial resources, institutional leadership and staff competencies were 2.644, 1.822, 1.814 and 1.213 respectively. This implied that enhanced follow-ups improves the probability of implementing the quality audit recommendations by 2.644 while availability of financial resources multiplies the probability of implementing the recommendations by 1.822. In addition, institutional leadership commitment and improved staff competencies multiplies the probability of implementing the quality audit recommendations by 1.814 and 1.213 respectively. The findings from this study were similar to those obtained by Wadesango, *et al.*, (2017) which stated inadequate financial resources was a key obstacle in the execution of audit recommendations. Further, the findings were consistent with Abebe (2018) which explained that low staff capacity, lack of support and close follow-up from institutional management greatly affected implementation of audit recommendations.

4. Conclusions and Recommendations

4.1. Conclusions

Majority of the participants agreed that lack of follow-up by top management affects implementation of audit recommendations. This showed that follow-up played an important role in the implementation of the audit recommendations.

Most respondents stated that the execution of quality audit recommendations was affected by lack of commitment and support from institutional management. The findings confirmed that institutional leadership had a great influence on implementation of quality assurance recommendations. Management negligence would likely have a negative and insignificant effect on the implementation of the audit recommendation. It could also be noted that a large proportion of respondents from both public and private TVCs felt that staff qualification affects implementation of quality audit recommendations. Additionally, most respondents agreed that staff experience affects implementation of quality audit recommendations.

Although a large number of institutions stated that they did not have adequate financial resources to implement Quality Audit (QA) recommendations, most of them had allocated some budget to implement the recommendations. Generally, there was a positive significant relationship between financial resources, follow ups, institutional leadership, staff competencies and implementation of quality audit recommendation.

4.2. Recommendations

Based on the findings from this study, the researchers recommend as follows:

1. Frequent audit follow-ups to be undertaken by TVETA and institutional management to ensure full execution of the recommendations;
2. Institutions to establish Internal Quality Assurance (IQA) units and provide necessary support for their effective operations. Further, IQA officers should serve as a focal point in implementing audit recommendations;
3. The Authority to scale up capacity building of quality assurance officers in the Technical and Vocational Colleges;
4. Institutions to develop strategies for resource mobilisation to enable effective implementation of audit recommendations.

References

- Abebe, D. (2018). Challenges of implementation of audit recommendations: The case of the Oromia Regional State five basic service providing sectors Regional Bureaus. Master Thesis. Addis Ababa University. Addis Ababa, Ethiopia.
- Asif, M. (2015). Determining improvement needs in higher education benchmarking. *Benchmarking: An International Journal*, 22(1), 56-74.
- Global Education Monitoring Report (2021). Non-state actors in education: who chooses? who loses?
- Gobosho, M. (2019). Factors affecting Auditor General's recommendations: A case of Oromia Regional State. Master Thesis. Addis Ababa University, Ethiopia.
- IIA (2012). The standards for the professional practice of internal auditing. *Altamonte Springs: The Institute of Internal Auditors, Research Foundation*
- Langat, K., Omboto, D.B., Ambuli, A.M., & Ng'eno, J.K. (2021). The Effect of Trainer Competencies on Training Effectiveness: A Survey of Public TVET Institutions in Kenya. *Journal of TVET Policy, Action Research and Data*, Vol. 4 ISSN 2227-5088.
- Government of Kenya (2013). Technical and Vocational Education and Training Act, 2013.

- Tesega, T.D. (2021). Determinants for successful implementation of audit report recommendations: The case of office of the federal Auditor General in Northern Branch. *Science, Technology and Public Policy*, 6(1) 1-9.
- TVET Authority (2018). Quality Management System Manual.
- Wadesango, N., Chinamasa, T., Mhaka, C., and Wadesango, V.O. (2017). Challenges faced by management in implementing audit recommendations: A literature review. *Risk, Governance and Control: Financial Markets and institutions*, 7(4) 51-61.

Factors Influencing Implementation of TVET-CDACC Courses in TVET Institutions. A Case Study of Nyandarua National Polytechnic Nyandarua County, Kenya

***Ododa, F. O. & Kariuki, P.**

Nyandarua National Polytechnic, P. O. Box 2033 – 20300, Nyahururu

email; ododafred@yahoo.com

Abstract

The Kenyan TVET subsector has undergone several reforms since 2013. One of the major changes was the need to review the skills provided to TVET graduates, after concern was raised by the various stakeholders on the mismatch of skills. It is therefore in this regard, that the implementation of Competency Based Education and Training (CBET) Courses was recommended in the Kenyan TVET institutions. The TVET - Curricula Development Assessment and Certification Council (CDACC) was established to design, develop and review curricula in collaboration with labour market representatives. CBET courses were recommended to institutions, but their implementation has been hindered by several challenges. This study investigated some of the factors that influenced implementation of the CBET courses. Descriptive research design was used. Stratified random sampling technique was employed to obtain a sample of respondents where 60 trainers were selected to participate in the study from a total of 135 trainers. A questionnaire consisting of both structured and open-ended questions was developed for the study. Findings from the study revealed the following factors to be influencing implementation of CBET; Availability of infrastructure, motivation of trainers, level of awareness and understanding of CBET concept and role of NyNP in the implementation of CBET. Another challenge realized was the transfer of functions of TVET-CDAAC to KNEC and KICD. It was recommended that the Government through State Department TVET help improve on the infrastructure and employ more trainers to train CBET courses. There is also a need to improve the awareness for CBET programs among trainees and other stakeholders.

Key words: *Implementation of CBET, Nyandarua National Polytechnic, TVET-CDACC Courses*

Introduction

1.1 Background Information

The Competency Based Education and Training (CBET) system started in the United States of America (USA) in the late 1960s. Other countries that immediately adopted this approach included but not limited to Australia, United Kingdom, Netherlands and Germany. Trainers' awareness on understanding CBET concepts

was given priority at the initiation stages of implementation. The general awareness included the ability of trainers to understand and appreciate the benefits and implementation process of CBET. Once the trainers are aware it is easy for them to transfer the knowledge and skills to the trainees thus improving the general uptake of the same. Komba and Mwandanji (2015) explained that regular capacity building of trainers enables them to update their teaching knowledge and skills to effectively implement the curriculum.

Deißinger and Hellwig (2011) noted effective implementation of CBET could be achieved if trainers have adequate information on key issues such as the role of regulatory and curriculum development bodies, characteristics, benefits, components and limitations of the curricula. They explained that before implementation of the CBET curricula, the attitude and perception of trainers should be assessed to ensure that they are comfortable with the philosophy of CBET and are open-minded. This will enable them to overcome problems that might emerge during CBET implementation. Dadi (2014) found that trainers' perceptions are important elements in the teaching and learning process. He explained that trainers' positive perception towards any educational change is vital for its successful implementation. Mwandanji (2015) found that general awareness, comprehension, knowledge, and attitude affect implementation of CBET curricula. According to Komba and Mwandanji (2015) implementation of CBET depends on the trainers' awareness, knowledge and general grasp of the curriculum. These factors should therefore be taken into account during implementation of the CBET curriculum. According to Altinyelken's (2009) trainers play a vital part in both education and training reforms and hence their participation should be given priority at the formulation stages of all reforms.

In addition to qualified trainers, implementation of CBET require adequate and well-equipped physical resources such as workshops, laboratories, classrooms and libraries, libraries, and internet facilities. Kufaine and Chitera (2013) found that "CBET requires more learning materials since it emphasises hands-on training. They noted that lack of adequate training facilities in TVET institutions negatively affects the uptake of CBET. They further explained that successful implementation of CBET could be achieved if training providers could access similar equipment used in the industry. Rutayuga (2012) noted that CBET is an intensive system both in terms of human and physical facilities. He reiterated that effective implementation of CBET curricula demands adequate resources which are lacking in many institutions. Fullan (2005) and Altinyelken (2009) emphasized the need for adequate resources before considering CBET programmes and explained that poor training conditions and resources could limit the performance and implementation of CBET even if the trainers and trainees were well prepared. These findings clearly explain the importance of proper preparations before considering implementation of CBET curricula.

1.2. Global and Regional Perspectives of CBET

The globalization process, industrial advancements, technological changes and competitive global labour market has greatly contributed to the need for adoption of the CBET curricula (Makunja, 2016). The CBET approach can be traced back to the education of primary and vocational teachers in the United States of America (USA) in the late 1960s. Some 23 states implemented performance based vocational teacher education in the late 1980s and the concept shaped many programs of vocational education and training. Based on the need to produce skill-based individuals, many countries globally such as the United Kingdom (UK), Australia, Netherlands, Germany, Australia and Canada introduced the CBET in their countries. Most of these countries have implemented the CBET on their own ways, based on the unique skills required to fit their systems. Germany introduced CBET at vocational level training in the 1970s (Mulder M. et al, 2007) to address high rates of unemployment, especially among the youths while the UK adopted it a decade later (Harris R. et al, 1995). In 1990, the Australian Federal Government established a framework for the implementation of CBET. Globally, countries with strong CBET systems have made great industrial and technological advancements. The youth from these countries are also equipped with relevant skills that improves their competitiveness globally.

Most African countries are adopting the CBET approach, following the success of CBET in most of the European countries. The CBET approach focuses on revitalising the training skills to bridge mismatch currently experienced in the workforce in most countries. However, in most African countries, the implementation of CBET has experienced various challenges such as inadequate preparations, inadequate trainers, insufficient resources, lack of employers' cooperation, curricula changes and lack of employers' cooperation. Rutayuga, (2012) and Dadi, (2014) noted that several countries such as South Africa, Ethiopia, Tanzania, Ghana and Malawi have started to adopt the CBET Approach. For instance, Although Tanzania introduced CBET in 2000, the implementation has been affected by various challenges including lack of physical facilities, lack of trainers, low understanding of CBET concept, large number of trainees and lack of motivation to trainers (Mariam A. T, 2017)

1.3. Kenyan perspective on CBET

The Government of Kenya has placed great emphasis in TVET and implemented a raft of reforms in the recent past to produce skilled labour for realization of development agenda of vision 2030. A study by Kenya Association of Manufacturers (2017) established that the training content in the TVET institutions did not match industry needs. This mismatch led to production of “half baked” graduates whose skills did not match those required by the industry. This finding, together with the ever-increasing unemployment among the youths led to the introduction of CBET programs in Kenya. TVET Authority (TVETA) was

established to coordinate and regulate the TVET sector while TVET-Curriculum Development Assessment and Certification Council (CDACC) was established to develop and review CBET curricula, conduct assessments, and award qualifications in collaboration with industry. The CBET programs are expected to equip trainees with skills and knowledge required by industry and hence perform in accordance with employment standards.

National Polytechnics, established under Section 26 (2) of the TVET Act of 2013 have legal authority to develop their own training programs and award qualifications. Nyandarua National Polytechnic being one of the National Polytechnics and TVET institutions in Kenya. It has been mandated to implement the different CBET programmes and even develop their own Competency Based Training Programmes as an awarding institution. The Nyandarua National polytechnic has been very instrumental in ensuring that they produce graduates with quality skills that makes them productive and competitive based on the industry needs. Nyandarua NP is implementing several CBET programmes despite many challenges.

1.4. Statement of the problem

Technical Vocational Educational and Training Curriculum Development Assessment and Certification Council (TVET CDACC) through the TVET Act 2013 together with different industry stakeholders and trainers, developed 406 curricula and occupational standards as mandated. Since its establishment, the implementation of CBET curriculum has witnessed several challenges in different TVET institutions Nyandarua National Polytechnic included, seeing slow uptake of CBET. A report on the uptake of CBET programs by TVET CDACC in 2021 revealed that in NPs, other courses (KNEC, City and Guilds, ICM, ABMA, KASNEB, GOETHE, HUAWEI, Microsoft and KHIBIT) had a higher proportion (49%) compared to the CBET courses; NITA at 26% and TVET CDACC at 20%. This study was conducted to identify the factors that influenced implementation of CBET courses in Nyandarua National Polytechnic.

1.5 Objective of the study

The main objective of the study was to examine factors that influence the implementation of CBET programs in TVET institutions in Kenya, to inform relevant stakeholders. The specific Objectives of the study were to:

1. Determine the availability of resources and infrastructure for implementation of CBET Programs in Nyandarua National Polytechnic.
2. Identify trainers' level of motivation in implementation of CBET programs in Nyandarua National Polytechnic.
3. Determine the level of trainer's awareness and understanding of CBET concept in implementation of CBET in Nyandarua National Polytechnic.

4. Identify the role played by Nyandarua National Polytechnic in the implementation of CBET programs.

1.5. Justification of the Study

The government in efforts to reform the TVET sector has made some significant steps in ensuring effective implementation of CBET. A report by TVET CDACC (2021) indicates that there has been a slow uptake of the CBET programmes in most of the TVET institutions. Most of TVET institutions including Nyandarua National Polytechnic has been experiencing several challenges, such as lack of clear guidelines and framework regarding CBET assessment and implementation, inadequate infrastructure, resources and materials for training CBET among others and instability within the education sector seeing TVET CDACC being disbanded and functions transferred to KNEC and KICD.

1.6. Significance of the study

The study highlighted some of the factors influencing the implementation of CBET programmes and recommended strategies to be adopted to increase the implementation of CBET courses in the Nyandarua National Polytechnic. It also aimed at informing different stakeholders on some of the recommendations to be adopted in ensuring effective implementation of CBET.

1.7. Scope of the Study

This study was conducted in Nyandarua National Polytechnic, one of the National Polytechnics in Kenya. The research focused on determining the factors that influence the implementation of the CBET programs in the National Polytechnics in Kenya. A total of 60 trainers were sampled from the 135 trainers at the institution.

2. Methodology

2.1 Research design

This study adopted Descriptive design which described and explained the events and variables as they are, while conducting the research and involves both quantitative and qualitative data analysis.

2.2. Target population, sampling procedures and piloting

The study's target comprised all trainers drawn from the nine academic departments at Nyandarua National Polytechnic. A sample size of 60 trainers at Nyandarua National Polytechnic was used for this study. Simple random and stratified sampling was used to identify 60 trainers drawn from all the academic departments in Nyandarua National Polytechnic. The instrument was pre-tested by administering it to a sample of respondents not included in the study. This improved its use and item clarity while also ensuring its dependability. The instrument was then examined to make sure the data been collected was in line with the study's goals.

The piloting helped in improving the validity of the instruments and eradicating inaccuracy.

2.3. Data collection and analysis

Closed ended structured questionnaire was used to collect data for the study. The survey was divided into five sections: A, B, C, D, and E. Section A of the questionnaire dealt with demographic information of the respondents, Section B sought information on availability of resources, materials and infrastructure for implementation of CBET, section C of the questionnaire determined trainers' level of motivation towards training CBET. Section D viewed the level of trainers' awareness and understanding of CBET concept while Section E inquired the role played by Nyandarua National Polytechnic in CBET implementation. The validity of the study, a pilot study was conducted at Kisumu National Polytechnic and Meru National Polytechnic, outside the study area. The questionnaire administered to the sampled respondents. Data collected for the study was sorted, coded, cleaned, analyzed, and presented in the form of frequency tables. Data quality checks were done to eliminate errors. The purpose of coding was to classify responses to questions into meaningful categories so as to bring out their essential pattern. Descriptive and inferential statistics was used in data analysis.

3. Results and discussions

3.1. Factors influencing implementation of TVET-CDACC courses

According to main objective of the study, the following factors were identified to be influencing the implementation of CBET programs in Nyandarua National Polytechnic; Availability of resources, materials and infrastructure for training CBET, Trainer level of motivation, Trainer's awareness and understanding of CBET concept, government policies and role of Nyandarua National Polytechnic as a TVET institution in ensuring effective implementation of CBET Program.

3.2 Availability of training resources for implementation of CBET

Table 1 shows the trainers' responses on availability of training resources for implementation of CBET at Nyandarua National Polytechnic. The responses were drawn from four statements and presented in terms of Likert scale Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD) as shown;

Table 1: *Availability of training resources for implementation of CBET*

Statements	SA	A	N	D	SD
There are adequate teaching aid materials such as textbooks for CBET training.	8(13.3%)	12(20%)	3(5%)	28(46.7%)	9(15%)
We are provided with the OS, curriculum and mentoring tools for CBET training.	12(20%)	24(40%)	2(3.3%)	9(15%)	3(21.7%)
It's true we have enough classes and fully equipped practical rooms for training of CBET	10(16.7%)	15(25%)	5(8.3%)	18(30%)	2(20%)
NyNP has effective way of maintaining and keeping the Portfolio of evidence	9(15%)	21(35%)	7(11.7%)	17(28.3%)	6(10%)

According to results on respondents' opinions about the availability of resources, materials and infrastructure required for effective implementation of CBET in Nyandarua National Polytechnic. About 8 (13.3%) of the respondents strongly agreed, with 12 (20%) agreeing with statement that there are adequate teaching aid materials such as textbooks for training CBET. 3 (5%) of respondents had neutral opinion while 28 (46.7%) and 9 (15%) of the respondents disagreed and strongly disagreed respectively on the similar opinion on adequate teaching aid materials for effective training of CBET in Nyandarua National Polytechnic.

On availability of OS, curriculum and mentoring tools, 12 (20%) of the respondents strongly agreed with 24 (40%) agreeing that they are provided with the National Occupational Standards, Curriculum and mentoring tools for training CBET. 2 (3.3%) of the respondents in their view held neutral opinion on the availability of these tools. On the other hand, 9 (15%) and 13 (21.7%) disagreeing and strongly disagreeing respectively having a view that some of these tools are not readily available especially the mentoring tools for mentorship program for the trainees

hence disagreeing with the statement on the availability of the OS, curriculum and mentoring tools.

Following the respondents' views on availability of classes, practical rooms, facilities and equipment, it was noted that the institution still has inadequate classes for effective implementation of CBET. This was supported with 10 (16.67%) strongly agreeing and 15 (25%) agreeing with the statement on availability of Classes and workshops. The 5 (8.3%) of the respondents weren't sure on their response, while 18 (30%) disagreed with 12 (20%) strongly disagreed with the same statements indicating that CBET implementation requires fully equipped workshops, practical rooms such for counselling psychology and adequate classrooms since some classes are undertaken in tents to supplement the insufficient classrooms which in turn affects the effective CBET implementation in Nyandarua National Polytechnic.

Finally, 9 (15%) of the respondents strongly agreed while 21 (35%) agreed that NyNP had established effective ways of maintaining portfolios of evidence. However, 7 (11.7%) of the trainers held neutral opinion. A significant proportion, 17 (28.3%) disagreed with 6 (10%) strongly disagreeing with the statement on the maintenance of portfolio of evidence, stating that some equipment such as cameras for recording the videos were not available, hence forcing them to use their mobile phones for taking the pictures and videos as evidence.

3.3. Trainers motivation towards training CBET

Table 2 shows results obtained from trainers on level of motivation towards training CBET in Nyandarua National Polytechnic. The responses were drawn from four statements and presented in terms of Likert scale Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD) as shown;

Table 2: *Trainers' motivation towards training CBET*

Statements	SA	A	N	D	SD
I always enjoy training and assessing CBET	12(20%)	21(35%)	3(5%)	18(30%)	6(10%)
Am open to attaining professional development in CBET	10(16.7%)	24(40%)	2(3.3%)	9(15%)	15(25%)
I am positive towards training CBET	8(13.3%)	12(20%)	7(11.7%)	12(20%)	21(35%)

The institution through moratorium scheme rewards us for good performance	11(18.3%)	9(15%)	5(8.33%)	29(48.3%)	6(10%)
---	-----------	--------	----------	-----------	--------

The results indicated that most of the trainers (55%) enjoyed training and assessing CBET courses. However, 3 (5%) of the participants held a neutral view while the remaining 18(30%) in their views disagreed together with 6(10%) of the participants strongly disagreed on the statement stating that they don't enjoy training and assessing CBET. In attaining professional development most of the respondents, 10 (16.7%) and 24(40%) strongly agreed and agreed respectively with the statement. However, 2 (3.3%) of the respondents held neutral opinions on the same while 9(15%) of them had different opinions by disagreeing stating that they still need more training and capacity building in CBET as also indicated with the 15(25%) who strongly disagreed.

Regarding trainers' attitude on CBET it was noticed that 12 (20%) and 21 (35%) Disagreed and strongly disagreed respectively presenting that they did not have a positive attitude and not motivated in CBET as they feel it's difficult to understand. On the other hand, 20 (33.3%) accepted the statement indicating that they had a positive attitude towards CBET with only 7 (11.7%). Finally, 58.3% of respondents reported that their efforts in CBET training and assessment were not rewarded, following the great demands required for effective CBET delivery.

3.4 Level of Trainer's Awareness and Understanding of CBET Concept

The table 3 shows results obtained on the level of trainers' awareness and understanding of CBET concept in Nyandarua National Polytechnic. The responses were drawn from three statements and presented in terms of Likert scale Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD) as shown in Table 3.

Table 3: *Level of trainers' awareness and understanding of CBET concept in NyNP*

Statements	SA	A	N	D	SD
It is easy to understand the OS and curriculum for training CBET	15(25%)	9(15%)	3(5%)	18(30%)	15(25%)
NyNP conducts adequate awareness and sensitization of CBET programs	12(20%)	25(41.7%)	4(6.7%)	9(15%)	10(16.7%)
Am well equipped with skills and knowledge in CBET	11(18.3%)	21(35%)	9(15%)	5(8.3%)	14(23.3%)

The level of awareness and respondents' understanding of CBET concepts was identified during the study. Majority that's 33 (55%) felt that CBET curriculum and content are not easy to understand, especially the Occupational Standards (OS) and its curriculum. This was despite the training majority of the trainers had undergone on the Competency Based Assessment (CBA) organized by NyNP in collaboration with the TVET CDACC. 24 (40%) accepted that they are aware and understand the CBET concept better. On the other side about 3 (5%) were not sure about their understanding of the CBET curriculum.

Most of the respondents also recognized the role of NyNP in creating awareness and sensitization; this was acknowledged by 36 (61.7%) of the respondents. 4 (6.7%) held neutral opinion on the same while the other respondents represented by 19 (31.7%) held different opinion saying that NyNP hasn't done enough on creating awareness since there are few trainees enrolled on the CBET as compared to others such as KNEC, NITA etc. Finally, 32 (53.3%) of the respondents on their views acknowledged that they have been equipped with adequate skills and knowledge necessary in training CBET. This was as a result of continuous capacity building organized by the NyNP administration. It was also realized that 19 (31.7%) of the participants held contrary views on the same, indicating that they still require more training.

3.5 Role of Nyandarua National Polytechnic in CBET implementation.

Table 4 shows results obtained on the role of Nyandarua National Polytechnic in CBET implementation. The responses were drawn from three statements and

presented in terms of Likert scale Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD) as shown in Table 4.

Table 4: *Role of NyNP in implementation of CBET curricula*

Statements	SA	A	N	D	SD
NyNP regularly organizes capacity building for CBET trainers	21(35%)	24(40%)	2(3.3%)	6(10%)	(11.7%)
We are provided with favourable work condition that supports CBET training and assessment	9(15%)	21(35%)	7(11.7%)	17(28.3%)	6(10%)
NyNP has good strategies for effective implementation of CBET curricula	14(23.3%)	21(35%)	5(8.3%)	12(20%)	8(13.3%)

On the response of trainers on the role NyNP is playing in ensuring effective implementation, it was identified that majority of respondents 45 (75%) accepted that Nyandarua National Polytechnic through the administration has been regularly organizing capacity building in Competency Based Assessment (CBA) for the trainers. However 2 (3.33%) of the respondents were undecided and held neutral view regarding the research question, while the remaining 13 (21.67%) of the respondents were not satisfied in the role that NyNP in conducting capacity building, holding divergent views that the institution has not done enough in regards to professional development of trainers in CBET.

Favourable working conditions were identified as key factors for enhancing effective implementation of the CBET. About a half of the respondents 30 (50%) in their views recognized that NyNP had placed favourable working conditions and were having good working environments for effective training. On the other hand, 7 (11.67%) seemed undecided on this factor, the remaining 23 (38.33%) of the respondents, didn't agree with that statement, highlighting that they feel



they are under unfavourable working conditions in regards to infrastructure and workload that affects their effectiveness in the implementation of the CBET.

Finally on strategies for effective implementation of CBET, 35 (58.33%) of respondents in their opinion agreed that the NyNP has placed appropriate strategies in enhancing effective implementation following the efforts they have made in developing their own CBET curriculum as a national polytechnic and their continuous support for CBET programs. The 5 (8.33%) of respondents were undecided in their view while about 20 (33.33%) of respondents disagreed in their response to the statement that NyNP had developed good strategies in ensuring effective CBET implementation.

Research Findings

The following were the findings obtained from the study;

- It was identified that NyNP has inadequate resources, materials and infrastructure required in training CBET.
- It was realized that trainers' motivation is majorly influenced by the trainers' workload, professional development, attitude, and rewards and remuneration for good performance of trainers in CBET.
- There trainers have little awareness and understanding of the CBET curriculum and various contents.
- It was found out that NyNP administration plays critical role in ensuring implementation of CBET

Conclusion

In conclusion the findings of the study clearly stated that varied factors influence the implementation and uptake of CBET courses in NyNP. The administration has been in the forefront in implementation of the CBET courses and they have played critical roles however there is need to create more awareness and sensitize the trainers and trainees on the importance of pursuing CBET programs and their benefits compared to other programs. It's evident that NyNP has done well in capacity building staff to uptake the new curricula. Most trainers have been provided with CBA training and there is also need to train other trainers and also conduct refresher training to the already trained to enhance the skills.

Recommendations

Based on the findings of the study the following recommendations were suggested;

1. The NyNP, Stakeholders and government should come together to improve and provide adequate resources, materials and infrastructure to TVET institutions to facilitate effective implementation of CBET.
2. More trainers to be equipped with skills in Competency Based Assessment (CBA) to ensure effective delivery in terms of knowledge, skills required for training of CBET in TVET institutions.
3. The State Department for TVET together with the TVET institutions

to ensure more awareness and Sensitization be done to all stakeholders including trainees, trainers, and industry on need for CBET implementation.

4. The Occupational Standards and curriculum be reviewed to make the CBET Content easy to understand by both trainees and trainers for effective implementation.
5. Government to provide a clear framework that guides the implementation of CBET in TVET institutions. This will prevent the confusion experienced in the past between KNEC, TVET CDACC and KICD.

Suggested Areas for further research

1. Impact of CBET skills acquisition on the performance of trainees in the job market.
2. Effectiveness of TVET CDACC assessment, in promoting quality training of CBET in TVET institutions in Kenya.
3. The role of industry in shaping skills of trainees in TVET institutions.

References

- Altinyelken HK (2009). Curriculum change in Uganda: Teacher perspectives on the new thematic curriculum. *International Journal of Educational Development* 30:151-161, www.elsevier.com/locate/ijedudev [Accessed on 12th January, 2017].
- Anane CA (2013). Competency Based Training: Quality Delivery for Technical and Vocational Education and Training (TVET) Institutions. *Educational Research International* 2/2, 117-127, www.erint.savap.org.pk [Retrieved on 3rd April, 2016].
- Basturk S (2016). Primary Pre-service Teachers' Perspectives on Constructivism and its Implementation in the Schools. *Universal Journal of Educational Research* 4/4, 904-912, <http://www.hrpub.org>, DOI: 10.13189/ujer.2016.040428 [Retrieved on 3rd October, 2016].
- Bos W, Tarnai C (1999). Content Analysis in Educational Research. *International Journal of Educational Research* 31/8:655-734.
- Bumen NT, Cakar E (2014). Curriculum Fidelity and Factors affecting Fidelity in the Turkish context. *Educational Sciences: Theory & Practice* 14/1, 219-228, www.edam.com.tr/estp, [Accessed on 6th June, 2016].
- Dadi L (2014). Effectiveness of competency based TVET curriculum in Ethiopia: The case of TVET institutions of Oromia Regional State, PhD Dissertation, Addis Ababa University, Ethiopia.
- Deißinger T, Hellwig S (2011). Structures and functions of competency- based education and training (CBET): A comparative perspective, Germany: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ),

- BMZ, & Federal Ministry of Economic Cooperation and Development.
- Erica Smith (1996) A Study of the Penetration of Competency-based Training in Australia, *Research in Post-Compulsory Education*, 1:2, 169- 185, DOI: 10.1080/1359674960010204
- Harris R, Hobart B, Lundberg D. *Competency-based education and training: Between a rock and a whirlpool*. Macmillan Education AU; 1995.
- ILO (2017). *Making TVET and skills systems inclusive of persons with disabilities*. Policy Brief.
- Laura Brewer and Paul Comyn (2015). *Integrating core work skills into TVET systems: Six country case studies*. International Labour Organization
- Makunja, G. (2016) Challenges facing teachers in implementing competence-based curriculum in Tanzania: The case of community secondary schools in Morogoro Municipality. *International Journal of Education and Social Science*, 3(5): 30-37.
- Ministry of Education. *Competence-Based Curriculum: Curriculum for Sustainable Development*. Kigali. Ministry of Education; 2015.
- Miseda, C., & Kitainge, P. K. (2021). The Effects of Instructional Design Processes on the Quality of Implementing Electrical Installation CBET System in Kenya. *Africa Journal of Technical and Vocational Education and Training*, 6(1), 35-45. Retrieved from <http://afritvet.org/index.php/Afritvet/article/view/121>
- Mulder M, Weigel T, Collins K. The concept of competence in the development of vocational education and training in selected EU member states: a critical analysis. *Journal of Vocational Education & Training*. 2007 Mar 1;59(1):67-88.
- Muia, R. (2011). Challenges of Adoption of ICT in Technical Training Institutions within Nairobi County. Retrieved from <https://www.grin.com/document/184127>
- Oviawe, J.I. (2018) Revamping Technical Vocational Education & Training through PublicPrivate Partnerships. *Makerere Journal of Higher Education* 10 (1) 73 – 91. ISSN: 1816- 6822; DOI: <http://dx.doi.org/10.4314/majohe.v10i1.5>
- Republic of Kenya (2018). *Competency Based Education and Training Policy Framework in Kenya*. Government Press: Nairobi.
- Republic of Kenya (2019). *Sessional Paper No. 1 of 2019 on a Policy Framework for Reforming Education and Training*
- Solomon, G. H. (2016). *Towards competence-based technical-vocational*

education and training in Ethiopia. Wageningen University. <https://doi.org/10.18174/388252>

- Tambwe, M. A. (2019). Challenges facing the implementation of a competency-based education and training (CBET) system in Tanzanian technical institutions. *Education in Tanzania in the era of globalisation: Challenges and opportunities*, 242-255.
- TVETA (2019). *Competence-Based Education, Training and Assessment Standards & Guidelines (CBETA Standards and Guidelines)*
- UNESCO-UNEVOC International Centre (2018) *TVET County Profiles*. Republic of Australia 51
- Wambua, M. E. (2019). *Constraints Facing Successful Implementation of The Competency Based Curriculum in Machakos County, Kenya*
- Wesselink, R., de Jong, C., & Biemans, H. J. (2010). Aspects of Competence-Based Education as footholds to improve the connectivity between learning in school and in the workplace. *Vocations and Learning*, 3(1), 19-38.

Status of Implementation of Competency Based Education and Training Programs in Kenyan TVET Institutions

**¹Langat, K., ¹Masai, L. K., ²Kisaka, S. T., ¹Omboto D. B;*

*¹Technical and Vocational Education and Training Authority, P. O. Box 35625
– 00100, Nairobi*

*² TVET – Curriculum Development and Assessment Certification Council
(TVET-CDACC), P. O. Box 15745 – 00100, Nairobi*

email:langat.langat@gmail.com;

Abstract

The Competency Based Education and Training (CBET) was introduced in the Kenyan TVET system to improve acquisition of practical skills and mitigate the mismatch of skills required by the labour market and those acquired by TVET graduates. In CBET, the skills, knowledge, and attitudes are specified at the beginning of training to help in the achievement of the competence standards, mainly within a national qualification's framework. Kenya is implementing a raft of reforms in the education and training sector to improve the skills of all graduates through adoption of CBET. This study investigated the proportion of CBET courses that had been implemented by TVET institutions, the accreditation of the CBET programs offered by the institutions, and factors that affected implementation of CBET courses in the Kenyan TVET institutions. A descriptive research design was used. The target population was administrators and trainers in the 2,178 registered TVET institutions. A stratified random sampling technique was employed to obtain a sample of respondents. A sample of 369 institutions (17%) of accredited TVET institutions in Kenya were selected for this study. A questionnaire was developed and pretested to ascertain its reliability before being deployed for data collection in the target institutions. The data collected was cleaned, analyzed, and presented in the form of frequency tables and bar graphs. The results from this study showed a low uptake of the new CBET programs developed by TVET-CDACC, Nursing Council, and University TVET Directorates as compared to the traditional CBET programs developed by NITA. The findings also indicated that only 63% of the CBET courses offered in Kenya had been licensed by TVETA. Based on the findings from this study, the authors recommended that the government agencies involved in skills development should enhance awareness campaigns targeting all the actors in the TVET subsector and work towards developing institutions' capacity to implement CBET.

Keywords: competence; competency-based education; courses; training; programs.

1. Introduction

1.1. Background information

Competency based education and training (CBET) puts great emphasis on development of skills or competencies needed in the labour market. Thus, in CBET, the main attention is transferred from the content or knowledge to outcomes based on the needs of the labour market (Tambwe, 2017). The CBET system is therefore designed to meet the demands of industry and business. Competency based education and training involves training individuals to perform to the standards required in employment, in an agreed range of contexts, repeatedly over time. The emphasis in CBET ensures that individuals achieve high quality of performance, which is essential for the success of the world of work. General Competence is sometimes defined as ‘the ability to perform tasks or do work according to set standards. It is the ability to transfer skills, knowledge, and attitudes to various situations within a given occupation’ (Republic of Kenya, 2018).

The TVET sub-sector in Kenya has undergone substantive reforms in the recent past as the Country strives to produce skilled labor to realize vision 2030. The sub-sector previously suffered from lack of attention from policymakers, which led to the production of graduates who did not meet industry expectations in terms of skills they acquired during training. This was evidenced by a study by the Kenya Association of Manufacturers (2017), which established that the training content in the TVET institutions did not match industry needs. The survey report recommended that TVET trainers undergo industrial attachment at least every three years to upgrade their knowledge and skills. The proposed reforms included switching from knowledge-based instruction to the Competence Based Education and Training (CBET) approach.

In the quest to improve the competencies of graduates, the government, through TVET CDACC, embarked on developing demand-driven CBET curricula. This process included the involvement of industry players to alleviate the issue of skill mismatch between what is provided by the training institutions and industry needs. Sector Skills Advisory Committees (SSACs) were formed to identify sector needs and evaluate and advise on the requirements of their respective sectors. Competency-based assessment (CBA) is a crucial component of CBET, and TVET CDACC has trained 13,758 trainers to spearhead the assessment and certification process. The government has invested substantive resources in equipping public institutions with state-of-the-art training equipment and hiring additional trainers to smoothen the CBET implementation process. Developments in the last three decades have made the role of TVET more decisive; the globalization process, technological change, and increased competition due to trade liberalization necessitate requirements of higher skills and productivity among workers in both modern sector firms and Micro and Small Enterprises (MSE) (Muia, 2011).

TVETA as a regulator in this sub-sector, has done a lot in facilitating the planned adoption of CBET courses. These include the development of Competence Based Education, Training and Assessment (CBETA) standard, Prior Learning Assessment and Recognition (PLAR) standard, quality assurance framework, trainer qualification framework, occupational training standards in some priority areas, guidelines for assessment centers, CBET assessment monitoring tools, and accreditation of institutions to offer CBET courses, among other interventions.

So far, TVET CDACC, in consultation with industry and other stakeholders, has developed and packaged 436 Occupational standards and CBET curricula, carried out competence assessments and issued a certification to competent trainees. The council also has capacity-built trainers on Competency-Based Assessment, CBET Curriculum development, and development and use of learning guides and training programs. TVET CDACC is also capacity-building trainers to digitize their training content to facilitate online learning, necessitated by the covid-19 pandemic and in line with global trends where blended learning has gained traction. The Directorate of Technical Education (DTE) has developed new Technical and Vocational Colleges in each sub-county, equipped them with state-of-the-art equipment suitable for CBET implementation, and hired additional trainers to alleviate the hitherto shortage, among other interventions. Despite all these efforts, TVET institutions seem not keen on mounting CBET courses. Little to no information is currently available that could explain this anomaly.

Although it is now about four years since the first TVET-CDAAC CBET curricula were approved for implementation, records at TVET Authority have shown that the uptake of CBET programmes in the institutions has been basically low. Kigwilu, Akala, & Wambua (2016) noted that, whereas introduction of CBET Curriculum represents a positive step in moving Kenya towards achieving the goals of Vision 2030 thus raising education standards, challenges in Kenya have to do with effective implementation since its adoption. The aim of this study was to determine the proportion of CBET courses that have been implemented by TVET institutions, the accreditation of the CBET programs offered by various institutions, and factors affecting the implementation of CBET in Kenyan TVET institutions.

1.2. Problem Statement

Despite all the substantive reforms and efforts in the TVET subsector, TVET institutions seem not keen on mounting CBET courses. Little to no information is currently available that could explain this anomaly. It is now about four years since the new CBET curricula were approved for implementation, however, records at TVET Authority show that the uptake of CBET programmes has been basically low. It is therefore prudent to determine the challenges or factors hindering effective transition.

1.3. Objectives of the Study

The main objective of the study was to determine the status of implementation of CBET programs in Kenyan TVET institutions. The specific objectives of the study were to:

- i. Determine the proportion of CBET courses adopted by TVET institutions
- ii. Determine the accreditation status of the CBET programs offered by various institutions
- iii. Determine factors affecting the implementation of CBET in Kenyan TVET institutions.

1.4. Scope of the Study

This study was restricted to determining the status of implementation of CBET in accredited TVET institutions in Kenya. Respondents were administrators and trainers from sampled institutions.

2. Methodology

This study used a descriptive research design. Two questionnaires, one for administrators and another for the trainers, composed of both structured and open-ended questions, were used to collect data from National Polytechnics (NPs), Technical and Vocational Colleges (TVCs), and Vocational Training Centers (VTCs). The study targeted 2,169 accredited TVET institutions (12 NPs, 311 public TVCs, 855 private TVCs, and 991 VTCs). Stratified random sampling was employed to obtain a sample of respondents. Institutions were classified by category, type, and county to give every institution an equal opportunity to be sampled. A sample of 369 representing 17 percent of all registered TVET institutions in the country was selected to participate in the study. A maximum of four respondents were selected per institution, with one being an administrator and three trainers randomly picked from different academic departments.

Questionnaires were used as the primary data collection instruments. These consisted of structured and open-ended questions and were administered through an online platform. A team of officers visited the sampled institutions to collect the data. The questionnaire was scripted using Kobo collect data collection software. The scripted questionnaire was then deployed for data collection. Quantitative data was sorted, coded, cleaned, analyzed, and presented in the form of frequency tables, and bar graphs. Data quality checks were done to eliminate data errors or points of contradiction. The purpose of coding was to classify responses to questions into meaningful categories to bring out their basic pattern. Descriptive statistics were used in data analysis.

3. Results and Discussions

3.1. Proportion of CBET Courses Adopted by TVET Institutions

The administrators were required to indicate the total number of courses on offer in the institution and the number of CBET courses (TVET CDACC, National

Polytechnic, Nursing Council of Kenya, University TVET) out of the total courses on offer. These courses were aggregated for all the sampled institutions, and the proportion of CBET courses was determined, as shown in Figure 1. Other courses include; KNEC, City and Guilds, ICM, ABMA, KASNEB, GOETHE, HUAWEL, Microsoft, and KHIBIT.

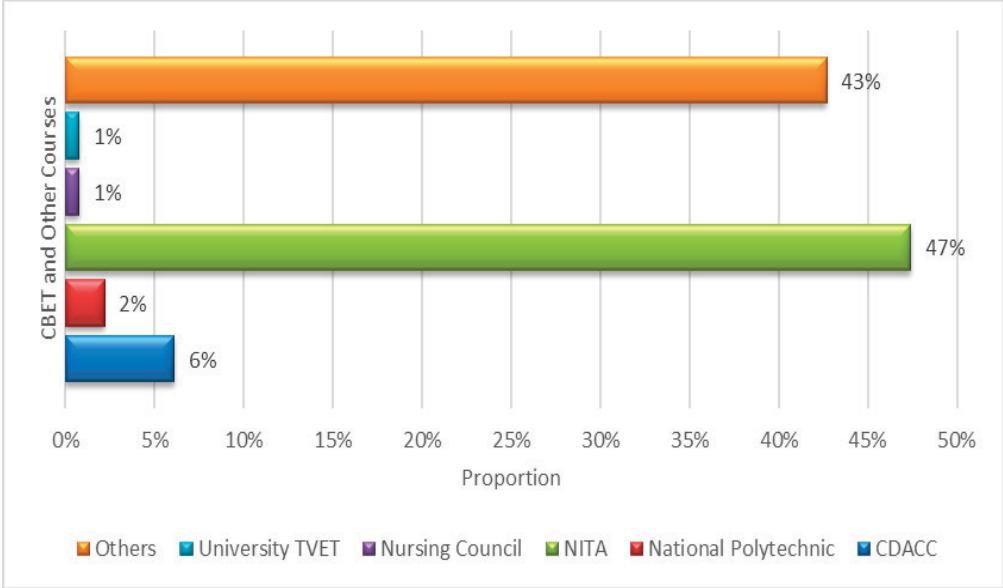


Figure 1: Proportions of CBET and Other Programs

Based on the findings, 6% of the total courses were TVET CDACC, 47% were NITA, 2% were National Polytechnic, 1% were Nursing Council of Kenya, 1% were University TVET, and 43% were Others. This signifies that the uptake of the new CBET curriculum (TVET CDACC, National Polytechnic, Nursing Council of Kenya, and University TVET) courses was low compared to the traditional CBET programs developed by NITA.

3.2 Distribution of CBET and Other Courses in TVET Institutions

This study sought to establish the distribution of courses in the different institution categories. The results are depicted in Figure 2.

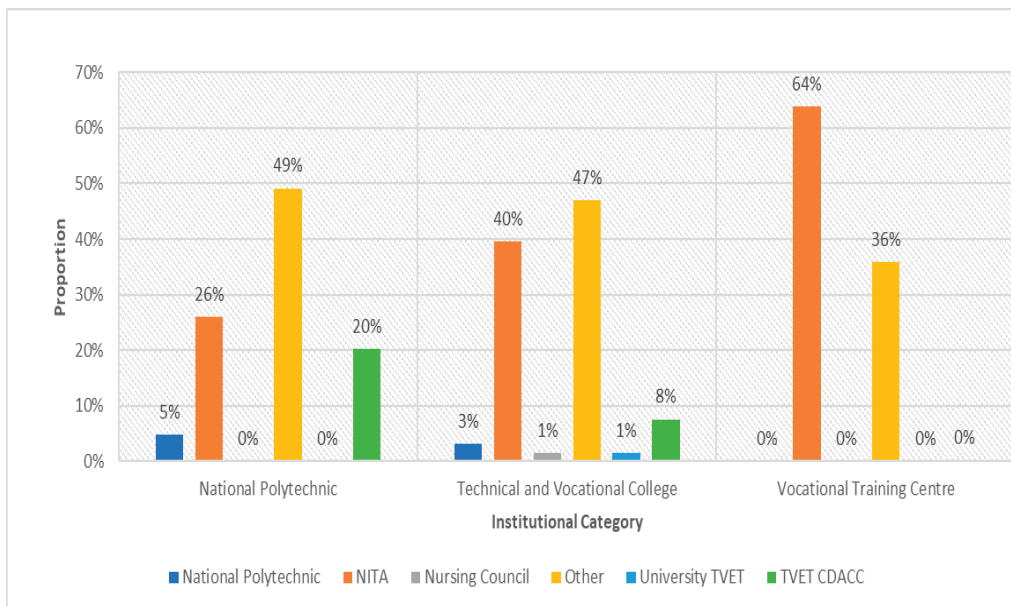


Figure 2: Distribution of CBET and Other Courses in TVET institutions

Based on the study in NPs, other courses (KNEC, City and Guilds, ICM, ABMA, KASNEB, GOETHE, HUAWEL, Microsoft, and KHIBIT) had a higher proportion (49%) compared to the CBET courses; NITA at 26%, NPs at 5% and TVET CDACC at 20%. In TVCs, Other courses had 47%, followed by NITA at 40%, TVET CDACC at 8%, National Polytechnic courses at 3%, while University TVET and Nursing Council courses were at 1%.

In VTCs, the NITA Courses had a higher proportion at 64%, followed by others at 36%. The study further shows that NITA courses have a higher proportion in VTCs. In contrast, Other Courses had a higher proportion in NPs. On the other hand, National Polytechnic courses, University TVET, and Nursing Council of Kenya courses had lower proportions in all three categories of Institutions. This can be attributed to the fact that TVET CDACC, National Polytechnic courses, University TVET, and Nursing Council of Kenya courses were still new in the market.

3.3 Enrolment in CBET and Other Courses in TVET Institutions

Figure 3 shows the proportions of enrolment in CBET and other courses in the three categories of TVET institutions.

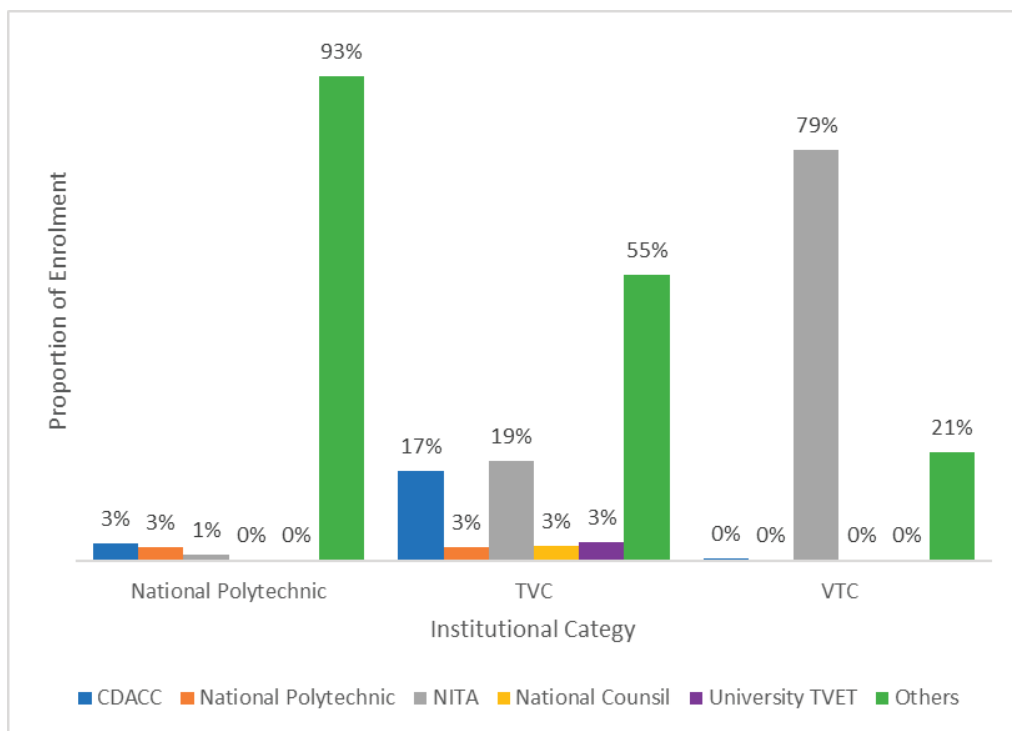


Figure 3: Enrolment in CBET and Other Courses in TVET Institutions

National Polytechnics had 93% of their trainees enrolled in other courses (KNEC, City and Guilds, ICM, ABMA, KASNEB, GOETHE, HUAWEI, Microsoft) KHIBIT), 3% enrolled in TVET CDACC, 3% in National Polytechnic courses and 1% in NITA Courses. This could mean that little awareness has been made among parents and trainees of NPs regarding the available options in terms of courses.

TVCs had 55% of their trainees enrolled in other courses, 17% enrolled in TVET CDACC, 3% in National Polytechnic courses, 19% in NITA Courses, 3% in Nursing Council of Kenya courses and another 3% in University TVET courses. The enrolment rate in the newly developed CBET courses seems to be higher in TVCs than NPs and VTCs.

From the findings, VTCs had 21% of their trainees enrolled in other courses (KNEC) and 79% in NITA Courses. Again, none of the VTCs have embraced the newly developed CBET courses. Most of them seem to lack awareness of the newly developed CBET courses and are stuck to NITA and KNEC courses, which they have offered for a long time. A lot of awareness is required in all

the three categories of TVET institutions regarding the newly developed CBET courses and how they could fit into the National and County development plans.

3.4 Accreditation Status of CBET Programmes

Table 1: Accreditation Status of CBET Programmes

CBET Courses on offer	Aggregate Courses	Percentage (%)
Licensed	2133	63%
Unlicensed	1259	37%
Total	3392	100%

The number of CBET courses on offer indicated that 2133 out of 3392 were licensed by TVETA. This translates to 63% of courses offered in the sampled institutions. The TVET Act requires all institutions to seek licensing before they begin to offer respective courses. Institutions should be encouraged to comply with the law by applying to TVETA for licensing of unlicensed programs.

3.5. Factors Affecting Implementation of CBET

The study further sought to establish the factors affecting the implementation of CBET. To achieve this objective, a list of possible factors was read out to respondents and they were expected to indicate if any of them was applicable in their situations. Multiple selections were allowed. The findings are presented in Figure 4

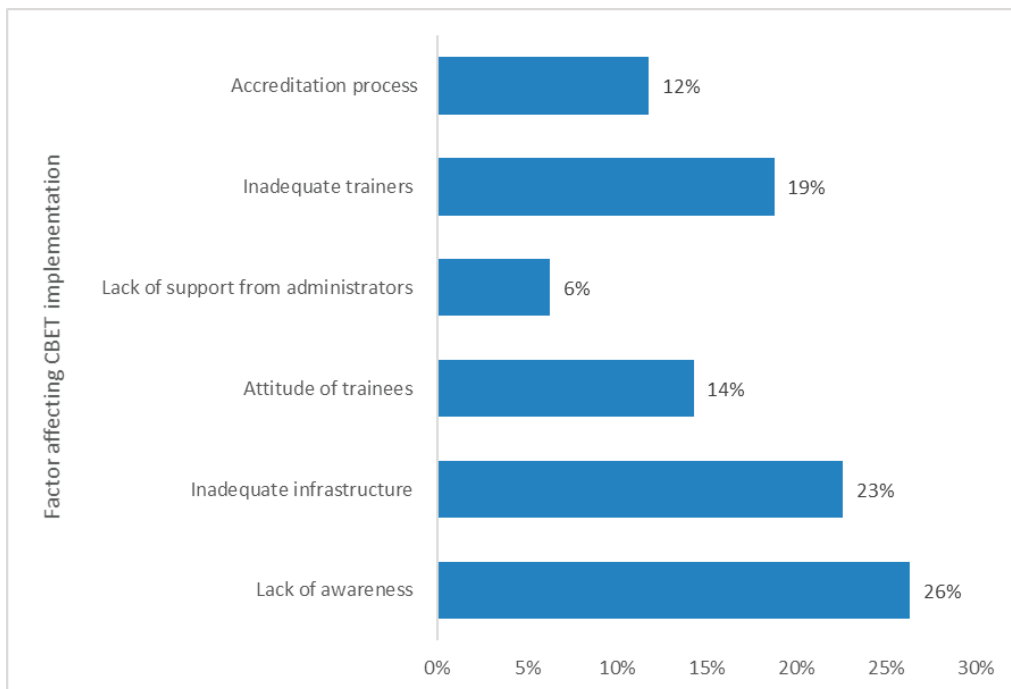


Figure 4: Factors Affecting Implementation of CBET

Lack of awareness and inadequate infrastructure was stated as the most prevalent factor that hindered the effective implementation of CBET at 26% and 23% respectively. Oviawe (2018), in a study on revamping TVETs through public-private partnerships, identifies inadequate infrastructure as one of the challenges affecting the TVET sector. The study argues that this can be addressed through Public-Private partnerships (PPP) and institutions sharing available infrastructure.

The less prevalent factors are lack of support from administrators and accreditation process at 6% and 12% respectively. This implies that there was adequate support from administrators in most institutions to facilitate CBET implementation. However, CBET implementation is a collaborative activity among all relevant stakeholders, the support of the administrators only is not sufficient. This should go hand in hand with infrastructural development, availability of resources, and adequate trainers, as administrators rely on all these factors to successfully implement CBET.

The other factors affecting CBET implementation are inadequate trainers and attitude of trainees at 19% and 14% respectively. These results concur with Wambua (2019), who revealed that the major challenges facing implementation of CBET included; shortage of teachers, resulting in overcrowded classes and inadequate teaching and learning resources. The impact of a trainee's perception on a training program was earlier supported by Wesselink (2010), who stated

that student perception could influence the nature and quality of the teaching-learning process. In general, trainees' negative perception has negatively affected the implementation of the CBET curriculum.

4. Conclusions and Recommendations

4.1. Conclusion

The study revealed a low uptake of the new CBET programs (TVET CDACC, National Polytechnic, Nursing Council, and University TVET) compared to the traditional CBET programs developed by NITA. This could be either because institutions were reluctant to embrace change or there was minimal sensitization on the newly developed CBET programs. There was generally low enrollment in CBET courses and only 63% of them had been licensed by TVETA. Lastly, lack of awareness, slow accreditation process, lack of support from administrators, and attitude of trainees were the most common factors affecting CBET implementation across all categories of TVET institutions.

4.2. Recommendations

- i. Government agencies involved in skills development should increase awareness campaigns targeting all stakeholders in order to improve uptake of CBET programmes.
- ii. Agencies in charge of accrediting institutions as training and/or assessment Centres should fast track their processes and ensure that all qualified institutions are accredited.
- iii. TVET Institutions should increase marketing of CBET courses in order to improve enrollment.

References

- Kenya Association of Manufacturers (2017). Policy and Sustainability Report. Nairobi. Retrieved from <https://kam.co.ke/kam/wp-content/uploads/2018/06/KAM-Policy-Sustainability-Report-2017.pdf>
- Kigwilu, P. C., Akala, W. J., & Wambua, J. M. (2016). Challenges Facing the Effective Implementation of Artisan and Craft Courses in Catholic Sponsored Community Colleges in Nairobi, Kenya. *IOSR Journal of Research & Method in Education Vol 6 (2)*.
- Muia, R. (2011). Challenges of Adoption of ICT in Technical Training Institutions within Nairobi County. Retrieved from <https://www.grin.com/document/184127>
- Oviawe, J.I. (2018) Revamping Technical Vocational Education & Training through Public-Private Partnerships. *Makerere Journal of Higher Education 10 (1)* 73 – 91. ISSN: 1816-6822; DOI: <http://dx.doi.org/10.4314/majohe.v10i1.5>

- Republic of Kenya (2018). Competency Based Education and Training Policy Framework in Kenya. Government Press: Nairobi.
- Republic of Kenya (2019). Sessional Paper No. 1 of 2019 on a Policy Framework for Reforming Education and Training
- Tambwe, M. A. (2017). Challenges facing implementing a competency-based education and training (CBET) system in Tanzanian technical institutions. *Education in Tanzania in the era of globalization: Challenges and opportunities*, 242-255.
- Wambua, M. E. (2019). Constraints Facing Successful Implementation of the Competency Based Curriculum in Machakos County, Kenya
- Wesselink, R., de Jong, C., & Biemans, H. J. (2010). Aspects of Competence-Based Education are footholds to improve the connectivity between learning in school and the workplace. *Vocations and Learning*, 3(1), 19-38.

2

TVET AND THE FUTURE OF WORK

Tertiary Tourism Education Quality Model for Predicting Tourism Destination Service Quality in Kenya

Kimeto, J. C.

University of Kabianga, P.O. Box 2030-20200, Kericho, Kenya

email: janetkimeto@kabianga.ac.ke

Abstract

Globally, travel and tourism has remained a significant sector for development of economy. It creates wealth, creates jobs, is a key foreign exchange earner and exporter, and a major contributor to Gross Domestic Product (GDP) throughout the world. To sustain the industry of tourism growth, employees with the right skills and competencies are required since tourism service quality is an outcome of quality human capital. In order that Kenya remains competitive both regionally and globally, the matter of quality tourism labour has to be addressed. Tertiary tourism institutions in Kenya produce potential employees for the industry. Nevertheless, a strong relationship between theory and practice has to be established so as to ensure industry needs and expectations are met during delivery of service. The main objective of the study was to examine the relationship between human capital and destination service quality in Kenya through a model. The study's research design was cross sectional survey. The data was collected and quantitatively analyzed from a target population of Graduate tourism employees from tertiary institutions and supervisors/managers from tourism Organisations. Sample size of 385 from Graduate tourism employees and supervisors/managers from four registered Organisations in Kenya; that is Kenya Association of Tour Operators (KATO) members, Kenya Association of Travel Agents (KATA) members, Kenya Wildlife Services and National Museums of Kenya was arrived at using Cochran's formula. Multi-stage sampling entailing proportionate, stratified and random sampling was employed to achieve the target sample. Questionnaires was used to collect data from both sets of respondents. Partial Least Square Structural Equation Modelling (PLS-SEM) was used for development of model and also check on relation between dependent variables. The results indicated that all the exogenous constructs sufficiently predict their corresponding endogenous construct in the model. The least Q^2 value in endogenous construct 'responsiveness' ($Q^2 = 0.04$) while the largest 'professional skills/competencies' ($Q^2 = 0.51$). Three techniques were used for testing model fit, SRMR < 0.08, NFI > 0.9 and RMS theta < 0.12. The Model is beneficial to Kenya as a tourism destination because it clearly indicates the importance of relevant competencies and skills required in the sector of tourism to remain competitive and a preferred destination regionally and globally. To achieve this, tourism institutions and practitioners in the sector should collaborate in developing curricula that is custom-made for the tourism industry.

Keywords: Tourism Industry, Tertiary Tourism Education, Destination Service Quality, Kenya

1. Introduction

1.1 Background information

Travel and tourism play a vital role in development of economy in the world. It generates wealth, is a major foreign exchange earner and exporter. Tourism accounts for 10.4% or a value of over US\$ 8.8 trillion Gross Domestic Product globally and creates both skilled and unskilled labour for the market which is approximately one in ten of all jobs in the world which is equal to 319m jobs in 2019 (WTTC, 2020; UNWTO, 2020). In Africa, Tourism is a key industry that managed to contribute 8.5% of Gross Domestic Product (GDP) (\$194.2b) in 2018 (African Travel and Tourism Association (ATTA), 2019). In terms of employment, tourism has provided 24.3 million (6.7%) job opportunities in the continent while in terms of export, tourism has contributed \$58.5 billion of the total export in the region (WTTC, 2020). For decades, tourism in Kenya has played a significant in driving the economy and being the second chief foreign exchange earner of more than US\$ 1.57b in addition to creating about 1.1m jobs in 2019 (WTTC, 2020). In the wake of Covid-19 pandemic, world economies were shaken and it is upon each country to come up with strategies for survival in tourism industry (Standard Media, 2021) since tourism was the hardest hit. The tourism stakeholders in Kenya need reassess the sector in terms of skills and competencies for crisis management in the future for it to remain competitive and viable regionally and globally.

1.2 Tourism Education Attributes

The objective of the curriculum in tourism is to generate graduates who are competent and skilled for a hospitality and tourism organization (Nhuta et al. 2015) but often industries complain of lack of the required skills and competencies from the graduates (Valdez et al., 2015). According to Cheng and Tam (1997) education quality comprises of inputs employed, processes involved and the outputs achieved from system of education that meet the needs and expectations of its stakeholders. For success of tertiary tourism institutions, input attributes are required which include human resources and facilities. Tourism education should have a balance of theories and behaviour so as to achieve the contemporary requirements of international, modernized, innovative and the interactive teaching models (WTTC, 2015) since it's key factor of defining the result of an education system. In the recent past, assessment of quality and assurance measures in execution of tertiary education have been acknowledged regionally and globally (Ashraf, et al., 2016). This is because assessment success and its strength will be dependent on the educational assessment principles from a diverse technique advocated in the curriculum policy and professionalism (Govender, 2003). In

this regard, the excellence in academics depends on significance of the course subjects, course content, programme's aim, and the reliability of assessment and the objective of the course (Yeo, 2008).

After successful completion of the studies, an outcome/output is expected from the learners as clearly stipulated by the course content and structure of the programme. The focus of this paper is the skills and competencies acquired after undergoing training in tourism and how they impact service quality in tourism sector. This is due to lack of collaboration among tourism practitioners and trainers in the sector. This resulted to skills mismatch that is acquired skills and the expertise required in the industry. The study outcomes were linked to four thematic skills and competencies. These include social, technical, leadership and professional competencies and skills (Zehrer and Mossenlechner, 2009).

Tourism sector is of high economic importance in Kenya; therefore, employees in this sector must be able to efficiently and effectively deliver services Tribe (2002) since excellent service is associated with human resources (Mei, 2017; Zeithaml et al., 2006). Consequently, development of curricula in tourism should be based on economic, social and cultural setting of the destination. It should be a 'need led' and not a 'market -led' (Shakeela, et al., 2012). Theoretical and practical perspectives should be integrated in curricula design with applied emphasis on its relevance to the industry since the industry requires professional services (Yeo, 2008).

1.3 Destination Service Quality

According to Mangold & Babakus (1991) the process of comparing consumer expectations and their perceptions of what has really been delivered is referred to service quality. Tosun et al. (2015) mentioned that service quality is how tourists value service performance consumed in tourist destination. Parasuraman et al. (1985) came up with SERVQUAL which is shortened form of 'service quality'. Five dimensions define service quality concept (Parasuraman et al., 1988). These include responsiveness, assurance, reliability, tangibles and empathy of the service providers. The five dimensions shows how consumers interpret service quality in their thoughts. In terms of importance Zeithaml and Bitner (2000) ranked reliability highly, followed by responsiveness and assurance. Tangibles and empathy showed weak effect on quality-of-service perceptions (Parasuraman et al., 1991, 1988; Zeithaml, et al., 2009). According to Boro (2022) SERVQUAL model and its dimensions act as standard of examining and evaluating service quality of distinct service sectors. Nevertheless, the significance of the dimensions is depended on the category of service provided (Bergman & Klefsjo, 2003).

Kenya as a destination must focus on creating a positive service image since destination image is connected to the quality of the services carried out by all

tourism players in an integrated and systematic manner (Akroush, et al., 2016). A connection between practice and theory should be evident in order to achieve and exceed needs of customers but the collaboration among education providers and industry in developing tourism education curricula and related matters is critical but remain subtle (Zehrer & Mossenlechner, 2009). This is because most institutions develop courses as per their own interests, instead of collaborating with the end users of the product - the target employers of their graduates in the industry (Bernthall, 1988). With a very competitive marketplace, nothing less than excellence in terms of service design and delivery can survive (O'Neill, 1997).

1.4 Problem Statement

Tertiary tourism institutions in Kenya produces potential employees who are believed to have relevant competencies and skills required for quality service provision in the industry. Nevertheless, the challenge is the absence of collaboration of tourism practitioners and trainers in the sector. This has resulted to skills mismatch and competencies acquired, and those that are required in the more competitive and evolving tourism industry. Therefore, a link between tourism training and the requirements and expectations of the industry in Kenya is required for it to be competitive in the delivery service quality at the destination. The study's findings provide information to tourism destination service quality through modelling of tertiary tourism in Kenya.

1.5 Objective of the Study

The objective of this study was to determine the relationship between human capital and destination service quality in Kenya through a model.

2. Methodology

The acquired data was quantitatively evaluated using a cross-sectional design. The study focused on graduate students from tertiary institutions and tourism supervisors/managers (employers) in Kenya's tourist business. The study included four tourism Organisations in Kenya: Kenya Association of Travel Agents (KATA), Kenya Association of Travel Operators (KATO), National Museums of Kenya (NMK), and Kenya Wildlife Services (KWS).

The four Organisations that were considered for the study included KATA, KATO, NMK and KWS. Kenya has 538 registered tourism institutions. Sample size was drawn using Cochran (1977) formula to arrive at 385 graduate employees in tourism and 385 tourism employers. To determine sample size, the study used stratification based on tourist institution category, proportionate sampling, and combination stratification. The Partial Least Squares Structural Equation Modelling (PLS-SEM) method was used to create the study model and to investigate the relationship between latent variables. Path weighting strategy in PLS-SEM was performed using SmartPLS software version 3.2.8 (Hair et al., 2014). Bootstrapping, blindfolding,

and model fit tests were utilized to assess the model's predictive capabilities and quality.

The structural model was evaluated for collinearity using the variance inflation factor (VIF). The Bias-Corrected and Accelerated (BCa) Bootstrap confidence interval approach was employed for path significance. A bootstrap sample of 5000 was utilized, with each bootstrap sample containing the same number of observations as the original sample. The effect size (f^2) quantified the relative impact of an exogenous construct on the R^2 value of an endogenous construct. Cohen (1988) defines f^2 values of 0.02 and lower as small, 0.15 to 0.35 as medium, and f^2 values greater than 0.35 as large. To assess predictive relevance (Q^2), the structural model's predictive capability was examined using the Stone-Geiser's Q^2 test. Standardized Root Mean Square Residual (SRMR) 0.08, Normed Fit Index (NFI) or Bentler and Bonett Index > 0.9 , and RMS_theta 0.12 were used to assess model fit for this model. Because it is less than the recommended threshold of 0.12, it shows that the model is well-fitting (Henseler et al., 2014).

Convergent validity was determined by utilizing an outside loadings indicator of more than 0.70. It was deemed appropriate when the construct's AVE was 0.50 (Hair et al., 2017). All of the outside loadings were greater than .70, with values ranging from .82 (Tangibility) to .93 (Learning context and Teaching methodology). In the study, the heterotrait-monotrait ratio (HTMT) was used to assess discriminant validity. HTMT results ranged from .03 for HTMT (Responsiveness, Assurance) to .78 for HTMT (Teaching & Learning Process, Professional Skills/Competencies). Cronbach's alpha was used to examine the consistency and stability of the questionnaire results in the pre-test study and the main study. Internal consistency was measured using Cronbach's alpha (α), composite reliability (Pc) (Hair et al. 2017), and the rho_A coefficient (Dijkstra & Henseler, 2015). All of the items were dependable because the Cronbach's alpha for the constructs was greater than .7. The composite reliability values varied from .94 (course content and structure) to .97 (leadership, professional, social, skills/competencies, assurance, empathy, and reliability aspects).

3 Results and Discussions

3.1 Model Predictive Relevance

The Q^2 test criterion of Stone-Geiser was used to evaluate the prediction performance of the structural model using blindfolding with an omission distance of 12, as shown in Table 1. All the endogenous constructs in the structural model had Q^2 values greater than zero. The dimension 'responsiveness' had the lowest Q^2 value of 0.04 while the dimension 'professional skills/competencies' had the highest Q^2 value ($Q^2 = 0.51$). As a result, as shown in Figure 1, all of the exogenous constructions in the model adequately predict their corresponding endogenous constructs.

Table 1: Model predictive relevance results

Constructs	SSO	SSE	Q ² (1-SSE/SSO)	Cut off
Assurance	6,160.00	5,687.22	0.08	> 0
Course Content & Structure	3,850.00	3,850.00	N/A	N/A
Empathy	5,390.00	4,917.34	0.09	> 0
Leadership Skills/Competencies	5,390.00	4,442.15	0.18	> 0
Learning Resources	4,620.00	4,620.00	N/A	N/A
Methodological Skills/Competencies	6,160.00	5,494.56	0.11	> 0
Professional Skills/Competencies	5,390.00	2,628.98	0.51	> 0
Reliability	6,930.00	6,266.33	0.10	> 0
Responsiveness	3,850.00	3,684.15	0.04	> 0
Social Skills/Competencies	7,700.00	5,846.50	0.24	> 0
Tangibility	4,620.00	4,406.47	0.05	> 0
Teaching & Learning Process	4,620.00	4,620.00	N/A	N/A

Note: SSO - Sum of the squared observations; SSE - sum of the squared prediction errors; N/A – Not applicable for exogenous constructs

The study's findings revealed that Q² values for all endogenous constructs were greater than zero in the structural model, with 'Responsiveness' registering the lowest Q² value in endogenous construct and 'Professional skills/competencies' registering the highest Q² value in endogenous construct. Zeithaml et al. (1990) defined 'responsiveness' as the readiness to assist customers and provide timely services as needed, and it is regarded as the second most significant feature in the SERVQUAL Model. However, according to this study, it is the least influenced by tertiary tourism education. Professional competences are the talents, knowledge, and skills required to meet the responsibilities and challenges of one's profession (Zehrer & Mossenlechner, 2009). According to the study's findings, tertiary tourism education has a significant impact on tourism professional abilities and competences. As a result, a graduate employee is deemed to have achieved methodological, social, leadership, and professional abilities and competences

to operate in the tourism sector after successfully completing tertiary tourism education. These gained abilities and competences are thought to be shown in service delivery in the form of the SERVQUAL Model's five dimensions, as shown in figure 1. Due to service features, most tourism sites face a significant challenge in meeting and exceeding consumer satisfaction and encouraging repeat purchases. To sustain their competitive advantage and profitability, tourism destinations must upgrade the skills and competencies of its employees. According to Airey (2008), the tourism industry's skill deficit highlights the need for vocational curricula that integrates practical skills, industry connections, and an emphasis on operational practice. Because providing outstanding service is linked to human resources (Zeithaml et al., 2006; Mei, 2017).

Because tourism is a labor-intensive industry, it should attract highly skilled people who have the specific skills and knowledge that employers require (Wang et al., 2010). As a result, tourist education and training strategies should provide a balance of fundamental knowledge, theme specialization, and professional skills (Zagonari 2009). Kenya should ensure graduates from tertiary tourism institutions are of high quality so as to remain competitive in-service quality delivery. Because a region's competitiveness is linked to its level of higher education, coordination between the tourism industry and tourism institutions will boost the destination's competitiveness (European Commission, 2015). As a result, the success of a firm is linked to its people because they are the first and last link of competitiveness (Perman & Mikinac, 2014). That said, a widening gap between expectations of employers and that of tourism education providers is noted to exist (Elsharnouby & Elbanna, 2021). Therefore, tourism stakeholders should collaborate in curriculum planning and development to ensure that the skills and competencies needed are all assembled into the specific curricula that will yield the preferred graduates for tourism industry (Putra et al., 2022). This will enable Kenya have skilled and competent employees which will translate to being a globally competitive tourism destination.

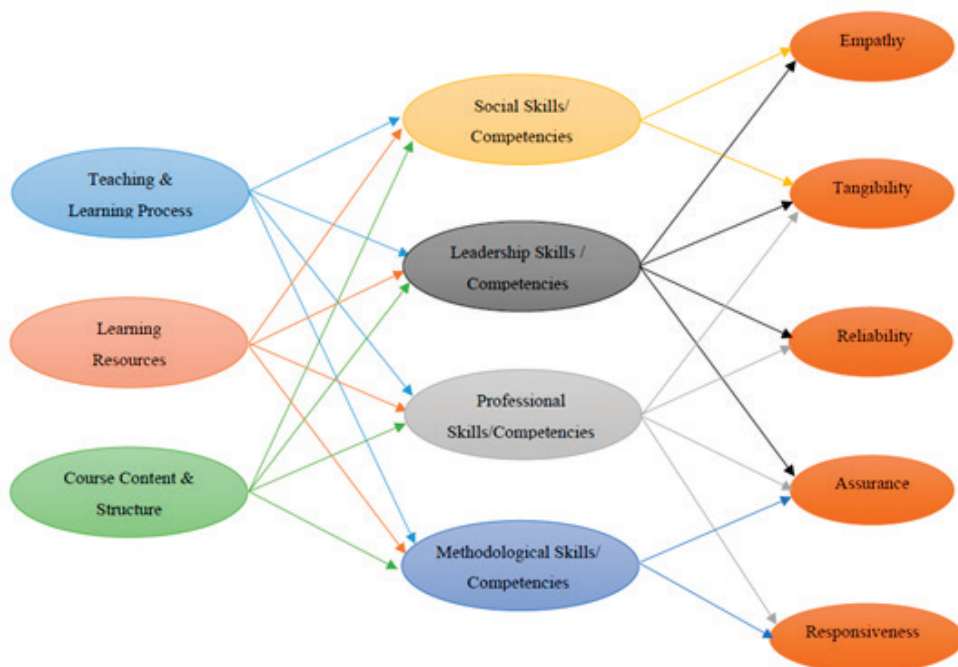


Figure 1: *Tertiary Tourism Education Quality Model (Source, Author, 2023)*

4. Conclusions and Recommendations

4.1 Conclusion

A closer link between tourism practitioners and tertiary tourism institutions in developing curricula that are custom-made for the tourism industry in skills and competencies is critical for Kenya to achieve destination service quality and become a preferred destination regionally and globally. This is due to the fact that a destination's competitiveness is based mostly on competent and well-educated employees at all levels.

4.2 Recommendations

Tertiary tourism education in Kenya should be aligned with what the tourism sector requires in order to strengthen the relationship between theory and practice. This is due to a lack of collaboration between tourist practitioners and tourism educators. As a result, there is a misalignment between skills gained and acquired and those required in the tourism business. Because the tourism business relies on tertiary tourism institutions for employment, graduate employees must acquire the necessary skills and abilities. To achieve this, tourism practitioners, tourism policymakers and tourism educators should come up with a standardized tourism curriculum for all the programs. This will address and ensure the needs of tourism industry are met. The collaboration should lead to instant and long-term goals of Kenya's tourism.

References

- African Travel and Tourism Association (ATTA), (2019), “An Analysis of Africa’s Tourism Market for April 2019”. Retrieved from <https://www.atta.travel/news/2019/04/an-anlysis-of-africas-tourism-market-for-april-2019>.
- Airey, D. (2008), “Tourism education: Life begins at 40”, *Téoros. Revue de recherche en tourisme*, 27(1), pp. 27–32. <http://journals.openedition.org/teros/1617>.
- Akroush, N. M., Jraisat, E. L., Kurdieh, D., J., Al-Faouri, N. R. & Qatu, T. L. (2016), “Tourism Service Quality and Destination Loyalty – the Mediating Role of Destination Image from International Tourists’ Perspective”, *Tourism Review*, 71(1), pp. 18-44.
- Ashraf, M. A., Osman, A. Z. R & Ratan, S. R. A (2016), “Determinants of Quality Education in Private Universities from the Students Perspective: A case Study in Bangladesh”, *Quality Assurance in Education*, 24(1), pp. 123-138. Scopus/Thompson Reuters (Emerald Pub).
- Bergman, B. & Klefsjo, B. (2003), “*Quality from Customer needs to Customer Satisfaction*”, (2nd Eds.), Student Literature, Lund.
- Bernthall, R. (1988, October), “Designing Curriculum: Will Industry Participate”, *International Conference for Tourism Educators*. University of Surrey, pp. 5-6.
- Boro, K. (2022), “Destination Service Quality, Tourist Satisfaction and Revisit Intention: The Moderating Role of Income and Occupation of Tourist”, *Journal of Tourism, Hospitality & Culinary Arts (JTHCA)*, 14(3), pp. 23-40.
- Cheng, Y. C. & Tam, W. M. (1997), “Multi-models of quality in education”, *Quality Assurance Education*, 5(1), pp. 22-31.
- Cochran, W. G. (1977), “*Sampling Technique*”, (3rd Eds), New York: John Wiley & Sons.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd Eds.). New Jersey: Lawrence Erlbaum.
- Dijkstra, T. K. & Henseler, J. (2015), “Consistent and Asymptotically Normal PLS Estimators for Linear Structural Equations”, *Computational Statistics & Data Analysis*, 81(1), pp. 10-23.
- Elsharnouby, T. H. & Elbanna, S. (2021), “Change of Perish: Examining the Role of Human Capital and Dynamic Marketing Capabilities in the

Hospitality Sector”, *Tourism Management*, 82. 104184. <https://doi.org/10.1016/j.tourman.2020.104184>.

- European Universities Association (2015), “*Standards and guidelines for quality assurance in the European higher education area: Endorsed by the Bologna Follow-Up Group Ministerial Conference*”, Yerevan.
- Govender, S. (2003), “*Evaluation of outcomes-Based Assessment in the intermediate Phase*”, Auckland Park, Johannesburg: Johannesburg University.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017), “*A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*”, (2nd Eds.), Sage: Thousand Oaks.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014), “*A primer on partial least Squares structural equation modelling (PLS-SEM)*”, Thousand Oaks: Sage.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., Kehen, D. J., Hair, J. F., Hult, G. T. M. & Calantone, R. J. (2014), “*Common Beliefs and Reality about Partial Least Squares*”, Comments on Rönkkö & Evermann (2013), *Organizational Research Methods*, 17(2), pp. 182-209.
- Mangold, W. G & Babakus, E. (1991), “Service quality: the front-stage Vs the back-stage Perspective”, *Journal of Service Marketing*, 5(4), pp. 59-70.
- Mei, X.Y. (2017), “Gaps in tourism education and workforce needs: attracting and educating the right people”, *Current Issues in Tourism*, DOI:10.1080/13683500.2017.1402870.
- Nhuta, S., Tawanda, M., Regina, M. & Abednigo C. (2015), “The Disparity between Tourism Education/Training and the Needs of the Tourism and Hospitality Industry Manpower Needs”, *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, 2(5), pp. 65-83. ISSN 2408-770X.
- O’Neill, A. M., (1997), “Investing in people: a perspective from Northern Ireland tourism part 2, Managing service quality”, *An International Journal*, 7(6), pp. 292-300.
- Parasuraman A., Zeithaml V. A. & Berry L. L. (1985), “Conceptual Model of Service Quality And its Implications for Future Research”, *Journal of Marketing*, 48, pp.41-50
- Parasuraman A., Zeithaml V. A. & Berry L. L. (1988), “SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality”, *Journal of Retailing*, 64(1), pp. 12-40.

- Parasuraman, A., Berry, L.L. & Zeithaml, V.A. (1991), “Refinement and reassessment of the SERVQUAL scale”, *Journal of Retailing*, 67(4), pp. 420-450.
- Perman, L., & Mikinac, K. (2014), “*Effectiveness of education processes in Tourism and Hospitality in the republic of Croatia, Tourism and Hospitality Industry 2014*”, Congress Proceedings Trends in Tourism and Hospitality Industry.
- Putra, K. K. F., Saepudin, P. & Utami, K. M. N. (2022), “Preferred Competencies for Tourism and Hospitality Graduates: Evidence from Longitudinal Tracer Studies”, *Journal of Technical Education and Training*, 14(3). ISSN 2229-8932.
- Shakeela, A., Breakey, N. & Ruhanen, L. (2012), “Tourism Education Roles in Sustainable Tourism Development: A case study of SIDS Introduction”, *Journal of Hospitality and Tourism Education*, 24(1), pp. 35-43.
- The Standard Group PLC (2021), “Give Kenya’s Tourism Industry a boost”. Retrieved from <https://www.standardmedia.co.ke/amp/opinion/article/2001429525/give-kenyas-tourism-industry-a-boost>.
- Tosun, C., Dedeoglu, B. B. & Fyall, A. (2015), “Destination Service Quality, Affective Image and Revisit Intention: The Moderating Role of Past Experience”, *Journal of Destination Marketing & Management*, 4(4), pp. 222-234
- Tribe, J. (2002), “The philosophical practitioner”, *Annals of Tourism Research*, 29(2), pp. 338-57.
- UNWTO, (2020), *Tourism Barometer*. Madrid, Spain
- Valdez, C. J. E, Alcantara, B. S. S., Pamintuan, A. C., Relos, G. J. & Castillo, C. R (2015), “Contributions of On-the-Job Training Program to the Skills, Personal Qualities and Competencies of Tourism Graduates”, *Asia Pacific Journal of Multidisciplinary Research*, 3(4), pp. 102-110
- Wang, J., Ayres, H. & Huyton, J. (2010), “Is tourism education meeting the needs of the Tourism Industry? An Australian case study”, *Journal of Hospitality & Tourism Education*, 22(1), pp. 8–14.
- World Travel & Tourism Council (WTTTC) (2015), “*Travel and Tourism Economic Impact of Ethiopia*”, London, United Kingdom.
- World Travel & Tourism Council WTTTC (2020), <https://www.wttc.org/about/media-centre/press-releases/2019/africa-tourism-sector-booming-second-fastest-growth-rate-in-the-world>.
- Yeo, R. K (2008), “Servicing Quality in Higher Education: Quest for Excellence”, *on the Horizon*, 16(3), pp. 152-161.

- Zagonari, F. (2009), "Balancing tourism education and training", *International Journal of Hospitality Management*, 28(1), pp. 2-9.
- Zehrer, A. & Mössenlechner, C. (2009), "Key Competencies of Tourism Graduates: The employers' point of view", *Journal of Teaching in Travel and Tourism*, 9(3-4), pp. 266-287.
- Zeithaml, V.A., Parasuraman, A. & Berry, L.L. (1990), "*Delivering Quality Service, Balancing Customer perceptions and Expectations*", The Free Press, New York, NY.
- Zeithaml, V. & Bitner, M. (2000), "Services Marketing: Integrating Customer Focus across the Firm", McGraw-Hill, New York, NY.
- Zeithaml, V.A., Bitner, M.J. & Gremler, D.D. (2006), "*Services Marketing: Integrating Customer Focus the Firm*", (3rd Eds.). McGraw-Hill, New York, NY.
- Zeithaml, V.A., Bitner, M.J. & Gremler, D.D. (2009), "*Services Marketing: Integrating Customer Focus the Firm*", (5th Eds.). McGraw-Hill, New York, NY.

TVET and the future of Work: Exploring the Role of Social inclusivity Innovations

Musau, E.

Kisii University, School of Business and Economics, Department of Management Science, P. O. Box 408- 40200, Kisii, Kenya

email: enockmusau@kisiiversity.ac.ke

Abstract

Technical and Vocational Education and Training (TVET) institutions remain citadels of knowledge and skills development. Indeed, the hallmark of TVET is to impart practical skills and work readiness that integrates the youth into labour markets. Globalisation, climate change, and digital transformation have occasioned rapid and increasing societal changes, including the in-depth transformation of the labour markets. In Kenya enrolment in TVET is on the increase. For instance, the number of students enrolled in TVET as of 2020 was 451.2 thousand which was almost triple the 148 thousand that enrolled in 2013. However, not much is known about the role TVETs play in ensuring the inclusion of their graduates into the labour markets. In retrospect, social inclusivity innovation is the means by which new TVET goods and services can be developed for and/or by those who may feel excluded from TVET and the future of work. This study explored the role of TVET in social inclusivity innovations to inform policy and to understand how TVET contributes to the future of work. A scoping review was conducted using the Arksey and O'Malley framework to explore and systematically map the literature on social inclusion, TVET, and the future of work. A total of eight hundred relevant articles were identified through the TVET website, Google scholar database, and the general Google search engine. The articles were screened by titles, abstracts, full-text assessment, and the criteria that articles were published from 2016 to date and reflected the search terms 'TVET and the future of work' and 'social inclusivity innovations.' One hundred and twenty-three articles survived the screening and formed the final scoping sample. The study identified digital innovations, such as LinkedIn, Microsoft teams, and YouTube, as innovations that TVET can use to guarantee the future of work. These innovations improve recruitment opportunities and increase access to learning materials. Therefore, the future of TVET lies in using these ubiquitous and cheap platforms that support a substantial part of the interaction that constitutes the education to employment pathways and related progressions.

Keywords: TVET, the future of work, social inclusion, innovation

1 Introduction

1.1 Background information

Social inclusion is the process through which individuals and groups' terms of taking part in society are improved with regard to ability, opportunity, and dignity of those disadvantaged on the basis of their identity (Read, 2020). The concept of social inclusion has gained much recognition in the United Nations (UN's) Agenda 2030. The Seventeen Sustainable Development Goals (SDGs) aim to ensure social inclusion in all segments of society, including health, education and information, by eliminating hunger and poverty (Boluk et al., 2019). The 2030 Agenda underscores the need for every person to enjoy minimum well-being while they reap the benefits of prosperity (Tayali & Sakhyi, 2020). This enjoyment implies that the 2030 Agenda, through actionable goals and targets, reverses tenets of social inclusion.

Social inclusion takes cognizance of the fact that certain groups of individuals face barriers to full participation in economic, social and political life in every society. Therefore, as a concept, social inclusion seeks to improve the abilities, opportunities and dignity of disadvantaged groups to enable them to enjoy improved social participation (Unterfrauner et al., 2020). Several factors, including the sense of belonging, community acceptance, active participation, role-playing, and social structures, are associated with social inclusion (Saavedra et al., 2018).

Education and training are critical in fostering social inclusion. According to Absolon (2016), education and training can emancipate people's spirits, bodies, hearts, and minds, and foster social conscience and truth. Monderna and Voinarovska (2019) contend that education and training provide concrete opportunities for diversified learning environments that enhance skills development and individual self-affirmation. The typical roles of technical and vocational education and training (TVET) to foster social inclusion that meets multifaceted needs, including employability, have become clearer among African nations in the last two decades (Malley, 2016). It is argued that TVET delivery systems inclusively look to impart the skills needed to create wealth and condemn poverty to the periphery (Subramanian et al., 2020).

In this study, social innovation is defined from three perspectives. Firstly, social innovation is conceived as creating, capturing, and distributing value to address social issues, consistent with the thoughts of Logue (2019). In these thoughts, TVET institutions could strive to source ideas, relations, practices, and models that have social impacts. Moreover, they could organize these resources and relations to maximize the generated social impact before sharing to distribute the impact. Secondly, social innovation has multiple meanings relative to diverse fields, practices, and multi-vocal powers (Logue, 2019). Therefore, social innovation in the TVET context is perceived as polysemous. The study recognizes the divergent

fields that TVET handles, the specificity of social innovations across those fields, and their diverse generative practices. Meanwhile, the study recognizes the different stakeholders with different ideas. Therefore, through TVET, the expectation is that individuals and groups get socially included in terms of improving ability, opportunity, and dignity of the disadvantaged groups.

The third perspective through which social innovation is defined in this study is institutional change. We argued that social innovations are functions of changes in social structures and relations. Consequently, TVETS should embrace change to address the emerging transformation of labour markets. Changes in values, governance, resource and authority flow, and routines are inevitable in pursuing social inclusion innovations (Klimczuk & Tomazyk, 2020).

According to the National TVET Standards report of 2020 authored by the Technical and Vocational Education and Training Authority (TVETA, 2020), TVET in Kenya is vital for social equity, inclusion, and sustainability. However, the Ministry of Education's (MOE) strategic plan, 2018-2022, acknowledges that Kenya experiences exclusion to TVET access, particularly for persons with disabilities and females (ILO, 2021). Besides, despite the efforts to revamp TVET institutions in Kenya by rebranding them and enticing youths by referring to them as the preferred option for higher education (Cohen, 2020), challenges of globalization, digital transformation, and climate change have led to transformed labour markets that continue to exacerbate exclusion of certain groups.

1.2 Problem Statement

Technical and Vocational Education and Training Institutions (TVETs) are in the process of implementing whole youth development (WYD) skills (Muyaka & Kitange, 2021). It is argued that WYD incorporates skills that holistically develop the youth skill set, including technical or hard skills and soft skills (Ochieng Ngware, 2021). By emphasizing WYD, TVETs recognize that developing young people's emotional, social and cultural awareness enhances their transition to the world of work (Ngware et al., 2018). Yet, evidence shows that Kenya experiences massive social inequalities in access to TVET, especially in regard to participation of females and persons with disabilities (ILO, 2021). It is reported that the number of women enrolled in TVET programmes in Kenya is 39.41 per cent, with only five per cent in vocational areas such as engineering and construction (Rotich et al., 2020). Several innovative initiatives are being made to boost social inclusion in TVET in Kenya, including a dual learning industrial welding training programme with low barriers to entry targeting female youth and persons with disabilities in Turkana and Garissa Counties (ILO, 2021); the Women in Technical Education and Development (WITED) programme (Najoli, 2019); and the open distance learning (ODL) programme (Chege & Kariuki, 2016). However, the fewer women enrolling in TVET compared to the targets set

by the Ministry requiring at least a 50 per cent enrolment and access for both men and women (ILO, 2021), coupled with the steady rise in youth unemployment in Kenya that stood at 22.2% as of 2019 (Gachugu & Mattingly, 2019), questions arise regarding the role of such innovative initiatives in TVET and the future of work. Therefore, this paper investigated social inclusion innovations in TVET institutions in Kenya and their impact on the future of youth in labour markets.

1.3 Research Objectives

The objectives of this study were to:

1. Determine the role played by TVET in enhancing social inclusion in Kenya;
2. Evaluate the social inclusion innovations through which TVET can guarantee the future of work.

2 Research Methodology

A scoping review based on the Arksey and O'Malley framework was conducted following suggestions by Bradbury–Jones et al. (2022). Under this framework, the research question was first specified, relevant literature was identified, studies were selected, data mapped out, and results were summarised, synthesised, and reported. The scoping review approach is a secondary approach that was deemed ideal in this study, due to its cost-effectiveness and broad search strategy that maximized transparency, reliability, and reproducibility of literature (Audate et al., 2019).

In line with the Arksey and O'Malley framework, the first step was identifying the research question. In retrospect, two questions were identified, i.e., 'what is the role of TVETs in Kenya in social inclusivity?' and 'Which innovations can TVET institutions in Kenya use to contribute to the future of work?' The second and third steps involved identifying relevant literature and selecting studies. The TVETA Website, Google Scholar database, Google search engine, and academic search premier were used to select suitable studies. The search strategy was broad and iterative, enabling navigation and redefining findings. The inclusion criteria were limited to articles from 2016 to date, articles on TVET and the future of work, and articles on social inclusivity innovations.

After identifying and selecting articles, data about author identity, author year, city, region, study purpose, design, methodology, and key findings were recorded. This process involved two study participants, one extracting data and the other validating. Once the quality of studies had been appraised, data were charted and sorted. The sorting included organizing articles, studies, and reports by identified themes.

3. Results and Discussions

3.1. Identification of studies

A total of 740 articles were identified from the searches (TVETA Website: 53, Google Scholar: 347, General Google: 240, Academic search premier: 100), leading to 650 titles and abstracts screened after removing duplicate articles. A total of 325 full-text articles were retrieved from different sources. Five articles could not be accessed in full format. Screening of the full texts led to 130 potential articles for the scoping review. Assessment of these articles for eligibility excluded seven full articles. Therefore, 123 articles were included in the final data extraction, sorting, and narrative account, as shown in the flowchart (Fig 1).

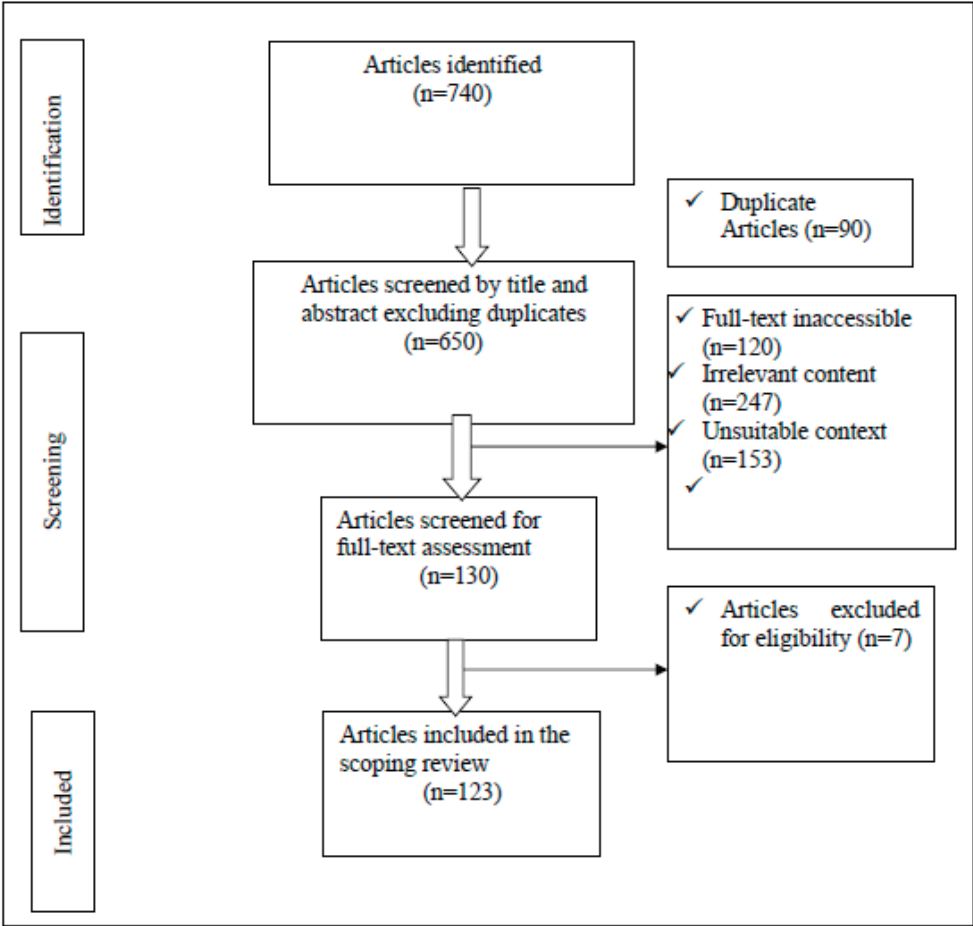


Figure 1: Flowchart of article identification and selection (Source: Author, 2023)

The articles included in the review employed the three study designs commonly associated with research: n=64 used qualitative methods, n=48 used quantitative methods and n=11 explored mixed methods. Included in the qualitative studies,

n=39 were systematic reviews, n=14 were narratives, n=6 were desk reviews, n=2 were discussion papers, and n=2 were policy briefs. The quantitative studies were also distributed across diverse designs: n=20 were quasi-experimental, n=8 were cross-sectional, n=6 were descriptive, n=6 were model development, n=5 were experimental, and n=3 were case studies. Geographical-wise, the included articles were mainly from Asia and Sub-Saharan Africa. Asia, with 48.9% of the articles identified, led the pack, followed by Africa at 32.5%. Some articles, 13.9% featured cross-country studies.

3.2 Role of TVET institutions in social inclusivity innovation.

The first research question identified articles related to the role TVETs play in social inclusivity innovations. Themes and subthemes were extracted, as highlighted in Table 1.

Table 1: Role of TVET institutions in Social Inclusivity

Theme	Sub-theme	References
Enhancing sustainable development	Green skills Green technology Learning organization Sustainability empowerment of youths	Paryono, 2017; Ramilia et al., 2019; Adam et al, 2019 Kassim et al., 2018 Okwella et al., 2017
Support inclusive economic recovery	Massive open online courses (MOOCS) Innovation Anticipating and preparing for emerging skills jobs	Spours and Grainger, 2022 Panth & Maclean, 2020
Nurture inclusive interests in STEM and TVET Education	ICT enabled TVET The social media analytics framework Industry 4.0	Hassan et al., 2021 Adnan et al., 2021 Alias et al., 2018
Integrating knowledge and skills	Blended and embedded model E-learning initiatives	Razzaq et al., 2019 Pangeni & Karki, 2021
Flexibility and entrepreneurial inclusivity	Entrepreneurial intention Addressing factors impacting entrepreneurship education	Tufa & Patel, 2022; Zedan, 2021 Gamede & Uleanya, 2019

3.2.1 Enhancing Sustainable Development

Several articles through sub thematic issues such as green skills, green technology, learning Organisations, and sustainable empowerment of youths underscored the role of TVETs in sustainable development innovations. Paryono (2017) highlighted TVETs contribution to social inclusivity through green jobs and sustainable development. Ramlia et al. (2019) argued that integrating green skills into the TVET curriculum amounted to social inclusivity innovation. Okwelle et al. (2017) reported that if well implemented, TVET was a tool to empower the youth sustainably. Adam et al. (2019) recommended that the TVET curriculum integrate green skills to promote social inclusivity through sustainable development.

3.2.2 Support Inclusive Economic Recovery

Contributing to social inclusivity through innovative support to economic recovery also emerged as a role played by TVET to enhance social inclusivity. Panth and Maclean (2020) posited that TVETs are positioned to anticipate and prepare innovations for emerging skills jobs for social inclusion in the labour market. Kassim et al. (2018) pointed out that despite recent developments, massive open online courses (MOOCs) are avenues that TVETs in Malaysia are employing to enhance green technology innovation aimed at enhancing social inclusion. Spours and Grainger (2022) argued that TVET institutions had pluralistic collaborations with each other, climate campaigners, and wider civil society partners to support social inclusion through skills generation.

3.2.3 Nurturing inclusive interests in STEM and TVET education

Nurturing interest in STEM and TVET education also emerged as a role TVETs play in social inclusivity innovation. Hassan et al. (2021) posited that TVETs should focus on ICT technologies, including artificial intelligence, data science, Robotics, IoT, cloud computing, and others, as innovations to maximize social inclusion. On the other hand, Adrian et al. (2021) noted that TVETs can exploit a social media analytics framework to nurture students' interest in STEM and TVET education and improve social inclusivity. Alias et al. (2018) posited that with the digital transformation of industrial markets, TVETs are well-placed to leverage industry 4.0 to enhance social inclusivity innovations.

3.2.4 Integrating knowledge and skills

Blending knowledge and skills is another theme from the scoping review regarding the role TVETs play in social inclusivity innovations. Razzaq et al. (2019) reported that TVETs employ an innovative approach that pursues a blended and embedded model. This model produces ready-made graduates with the requisite academic and soft skills for inclusion in labour markets. Pangeni and Karki (2021) acknowledged that TVETs had attempted to shift pedagogy to innovative e-learning initiatives, thereby increasing access and inclusion.

3.2.5 Flexibility and Entrepreneurial inclusivity

Other Scholars hailed TVETs for emphasizing flexibility and inclusive entrepreneurial mindsets. Tufa and Patel (2022) observed that TVETs could nurture entrepreneurial intention and autonomy, which are antecedents of social inclusion in labour markets. Gamede and Uleanya (2019) argued that by ensuring that education related to industry-specific skills, TVETs had the onus to oversee countries' economic and social growth and enhance social inclusivity innovation.

3.3 Innovations through which TVET can contribute to the future of work

The second research question investigated innovations through which TVET can contribute to the future of work. Emerging themes from the scoping review highlighted innovations inherent in digital technologies. Table 2 displays the common technology platforms identified.

Table 2: Innovations contributing to the future of work

Innovation	References
LinkedIn	Olelewe et al., 2020 Kanwar et al., 2019 Majumdar & Araizteglu, 2020 Dawe et al., 2020
Microsoft teams	Majumdar et al., 2021 Oloo & Otieno, 2022 Okumu & Kenei, 2022 Aina & Ogegbo, 2022
YouTube	Rabiman et al., 2021 Wandago et al., 2017 Ehlers et al., 2018 Ariantini et al., 2021 Quarshie et al., 2022

3.3.1 LinkedIn Innovation

The scoping review identified many studies highlighting LinkedIn's importance as an online teaching platform. Olelewe et al. (2020) noted that teaching platforms such as LinkedIn had found their way into learning environments requiring that TVET lecturers undergo professional development to engage them as social inclusion innovations. Kanwar et al. (2019) argued that social platforms such as LinkedIn represented the shift in paradigm that moves TVET from traditional models to more innovative models for the constantly evolving world of work. Majumdar and Araizteglu (2020) identified the LinkedIn platform as an avenue through which TVET could address social inclusion challenges due to global

disruptions like Covid-19. Dawe et al. (2020) noted that LinkedIn was a platform capable of enhancing social inclusion through trainee recruitment in TVET and enabling learners and employers to match skills to jobs.

3.3.2 Microsoft Teams

Majumdar et al. (2021) identified Microsoft teams as the ultimate messaging app that TVET could harness for real-time communication, collaboration, and instruction to enhance social inclusion. Oloo and Otieno (2022) determined that to maintain social inclusion during the Covid-19 pandemic, TVET institutions largely used the Microsoft teams platform as a suitable innovation. Okumu and Kenei (2022) established that most TVET institutions in Kenya leveraged these platforms to support training innovations, including Microsoft teams. Aina and Ogegbo (2022) contend that in transitioning from traditional pedagogy to virtual pedagogy due to the Covid-19 pandemic, TVET college educators in TVETs in South Africa were using Microsoft teams, albeit after pieces of training to achieve social inclusion.

3.3.3 YouTube

The YouTube platform emerged from the scoping review as a rich resource in social inclusion innovation that allows employers to assess potential employees' skills remotely. Rabiman et al. (2021) posited that YouTube is an online media learning that complements conceptual understanding of technical subjects leading to enhanced inclusion. Wandago et al. (2017) observed that YouTube was a social inclusivity innovation that complements classroom instruction and should gain prominence in TVET. Elhers et al. (2018) identified YouTube as an open educational resource providing access to high-quality training materials needed for technical education in TVET. Ariantini et al. (2021) recognized YouTube as a social media innovation and a platform to provide trainees with the required exposure. Quarshie et al. (2022), on the other hand, regarded YouTube as part of the blended technology likely to enhance social inclusion in TVET.

3.4 Discussion

This research employed the scoping review methodology to identify and synthesize findings from 123 articles focused on TVET and social inclusivity innovation. The review documented the enhancement of sustainable development, supporting economic recovery, nurturing interest in STEM and TVET education, integrating knowledge and skills, and emphasizing flexibility and entrepreneurship as roles that TVET institutions in Kenya can play towards social inclusivity. Additionally, the review identified the LinkedIn, Microsoft teams and YouTube innovations as innovations that TVET institutions in Kenya can use to contribute to the future of work. These findings have many implications for TVET institutions concerning

endeavors to improve the ability, opportunity, and dignity of the disadvantaged by assuring the future of work.

For instance, in finding that TVET contributes to the enhancement of sustainable development, this research highlights the significant role that TVET is poised to play in inclusive handling of emerging disruptions such as the threat posed by the sixth mass extinction to the future of work. The sixth mass extinction is an Anthropocene extinction that threatens sustainability due to losing the planet's biodiversity (Cowie et al., 2022). TVET institutions are undergoing a revamping exercise that can have them adopt a responsive curriculum to cater for the inclusion needs of the disadvantaged during such emerging issues and enhance innovations for their social inclusion (Quan-Baffour & Akpey–Mensah, 2022; Oriawe, 2018). Given the ongoing greening endeavours, the contribution of TVET to enhancing social inclusion is perhaps expected in contemporary society (Were & Ahmed, 2018). Anundo and Orwa (2020) implicitly underscored the importance of TVET in social inclusion by calling for further innovations and improvements in TVET institutions in Kenya. In these circumstances, TVET contributes even more to social equity and inclusion.

The finding that TVET supports economic growth confirms the sub-sector position in social inclusivity. According to Ali Asadullah (2019), expenditure on TVET indirectly contributes to economic growth by targeting social inclusion indicators such as earnings, employment, and multidimensional poverty. Pavlova (2018) contends that TVET partnerships do not only foster green skills but also inclusive and sustainable economic growth. Moreover, TVET is recognized as the pillar of economic development (Wakiaga, 2022). Given the concern among Kenyan manufacturers that there are gaps in technical skills, including Science, Technical, Engineering, and Mathematics (STEM) courses, the finding that TVET nurtures an interest in STEM illuminates its centrality in Kenya's desire for industrialization and the guarantee of the future of work. Moreover, the realization of the manufacturing pillar of Kenya's Big 4 Agenda leverages TVET institutions capacity to be innovative.

This scoping study also identified blending skills, knowledge, flexibility, and entrepreneurship as roles that TVET can play in social inclusion. Indeed, with the economic hard times being experienced in Kenya, TVETs are in a position to blend knowledge and skills that can enhance entrepreneurial spirit. Research has shown that the entrepreneurial spirit has enhanced social inclusion in Serbia (Demnjanovic et al., 2017). Similarly, it has been documented that the creation of entrepreneurial societies has raised the chances of social inclusion among young people (Jovanoy Apasieva et al., 2020). Suffice it to say that in emphasizing flexibility and entrepreneurship, TVET is a citadel of social inclusion.

Regarding TVET's contribution to the future of work, this research underscored the emerging importance of the various digital innovations. It is posited that the quest for competitiveness in this era of fast-changing digitization requires efficient ways to optimize productivity and morbidity in the workforce (Gennrich, 2019). Consequently, TVET institutions are expected to be prepared to meet challenges due to the digital age. Luckily, this seems to be the case with this scoping research establishing that social media platforms such as LinkedIn, Microsoft teams, and YouTube are currently used in TVET institutions to raise chances of inclusion into the future of work.

4 Conclusions and Recommendations

4.1 Conclusions

TVETs in Kenya play several critical roles towards social inclusivity. These roles include enhancing sustainable development through green skills and technology that empowers the youth; supporting inclusive economic recovery; nurturing inclusive interest in STEM and TVET education; integrating knowledge and skills; and honing flexibility and entrepreneurial inclusivity. Meanwhile, to increase social inclusivity and enhance the future of work, TVETs can integrate innovations such as the LinkedIn and YouTube platforms together with Microsoft teams.

4.2 Recommendations

TVET institutions undoubtedly play a critical role in social inclusion and the future of work by nurturing skills and contributing to sustainable development, economic recovery, knowledge, and skills and jobs. These contributions will remain sustainable if these institutions take responsibility for creating innovations that can enhance social inclusion. To contribute effectively to social inclusion innovations, TVET stakeholders should be ready to face industrial revolution 4.0. Although several digital technologies are available for management of TVETs, exploiting social media innovations such as LinkedIn, Microsoft teams, and YouTube remains a good starting point for social inclusion in the future of work. The findings showing the critical nature of social inclusion implies that policy frameworks targeting TVET provide an avenue for including the disadvantaged groups to boost their opportunities for the future of work. Moreover, research should narrow on a highly defined search of information relating to social exclusion instead of a broader, less defined search achieved in a scoping review. Future studies on TVET and social inclusion innovations should employ the 'cause-effect' designs that suitably identify the problem to be addressed. Given the leveraging of the manufacturing pillar of the Big 4 Agenda on TVET, the government and TVET sub-sector stakeholders should help TVET institutions to gain the financial capacity to continue providing a training model that enhances innovations and social inclusion.

References

- Absolon, K. E. (2016). Wholistic and ethical: Social inclusion with Indigenous peoples. *Social Inclusion*, 4(1), 44-56.
- Adam, M. S., Jibrin, D. U., Shuaibu, F., Dahiru, M., Jaja, M. K., & Sule, C. C. A. Y. M. (2018). Greening TVET: An Imperative to Nigeria's Energy Crisis for Sustainable Economic Recovery and Development. In *KANO 2018—Proceedings of the 31st TEPAN Annual National Conference* (pp. 337-346).
- Adnan, M. H. M., Ariffin, S. A., Hanafi, H. F., Husain, M. S., & Panessai, I. Y. (2021). A Social Media Analytics Framework to Increase Prospective Students' Interests in STEM and TVET Education. *Asian Journal of University Education*, 16(4), 82-90.
- Aina, A. Y., & Ogegbo, A. A. (2022). Investigating TVET college educators' experiences while transitioning from the traditional classroom to the virtual classroom during the COVID-19 pandemic. *Perspectives in Education*, 40(1), 129-142.
- Alias, S. Z., Selamat, M. N., Alavi, K., & Arifin, K. (2018). Industry 4.0: a systematic review in technical and vocational education and training. *Jurnal Psikologi Malaysia*, 32(4).
- Audate, P. P., Fernandez, M. A., Cloutier, G., & Lebel, A. (2019). Scoping review of the impacts of urban agriculture on the determinants of health. *BMC Public Health*, 19(1), 1-14.
- Boluk, K. A., Cavaliere, C. T., & Higgins-Desbiolles, F. (2019). A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism. *Journal of Sustainable Tourism*.
- Bradbury-Jones, C., Aveyard, H., Herber, O. R., Isham, L., Taylor, J., & O'malley, L. (2022). Scoping reviews: the PAGER framework for improving the quality of reporting. *International Journal of Social Research Methodology*, 25(4), 457-470.
- Chege, P. N., & Kariuki, J. N. (2016). Increasing Women Access in TVET Through ODL Programme: A Case of Thika Technical Training Institute in Kiambu County, Kenya.
- Cohen, J. (2020, September 8). How TVET is Changing the Landscape of Poverty in Kenya. <https://www.borgenmagazine.com/tvet-in-kenya/>
- Cowie, R. H., Bouchet, P., & Fontaine, B. (2022). The Sixth Mass Extinction: fact, fiction or speculation?. *Biological Reviews*.
- Dawe, M., Miller, T., & Diop, O. (2020). Policy brief: Using digital credentials to keep the promises of TVET. *New Delhi: United Nations Educational*.

Scientific and Cultural Organization.

- Gachugu, E., & Mattingly, S. (2019). Strengthening Kenya's TVET capacity through learning and adaptation through Learning and Adaptation. Nairobi: RTI International/USAID KYES.
- Gamede, B. T., & Uleanya, C. (2019). Factors impacting entrepreneurship education in TVET colleges: A case of South Africa. *Journal of Entrepreneurship Education*, 22(3), 1-12.
- Hassan, R. H., Hassan, M. T., Naseer, S., Khan, Z., & Jeon, M. (2021). ICT enabled TVET education: a systematic literature review. *IEEE Access*, 9, 81624-81650.
- International Labour Organization (2021, April 01). Overcoming barriers and stereotypes: Social inclusion in Technical and Vocational Education and Training (TVET). https://www.ilo.org/global/programmes-and-projects/prospects/news/WCMS_778068/lang--en/index.htm
- Kanwar, A., Balasubramanian, K., & Carr, A. (2019). Changing the TVET paradigm: new models for lifelong learning. *International Journal of Training Research*, 17(sup1), 54-68.
- Kassim, S. N. H. B. M., & Puteh, S. B. (2018, July). Assessing The Role of MOOC on Knowledge, Attitude, and Practice of Green Technology Among TVET Students in Malaysia. In *2018 International Conference on Smart Computing and Electronic Enterprise (ICSCCE)* (pp. 1-4). IEEE.
- Klimczuk, A., & Tomczyk, Ł. (2020). Perspectives and Theories of Social Innovation for Ageing Population. *Frontiers in Sociology*, 5, 6.
- Logue, D. (2019). *Theories of social innovation*. Edward Elgar Publishing.
- Majumdar, S., & Araiztegui, I. (2020). Technical Vocational Education & Training—Reflections on the Issues Facing TVET and Its Potential in the Time of COVID-19 (pp. 9-22). Colombo Plan Staff College (CPSC).
- Majumdar, S., Subrahmanyam, G., Busian, A., Schröder, T., & Schröder, T. Towards E-learning in TVET: Designing and developing an E-Competence Framework (E-CF) for TVET teachers in Palestine Jan 31, 2021| Issue 16.
- Malle, A. Y. (2016). Inclusiveness in the Vocational Education Policy and Legal Frameworks of Kenya and Tanzania. *Journal of Education and Learning*, 5(4), 53-62.
- Monderna, E., & Voinarovska, N. (2019). Promoting personal motivation

- within professional education. *Journal of Educational and Social Research*, 9(2), 1-1.
- Muyaka, J., & Kitainge, K. M. (2021). Implementation Of Whole Youth Development Skills in Kenya's TVET Institutions. *The Kenya Journal of Technical and Vocational Education and Training*, 4: 63-80
- Najoli, E. K. (2019). The effectiveness of wited programme on enrollment of women in technical and vocational education and training (TVET). *EURASIA Journal of Mathematics, Science and Technology Education*, 15(3), em1682.
- Ngware, M., Hungi, N., Ochieng, V., Kiroro, F., Wambiya, E., Muhia, N., Mambe, S. (2018). Building Capabilities for Work and Life: Assessing the Production of Core Values and Capabilities Among Youth in TVET Institutions in Kenya. Nairobi : African Population and Health Research Center (APHRC).
- Ochieng, V. O., & Ngware, M. (2021). Whole youth development and employment: exploring the nexus using qualitative data from a Kenyan study of technical and vocational education and training institutions. *Journal of Adult and Continuing Education*, 14779714211037357.
- Okwelle, P. C., Deebom, M. T., Harcourt, P., & Okwelle, P. C. (2017). Technical vocational education and training as a tool for sustainable empowerment of youths in Niger Delta, Nigeria. *International Journal of Innovative Social & Science Education Research*, 5(1), 29-38.
- Olelewe, C. J., Orji, C. T., Osinem, E. C., & Rose-Keziah, I. C. (2020). Constraints and strategies for effective use of social networking sites (snss) for collaborative learning in tertiary institutions in nigeria: perception of tvet lecturers. *Education and information technologies*, 25(1), 239-258.
- Oloo, N. & Otieno, G. A. T. (2022). Assessment of Technology Acceptance and Adoption in TVET institutions during the Covid-19 Pandemic. *The Kenya Journal of Technical and Vocational Education and Training*, 5: 78-85
- Okumu, G. J., & Kenei, J. K. (2022). The Efficacy of Distance and On-line Learning in TVET Institutions in Kenya. *The Kenya Journal of Technical and Vocational Education and Training*, 5: 17-30
- Otieno, A., & Onyango, M. The Impact f Industrial Attachment in TVET Institutions; A Case Study Of Engineering Departments In Masai Technical Training Institute In Kajiado, Kenya. *The Kenya Journal Of Technical And Vocational Education And Training*, 14.

- Oviawe, J. I. (2018). Revamping Technical Vocational Education and Training through Public-Private Partnerships for Skill Development. *Makerere Journal of Higher Education*, 10(1), 73-91.
- Pangeni, S. K., & Karki, G. (2021). E-Learning Initiatives at CTEVT: An Attempt at Innovation and Paradigm Shift in TVET Pedagogy. *Journal of Technical and Vocational Education and Training*, 1(15), 134-147.
- Panth, B., & Maclean, R. (2020). *Anticipating and Preparing for Emerging Skills and Jobs: Key Issues, Concerns, and Prospects* (p. 351). Springer Nature.
- Paryono. (2017, September). The importance of TVET and its contribution to sustainable development. In *AIP Conference Proceedings* (Vol. 1887, No. 1, p. 020076). AIP Publishing LLC.
- Quan-Baffour, K. P., & Akpey-Mensah, T. L. (2022). Responsive Curriculum for Sustainable TVET Colleges in South Africa: Quo Vadis?. In *Reimagining Development Education in Africa* (pp. 109-128). Springer, Cham.
- Rabiman, R., Sudira, P., Sofyan, H., & Nurtanto, M. (2021). Practical learning media in subject maintenance of chassis and power (MCP) based online: simple learning using videos on YouTube.
- Ramli, S., Rasulb, M. S., & Affandic, H. M. (2019). The importance of green skills-from the perspective of TVET lecturers and teacher trainees. *International Journal of Innovation, Creativity and Change*, 7(6), 186-199.
- Razzaq, A. R. A., Amiruddin, M. H. B., Rohiat, M. A., & Razali, N. B. (2019). Integrating knowledge and skills-based curriculum in TT-TVET through a blended and embedded model: An innovative approach at the faculty of technical and vocational education, Universiti Tun Hussien Onn Malaysia. In *Innovative Teaching and Learning Methods in Educational Systems* (pp. 3-11). Routledge.
- Read, T. (2020). Towards a new model for inclusive education based on virtual social inclusion and mobile openness. *World Journal on Educational Technology: Current Issues*, 12(1), 14-22.
- Rotich, R., Wanyeki, P., & Dimo, H. (2020). Influence of Occupational Stereotyping on Enrolment in Technical Courses: A Case of Female Students in Technical Training Institutions in North Rift Region, Kenya. *African Journal of Education, Science and Technology*, 5(4), 250-257.
- Spours, K., & Grainger, P. (2022). The Roles and Relationships of Vocational and Higher Education in Supporting Economic Recovery and the

Just Transition.

- Subramaniam, M., Loganathan, N., & Noordin, M. K. (2020). Tvet education for students in Malaysia: A systematic literature review. *Journal of Social transformation and Education*, 1(1), 63-74.
- Tayali, E. M., & Sakyi, K. A. (2020). The health and well-being of low paying jobs in Southern Africa: Case Study of Security Guards in Zambia. *Advances in Social Sciences Research Journal*, 7(4), 229-247.
- Tufa, T. L., & Patel, A. A. (2022). Entrepreneurial Intention, Autonomy, And Self-Employment Among Mses: The Role Of TVET Support In Addis Ababa. *Journal of Positive School Psychology*, 8048-8053
- Unterfrauner, E., Hofer, M., Pelka, B., & Zirngiebl, M. (2020). A new player for tackling inequalities? Framing the social value and impact of the maker movement. *Social Inclusion*, 8(2), 190-200.
- Were, C. M., & Ahmed, F. (2018). Issues affecting the greening of TVET programs for sustainable development in Kenya: A case of TVET institutions in Nairobi County. *Africa Journal of Technical and Vocational Education and Training*, 3(1), 2-12.
- Zedan, S. (2021). TVET: Labor force today, entrepreneurial leaders tomorrow. *Journal of the International Council for Small Business*, 2(1), 42-45.

Enhancing Trainees' Competency Nutraceutical Skills: Nutrition Trainers' Perspective

Odhiambo W. A.

Mawego Technical Training Institute, P. O. Box 289-40222, Oyugis, Kenya

email: achiengodhiambo84@gmail.com

Abstract

The dynamics of both national and international economies calls for pursuit and advancement of education aimed at producing TVET graduates who are able to cope with the ever-changing trends in foods, nutrition and health. TVET nutrition and dietetics curriculum review indicates over emphasis on the utilization of foods and nutrients end products by the public and patients as preventive and curative therapies while excluding production skills inculcation. A shift from lecture-based teaching in line with competency-based curriculum calls for the need to integrate more practical skills especially on production of nutraceuticals. This paper seeks to analyze trainer's perspective on nutraceutical skills in the trainee's syllabus with the focus of enhancing nutrition trainee's employability skills. A survey targeting forty practicing nutrition and dietetics trainers from six institutes within Western region and another six institutes from Nyanza regions were purposively selected based on the fact that they offer nutrition programs and online questionnaires were deployed for both qualitative and quantitative data. The findings from this study showed that implementation of such a comprehensive source of practical approaches is important in ensuring innovation, and professional competency in the manufacturing aspect of nutrition and dietetics. This study recommended the provision of adequate resources by Ministry of Education and other stakeholders to support in-depth research and commissioning of relevant partnerships for improvement of skills.

Keywords: Nutraceutical processing; practical approaches;

1. Introduction

1.1. Background information

Nutraceutical and Functional Food Processing Technology is a comprehensive overview of current and emerging trends in the formulation and manufacture of nutraceuticals and functional food (Aryee, 2014). Healthy living largely depends on consumables including natural food sources and manufactured products such as nutraceuticals. In an effort to achieve healthy living, globalization has increased flow in all aspects of science and technology, thus taking health services to new heights of probability for prompt meeting of both preventive and curative healthcare needs. Similarly, advancements in the clinical nutritional field constantly necessitates new concepts in nutrition. Dietetics needs to shift from the traditional lecture based training methods that develop skills which

includes; calculation of dietary requirements of an individual, distribution of daily macro and micro-nutrients thus utilization of therapeutic products for curative and nutritional counselling and education for disease preventive services to a novel and exhilarating research field for the discovery of innovative health products with high morbidity preventive. It is in this line that Technical and Vocational Education Training in Nutrition and dietetics.

Problem solving competency, team-work and self-criticism are some of the key non-technical skills transferable through TVET. These skills once acquired or developed by the learner, can be transferred into different vocational and non-vocational areas, such as group life or personal. Achieving competency- based Nutrition and dietetics trainings requires alignment of these transferable skills with a practical approach to training which explores innovativeness, creativity and entrepreneurship while appreciating current marketable product manufacturing, hence nutraceutical processing technology. With consistency in achieving goals of learning merged with specific outcomes, designing appropriate assessment tool will ensure the skills are inculcated. Rather than being an event that occurs after instruction to check on individual learning, assessment can be central in driving high-quality learning and instruction (Wakeford, 2003).

Two research questions were addressed in this paper. First, does the current TVET Nutrition and Dietetics curriculum coverage wide enough to enhance competency-based training? Second, is nutraceutical technology processing skills inculcation in trainees a possible way to ensure innovativeness through manufacturing of products hence entrepreneurship?

Nutraceutical holds a significant promise of elevating the suffering form diseases and for this potential to be fulfilled, much more research is needed to document safety and disease risks to humans (Mahabir, 2016). Competency in nutraceutical field is particularly advantageous to learners in nutrition field in technical and vocational training as the challenges of uprising diseases would be solved by relevant research and innovative products.

1.2. Statement of the problem

Nutraceuticals and functional foods are becoming an alternative affordable system to reduce the risk of disease through prevention in spite of high tech therapies and costly medicine (Mann, 2021). In technical training, the overall goal of imparting relevant skills applicable in solving world's problem remains certain and a vision to be achieved. This implies that nutrition and dietetics curriculum requires urgent reform to align itself with current healthcare trend far above listing foods and their nutritional values. The important link between nutrition and health has led to the discovery of nutraceuticals which are food derived products that exhibit health boosting properties beyond their nutritional values (Gopi, 2022). A situation that

necessitates a proactive approach training future nutritionists thereby inculcation of nutraceutical processing skills.

1.3. Objectives of the study

The objective of this paper was to analyze TVET nutrition trainer's perception on adaptability of nutraceutical processing technology and to analyze trainers view on its future applicability at workplace. The specific objectives of the study were to:

- i. Determine trainers' ratings on resource availability for nutraceutical processing skills curricula implementation in technical institute.
- ii. Determine the relevance of nutraceutical skills on employability of nutrition trainees' graduates.

2. Methodology

A descriptive cross-sectional study was conducted and data collected from the beginning of January to end of April 2022. An informed consent was obtained from participants before they were allowed in the questionnaire section. Simple random sampling method was used to collect data from nutrition and dietetics trainers from Western and Nyanza regions where a sample size of forty was obtained. Data was collected electronically using google forms. The questionnaire consisted of two parts: the informed consent and proforma with demographic details and questions. Informed consent was mandatory before proceeding to the questionnaire section. Only after they read and clicked on the informed consent page where they allowed access to the proforma section.

Data were opened with Microsoft excel sheet and analyzed. Descriptive statistics have been presented as means, standard deviations, frequencies and percentages.

3. Results and discussions

3.1. Demographic Characteristics of the Trainers

This section presents the demographic characteristics of the trainers, which include gender, age, qualifications and work experience.

3.1.1. Trainers' gender

As shown in Table 1, there were more female trainers (70%) than male trainers (30%) for the nutrition course. This could be attributed to the society's female gender preference for the course.

Table 1: Gender of Trainers

	Frequency	percent	Cumulative percent
Male	12	30	30
Female	28	70	100
Total	40	100	

3.1.2 Age of trainers

Majority of the Nutrition trainers (47.5%) were in the age group 36-40 years. This was followed by trainers in the age group 41-45 years and 31-35 years at 25% and 22.5% respectively. The age group 46-50 years had the lowest proportion of trainers at 5%. The results showed that younger trainers were the majority implying that they would likely stay within the service for longer period of time. The age groups of the respondents are shown in Table 2.

Table 2: Age of respondents

Age range (years)	Frequency	percent	Cumulative percent
31-35	9	22.5	22.5
36-40	19	47.5	70
41-45	10	25	95
46-50	2	5	100
Total	40	100	

3.1.3 Trainers' qualifications

Majority of the trainers (85%) had Bachelor degree qualifications, followed by Masters and PhD degree qualifications at 12.5% and 2.5% respectively. As indicated in Table 3, majority of the trainers are bachelor degree holders at 85%. There were neither diploma nor craft certificate nutrition trainers. This was an indication of highly qualified trainers with great understanding of the course content. Table 3 shows the qualification of the trainers.

Table 3: Qualification Level of Trainers

Attainment	frequency	percentage	Cumulative percentage
PhD Degree	1	2.5	
Master's Degree	5	12.5	15
Bachelor's Degree	34	85	100
Diploma	0	0	100
Craft Certificate	0	0	100
Total	40	100	

3.1.4 Trainers work experience

The experience of most trainers (62.5%) ranged from 0-5 years followed by those with experience of 6-10 years at 17.5%. A significant proportion of trainers (7.5%) had experience of more than 10 years. The 25% of trainers who had experience of over 6 years could adequately mentor the new trainers for effective curriculum delivery. Table 4 shows the work experience of nutrition trainers.

Table 4: Work experience of the trainers

Work experience	Frequency	percent	Cumulative percent
0-5 years	25	75	75
6-10years	7	17.5	92.5
10 years and above	3	7.5	100
Total	40	100	

3.2 Trainers' ratings on availability of adequate time for syllabus coverage

This section sought to whether the time allocated for Nutrition syllabus coverage was adequate for both the practical and theory sessions. The trainers' views on the adequacy of industrial attachment sessions were also recorded. Table 5 shows the responses that was obtained from the trainers.

Table 5: Trainers' perception on time allocated for teaching nutrition syllabus in TVET

Statement	Strongly Agree		Agree		Disagree		Strongly Disagree		Mean	S. D
	f	%	f	%	f	%	f	%		
Adequate time is available to cover the course content	6	15	29	72.5	5	12.5	0	0	3.03	0.16
Trainees are given enough time for practical tasks	23	57.5	10	25	7	17.5	0	0	3.4	0.25
Adequate rest time is allowed between training sessions	13	32.5	22	55	5	12.5	0	0	3.2	0.138
Adequate time is allocated for industrial attachment	7	17.5	31	77.5	2	5	0	0	3.28	0.045
Feed-back from trainees' assessment is provided on time	6	15	21	52.5	3	7.5	10	25	2.58	0.128

Based on the responses in Table 5, majority of the trainers (82.5% to 95%) agreed that the time allocated for the Nutrition course was adequate for theory and practical syllabus coverage and industrial attachment sessions. Most trainers (67.5%) also stated that feedback on trainees' assessment was provided in time. This indicates that trainers agreed that time factor was not a challenge in nutrition syllabus coverage in the TVET institutions.

3.3 Trainers' perceptions on availability of Nutrition training resources

Table 6 provides information on resource availability for implementation of nutraceutical skills curriculum. Utilization of modern training equipment for practical training, adequacy of space for lab skills establishment and availability

of experienced training personnel all rates above the mean average based on a scale from one on strongly disagree and four for strongly agree, an indication that resource support has a basis of need. It is worth noting that, on availability of instructional machines and technologies rates below mean average, a factor that has to be placed in high consideration for implementation of such skills. Trainers appreciate relevancy in technological skills as Such skills demonstrate multi-disciplinary approach, and aims to prepare students for becoming competent and innovative professional (Huang, 2019). The nutraceutical field is perceived to be new and many gaps exists in terms of knowledge base (El Sohaimy, 2012) strengthening the need for its study as articulated by the participants.

Table 6: Trainers’ perception on institutional resource availability for nutrition training

Statement	Strongly Agree		Agree		Disagree		Strongly Disagree		Mean	SD
	f	%	f	%	f	%	f	%		
Adequate training facilities and equipment are available	2	5	1	2.5	25	62.5	12	30	1.83	0.182
Modern training equipment are used for practical training.	5	12.5	10	25	15	37.5	10	25	2.25	0.135
There is enough space for establishment of nutraceutical lab skills in your institution	32	80	4	10	2	5	2	5	3.65	0.264
Training personnel are adequate to handle additional curricula.	6	15	4	10	30	75	0	0	2.4	0.129

3.3 Trainers’ perceptions on relevance of Nutraceutical skills on employability

The findings on trainers familiarity with the nutraceutical concept, nutraceuticals skills potential to address emerging foods and health challenges, nutraceuticals skills role in promoting lifelong entrepreneurial skills, innovation and creativity and

the aspect of manufacturing of nutraceutical products from locally available foods alongside its role in promotion of SMEs all rates above mean average stipulating that nutrition and dietetics trainers embrace the idea of including nutraceutical processing technology into TVET curriculum. Several studies demonstrate benefits of nutraceuticals to daily human life (Goncharov, 2016). This is basically in line with the current literature that supports consumer’s attitude toward healthcare as an emerging trend and appreciates that more people are taking responsibility for their own health rather than passively accepting medical decisions. This desire to exercise individual decision means many consumers are looking outside the traditional dependencies on pharmaceuticals, to herbal remedies and supplements (Ottaway, 2008.) thereby prompting the need for expertise in the nutraceutical field.

Table 7: Trainers’ perception on nutraceutical skills relevance on employability

Statement	Strongly Agree		Agree		Disagree		Strongly Disagree		Mean	S. D
	f	%	f	%	f	%	f	%		
Nutraceutical skills is a familiar concept	32	80	7	17.5	01	2.5	0	0	4.075	0.383
Nutraceutical skills training holds the potential to address emerging foods and health challenges	25	62.5	12	30	02	5	1	2.5	3.525	0.236
Nutraceutical skills can promote lifelong innovativeness, entrepreneurship and innovation	30	75	6	15	4	10	0	0	3.65	0.264
Manufacturing of nutraceutical products from locally available foods can promote establishment of SMEs by trainee graduates	36	90	3	7.5	1	2.5	0	0	3.725	0.3



4. Conclusions and Recommendations

4.1 Conclusion

Based on the findings of this study, nutraceutical skills training is relevant for promotion of employability of nutrition trainee graduates. A previously done research on need of nutraceuticals shows that some of the main health challenges of the 21st century such as obesity, cardiovascular diseases, cancer, osteoporosis, arthritis, diabetes, in whole requires nutraceuticals which have led to new era of medicine and health in which food industry has become research oriented sector (Aryee, 2014 and Gopi, 2022) and therefore the positive nutrition and dietetics trainers' perception recognizes the current opportunities in the nutrition field which demands for adaptability in the current TVET syllabus hence alignment to future works of nutrition. A study on TVET skills elaborates that Technical and Vocational Education and Training (TVET) is recognized globally for its important role in preparing people to participate effectively in the world of work (Tuenpusa, 2021), a scenario that calls for nutrition to upgrade on its training by ensuring that transferable skills which promotes entrepreneurship are adopted. Furthermore, the resource set up of our institutions in terms of personnel, space for nutraceutical skills lab establishment in the technical institutes are fundamental capital essential and ready for nutraceutical skills training.

4.2 Recommendations

Arising from the findings and conclusion, the following recommendations are made:

1. Ministry of Education should support the Technical and Vocational institutes with relevant resources for establishment of working nutraceutical skills lab.
2. Technical and Vocational Education and Training Authority should empower researchers on conducting nutraceutical skills gap research to ensure proper partnerships and policy formulation that support nutritionists' employability.

References

- Aryee, A. N., & Boye, J. I. (2014). Current and emerging trends in the formulation and manufacture of nutraceuticals and functional food products.
- Boye, J. I. (2015). *Nutraceutical and functional food processing technology*. John Wiley & Sons.
- Chaudhari, R., & Fanion, M. (2008). Technical aspects of micronutrient addition to foods. *Food fortification and supplementation: technological, safety and regulatory aspects*, 108-125.
- Das, L., Bhaumik, E., Raychaudhuri, U., & Chakraborty, R. (2012). Role of nutraceuticals in human health. *Journal of food science and technology*, 49, 173-183.
- El Sohaimy, S. A. (2012). Functional foods and nutraceuticals-modern approach to food science. *World Applied Sciences Journal*, 20(5), 691-708.
- Fisher Jr, M. R., & Bandy, J. (2019). Assessing student learning. *Vanderbilt University Center for Teaching*.
- Gopi, S., & Balakrishnan, P. (Eds.). (2022). *Advances in Nutraceuticals and Functional Foods: Concepts and Applications*.
- Goncharov, N., Orekhov, A. N., Voitenko, N., Ukolov, A., Jenkins, R., & Avdonin, P. (2016). Nutraceuticals: Efficacy, Safety and Toxicity. *Ed. Gupta RC Academic Press*, 177.
- Huang, R. (2019). *Educational technology a primer for the 21st century*. Springer Nature Singapore Pte Ltd.
- Knoerzer, K., Juliano, P., Roupas, P., & Versteeg, C. (Eds.). (2011). *Innovative food processing technologies: advances in multiphysics simulation*. John Wiley & Sons.
- Mann, G. S., Singh, L. P., Kumar, P., & Singh, S. (2020). Green composites: A review of processing technologies and recent applications. *Journal of Thermoplastic Composite Materials*, 33(8), 1145-1171.
- Mahabir, S., & Pathak, Y. V. (Eds.). (2016). *Nutraceuticals and health: review of human evidence*.
- Ottaway, P. B. (Ed.). (2008). *Food fortification and supplementation: Technological, safety and regulatory aspects*. Elsevier.
- Sohaimy, S. E. (2012). *Functional Foods and Nutraceuticals-Modern Approach to Food Science*.

Tuenpusa, P., Boonpoo, S., & Chaisuk, P. (2021). Technical Vocational Education and Training (TVET) Workforce Skill Development Policy and Strategy to Support 4th Industrial Revolution due to Disruptive Technology. *Journal of Human Resource and Sustainability Studies*, 9(4), 596-607.

3

ROLE OF TVET IN NATURAL RESOURCES FOR SUSTAINABLE DEVELOPMENT

Evaluation of intra-row spacing and trellis on the yield potential of Indian spinach (*Basella Alba L.*) in Busia and Bungoma Counties, Kenya

Masombo, B.

¹Kitale National Polytechnic, P.O. Box 2162-30200, Kitale, Kenya.
Agriculture Department

email: bwabimasombo@gmail.com

Abstract

Indian spinach is a vine indigenous leafy vegetable with high nutritional and medical properties. In western Kenya it is known as 'Enderema' in Luhya. This could be a resolution to malnutrition cases in most communities in Kenya. Cultivation is at low scale due to limited resources, ie land, and inappropriate husbandry practices, lack of skills in value addition, unavailability of seed and inappropriate husbandry practices. In this study the evaluation of plant population and trellis on crop performance was carried out. Randomized Completely Block Design (RCBD) was used with three replicates for one season at Bumala and Mabanga in Busia and Bungoma counties respectively. Farm yard manure and Mavuno planting fertilizer (N P K Cao Mg S) was applied after analysis of soil samples from the experimental plots. The height of the vegetables, number of leaves and branches were determined at 60, 74, and 88 Days After Transplanting (DAT) respectively. Data was analyzed using SAS Mixed linear model version, 2012 for analysis of variance at ($P < 0.05$). Analysis of variance indicated that a combination of trellis and spacing of 20 cm by 30 cm at 88 DAT produced the highest yield. From the study the author recommends that spacing of 20 cm by 30 cm and use of Trellis should be employed by farmers for maximum yield. A long-term experiment on the same be conducted to ascertain the best combination and optimum DAT for dry matter accumulation.

Keywords: Indian spinach, dry matter, spacing, trellis

1. Introduction

1.1 Background information

Indian spinach is widely grown in many home gardens and hedges. It is a vine, with glossy, broad, deep green, thick, and mucilaginous leaves. The vegetable is majorly cultivated in the backyard gardens of many south Asian families. Nutritionally it is rich in vitamins, minerals, and antioxidants. Plant leaves have been found to be rich in various crucial carotenoid pigments and anti-oxidants such as β -carotene, lutein, and zeaxanthin (Alcantara, 2005).

The performance of crops such as Indian spinach (*Basella alba*) can be affected by various factors such as planting time, methods of propagation, plant population, and trellis. Although Indian Spinach grows readily in most parts of the country with less attention and husbandry practices, it is important to determine factors that can contribute to the best yields of the plant. The level of consumption of *Basella alba* in western Kenya is quite minimal due to low level of production and it is nearly becoming extinct (Abukutsa-onyango (2007). The promotion of consumption can greatly help in prevention of diseases caused by nutrient deficiencies such as scurvy, night blindness, and rickets which are quite common in the slums and rural areas of many developing countries and this calls for increased cultivation of Indian spinach.

The cultivation and agricultural output of crops such as Indian Spinach is influenced by plant population. Experiments conducted by Park *et al.*, (1993) on population of Indian spinach found that a spacing of 30 cm by 30 cm produced better yield than 15 cm by 15 cm or 45 cm by 45 cm, in consideration of growth rate and yield of the crop. Experiments done by Akinasoye *et al.*, (2008) showed that a spacing of 25 cm by 25 cm yielded the highest shoots while the greatest growth and yield were recorded at a spacing of 20 cm by 20 cm. Abbasdokht *et al.*, (2003) reported similar results for Amaranth in Iran at spacing of (10, 20 and 40 per metre). This indicated that farm with 40 plants per metre had a minimum yield whereas 10 plants per metre provided the highest single plant yield but the lowest overall yield per hectare.

Indian spinach is a creeping leafy vegetable which needs support for optimum growth and yield, just like tomatoes. Trellis or staking can be employed as the support systems, depending on availability of stakes and economic implication. The supports help in improving the efficiency of photosynthesis and minimize the risk of disease attacks (Akunda *et al.*, 2002). Francis (2010) noted that staking/ trellis influences growth and yield of the plant as well as hence dry matter accumulation. The knowledge on appropriate husbandry practices especially plant population and trellis would enhance productivity of Indian spinach. *Basella alba* being adaptive to harsh climatic conditions and disease infestation unlike their exotic counterparts like tomatoes and cabbages. Local leafy vegetables, have the potential to produce seeds under tropical conditions unlike the exotic counter parts. Due to their short growth periods of between 3 – 4 weeks, and good response to organic fertilizers, indigenous vegetables can tolerate some biotic and abiotic stresses. Basing on the minimum selection on indigenous vegetables, they have a wide genetic bases, which is a source for new genotypes and/or genes for adaptation to climate change.

1.2 Statement of the problem

According to the Ministry of Agriculture Annual report (2014), the production of Kenya's local vegetables is on a steep decline. Although Bungoma County had a target of producing 42 metric tons (MT) of indigenous vegetables, only 35 MT was produced. There is no clear record on the amount and species *Basella* that is produced in Western Kenya, with the current production estimated at less than 1 MT per annum despite its great nutritional and economic value (MOA report 2015). The low production of these vegetables could be attributed to factors such as substandard trellis methods, agronomic methods and propagation materials. The agricultural land for indigenous vegetables is basically quite low in comparison to other vegetables in Kenya. A report by Government of Kenya (2008) noted that only 500 hectares were reserved for local vegetables out of the 14893 hectares used for growing vegetables in the country. Additionally, many Kenyans are not aware of their nutritive values and hence consider the local vegetables to be of less significance. The identification of suitable factors that improve the yield of crops and vegetables such as spinach can improve the interest of farmers and enhance its production.

1.3 Objectives of the study:

The main objective of the study was to evaluate the effect of intra-row spacing and trellis on the yield of Indian spinach in Western Kenya. The specific objectives of the study were to:

- i. Evaluate the effect of various trellis methods on the yield of the Indian spinach;
- ii. Determine effects of intra-row spacing on the yield of Indian spinach;
- iii. Determine of the effect of spacing on vine length, dry matter, number of leaves and branches.

2. Materials and Methods

2.1 Experimental sites.

The experimental sites were identified in Bungoma and Busia Counties. The sites had moderately fertile soil, homogeneous in terms of soil fertility and were neither on slopes nor on shallow soil. The sites represented the general overview of the agro-ecological zones of the two counties. The Bungoma experimental site was at altitude of 11592 m above sea level, with a mean temperature of 22 °C and humid conditions. The region had gentle-sloping sandy-clay well drained soils and received an average annual rainfall between 1200 -1800 mm. The Busia experimental site was at altitude of 1321 m above sea level and receives a mean annual rainfall of between 1100 -12450 mm. The region had an average temperature of 28 °C and had loam-sandy soil.

2.2 Experimental Treatments

Nine (9) treatments that included; farmers way (no staking), one stake per plant and trellis and three levels of spacing, 15 cm by 30cm, 20 cm by 30 cm and 25 cm by 30 cm were used on the experimental plots.

2.3 Experimental Design

A Randomized Complete Block Design (RCBD) was used with, three replicates. The plot sizes were 3 m x 4 m, where by each replicate had 9 treatments, thus providing a 3 x 3 factorial experiment. Farmacyard manure and Mavuno planting (NPK Cao Mg S) was applied equally in all the experimental plots after soil analysis. The nature of treatment that were used in this study are shown in Table 1.

Table 1: *Treatment structure*

Treatment number	Treatment combination
1 (TR0+SP1)	No trellis + narrow spacing (15 cm x 30 cm)
2 (TR0+SP2)	No trellis + medium spacing (20 cm x 30 cm)
3 (TR0+SP3)	No trellis + wider spacing (25 cm x 30 cm)
4 (TR1+SP1)	Staking + narrow spacing (15 cm x 30 cm)
5 (TR1+SP2)	Staking + medium spacing (20 cm x 30 cm)
6 (TR1+SP3)	Staking + wider spacing (25 cm x 30 cm)
7 (TR2+SP1)	Trellis + narrow spacing (15 cm x 30 cm)
8 (TR2+SP2)	Trellis + medium spacing (20 cm x 30 cm)
9 (TR2+SP3)	Trellis + wider spacing (25 cm x 30 cm)

2.4 Data analysis

Dry leaf weight was done using an oven, a tape measure for vine length and harvested biomass was determined using a weighing balance (5000 g with 0.001 precision). This was done 60 days after transplanting at intervals of two weeks apart from harvested biomass which was be done at 88 days after transplanting. These assisted to identify the most affordable combination for recommendation to end users. Data was analyzed using SAS Mixed linear model version 2012 for analysis of variance at ($P < 0.05$). Analysis of variance indicate that (treatment 8) combination of trellis and a spacing of 20 cm by 30 cm at 88 DAT had the highest yield.

3. Results and discussion

3.1 Vine length per plant across Days After transplanting (60, 74 and 88)

The length of vine for each plant was greatly affected by Days After Sowing (DAS) at 60, 74 and 88 respectively in both Bumala and Kabuchai. Plant height increased with increase in days after sowing where the longest vine length was recorded at 88 DAT (56.7 cm) which was followed by 50.3 cm at 74 DAT while the shortest vine length per plant was recorded from 60 DAS (47.8cm). There were also significant differences in treatments within days of sowing. At 60 DAS, treatment 8 recorded the longest plant height of 53.3 cm while treatment 1 recorded the shortest plant height of 40 cm. Consequently at 74 DAT, the longest vine was found at treatment 8 (trellis and spacing of 15 cm by 30cm). The shortest vine length (35 cm) was found at treatment 1 (spacing of 15 cm by 30 cm with no trellis and no pruning). This was not significantly different from treatments 1,2,3 and 5 and at 88 DAT, the longest vine height was recorded from treatment 8 (57.9 cm). while the shortest vine diameter was recorded from treatment 1 (28.5 cm). The longest vine was obtained in treatment with narrow spacing (15 cm by 30 cm), pruned and with trellis. The narrow spacing increased plant density per unit area, which encouraged competition for strive for vital resources, especially light. It also led to increased blockage of light for photosynthesis which directly affects accumulation of dry matter. Further, staking or trellis supported the plant and promoted improved growth unlike those treatments without trellis. These findings were consistent with those obtained by Park *et al.*, (1993) which showed that highest vine length was produced by plants that had the closest spacing while the lowest was obtained from those with the widest spacing. The significant differences observed in the vine length based on DAT showed that plant height is an indicator of growth, development and productivity. It also justified that *Basella alba* is a perennial crop and dry matter accumulation increases with time. Tables 2 and 3 shows the effect of DAT on the height of plants, number of leaves and branches of the plants at Kabuchai and Bumala respectively.

Table 2: *Plant height, Number of leaves, Number of branches, Vine diameter and Dry matter at 88 days after transplanting-Kabuchai*

TRT	Plant height (cm)	Number of leaves	Number of branches	Vine diameter	Dry matter tons/Ha
	28.5	22d	15hl	0.35ef	4.8fg
	38.2g	22d	15hl	0.36ef	4.7fg
	39.4g	22d	15hl	0.38bdef	4.6fg

	51.5bcd	24cd	17ghl	0.41bcdef	8cdef
	52bcd	25cd	17ghl	0.49abcd	8cdef
	52.1bcd	25cd	18efgh	0.49abcd	8cdef
	52.1cd	25cd	20defg	0.51bcdef	10cde
	54.3bcd	31bc	19cde	0.51abc	10cde
	57.9bc	34ab	23b	0.6a	14bc
CV%	25.1	34.5	30.2	25.5	23.2
LSD	7.3	4.5	2.5	0.23	

Means with different letters in the same column are significantly different at $P \leq 0.05$

Table 3: *Vine length Number of leaves, Number of branches and Vine diameter at 88 Days After transplanting-Bumala*

TRT	Plant height (cm)	Number of leaves	of Number of branches	Vine diameter
	28.5h	19d	13hl	0.33ef
	38.2g	19d	13hl	0.33ef
	39.4g	19d	13 hl	0.33bdef
	48.5bcd	22cd	14ghl	0.4bcdef
	49.6bcd	23cd	14ghl	0.45abcd
	51.1bcd	23cd	15efgh	0.47abcd
	48.1cd	22cd	16defg	0.41bcdef
	51.3bcd	27bc	17cde	0.48abc
	53.9bc	31ab	20b	0.52a
CV%	25.1	34.5	30.2	25.5
LSD	6.1	5.5	2.4	0.11

Analysis of variance in Bumala showed significant differences in plant height based on days after transplanting (60, 74 and 88) DAT (Figure 1a). The longest vine length was recorded from 88 DAT (56.7 cm) which was followed by 50.3 cm at 74 DAT while the lowest vine length per plant was recorded from 60 DAT (47.8cm). The same trend was also observed in Kabuchai with treatment 88 DAT recording the highest plant height (61.4 cm) and lowest (52) recorded from 60 DAT as indicated in table 2.

Table 4: *Effect of DAT on plant height, Number of leaves and Number of branches- Kabuchai*

DAS	Plant height	Number of leaves	Number of branches
88	61.4a	33.8a	25a
74	53.8b	29.1b	22b
60	52c	27c	21c
CV	19.3	28.8	21.3
LSD	1.2	1.1	0.45

Means with different letters in the same column are significantly different at $P \leq 0.05$

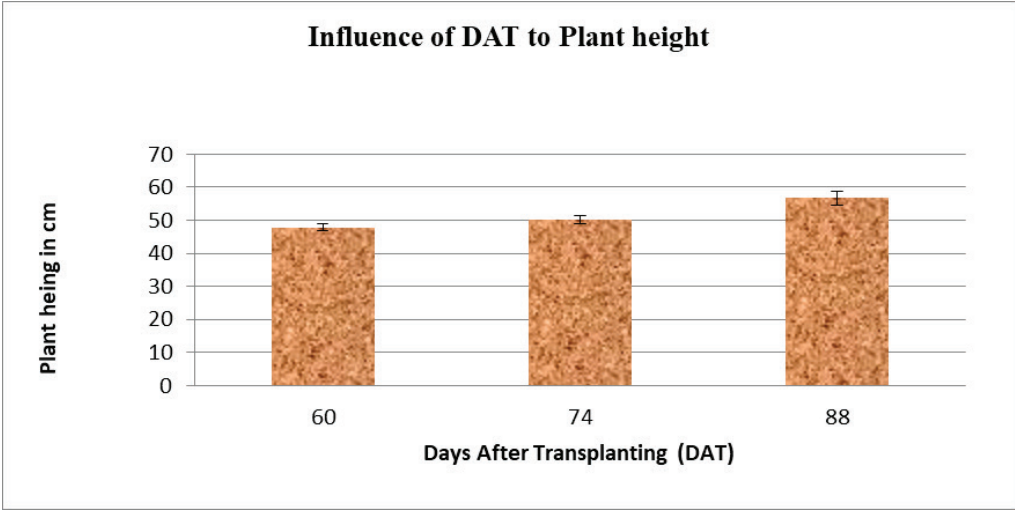


Figure 1a: *Influence of DAT to plant height*

3.2 Number of leaves per plant versus Days After transplanting (60, 74 and 88)

In Bumala number of leaves on each plant varied significantly on the different DAT, 60, 74 and 88 (Fig 1b). The maximum number of leaves of 32 per plant was documented at 88 DAT, followed by 27 at 74 DAT and lowest (25) was recorded at 60 DAT. At Kabuchai the highest number of leaves (34) was recorded at 88 DAT while the lowest (27) at 60 DAT (Table 2). The quantity of leaves mainly depended on the Days After Transplanting nature of treatments in both sites. The results from this study showed that the quantity of leaves was mainly influenced by spacing and trellis. The quantity of leaves increased in the treatments with trellis and spacing for each particular period of time (Days After Transplanting). Treatments with trellis developed additional branches that led to increased number of leaves and more vegetative growth. The treatments

with wider spacing produced the least number of leaves. The highest number of leaves were obtained in treatments with narrow spacing (5 cm by 30 cm) and medium spacing (20 cm by 30 cm). The number of leaves increased steadily with time (DAT), with the highest number of leaves observed at 88 days after transplanting with treatment combination of trellis, and Narrow and medium spacing, treatment 8 and 9 respectively. The findings agree with research done by Khan (2013)

Similarly, the number of branches per plant in Bumala varied significantly with DAT at 60, 74 and 88 (Fig. 1). The highest number of branches per plant (21) was recorded at 88 DAT followed by 18 at 74 DAT and lowest number of branches (16) was recorded at 60 DAT. The DAT also influenced the number of branches significantly at Kabuchai. The number of branches per plant was highest (25) at 88 DAT and lowest (21) at 60 DAT as shown in table 2.

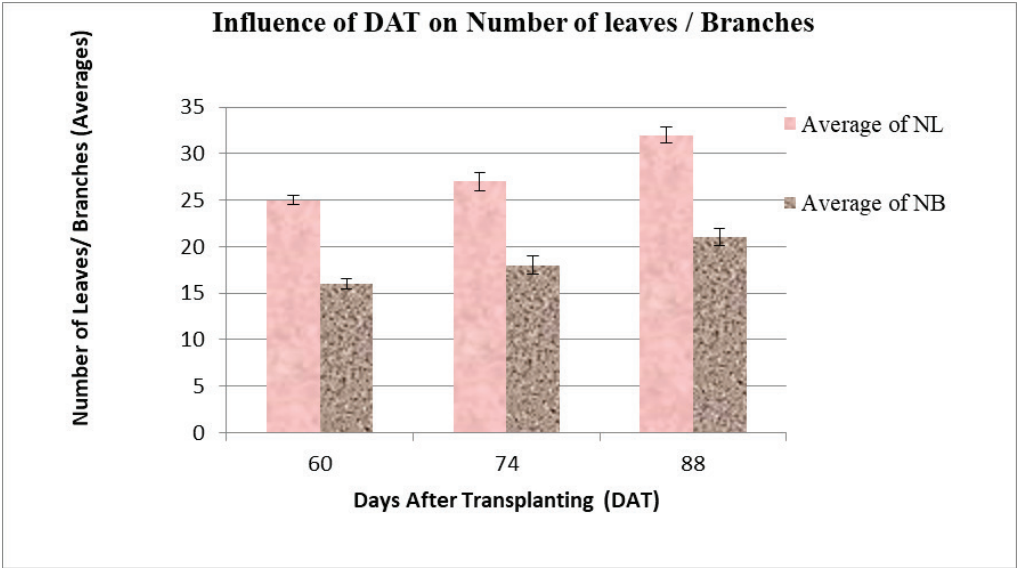


Figure 1b: Influence of DAT to number of leaves /branches

3.3 Yield of Basella alba per hectare

Significant difference was observed among treatments at harvest in Kabuchai (88 DAT) as indicated in Table 5. The highest yield on dry matter basis (14 ton/ha) were recorded from treatment 8 (Trellis, and at a medium spacing of 20 cm by 30 cm). While the lowest dry matter per hectare was recorded from treatment 1 with 4.8 tons/ha, which was statistically similar to treatment 2 (4.7 tons/ha), and treatment 3 (4.6 tons/ha) respectively.

Table 5: Biomass yield per hectare at 88 Days After transplanting-Kabuchai

Treatments	Biomass yield per Ha (Tons)
	4.8a
	4.7a
	4.6a
	8b
	8b
	8b
	10bc
	14bc
	10bc
LSD	1.8

The analysis of variance in Bumala also displayed substantial variations among treatments on the yield of dry matter (Figure 3). The highest dry matter (12 tons/ha) was recorded from treatment 8. Treatments 1, 2 and 3 recorded the lowest dry matter at 3.7, 4.2 and 4.5 tons /ha respectively. Figure 2 shows the yield of dry matter recorded for the various treatments.

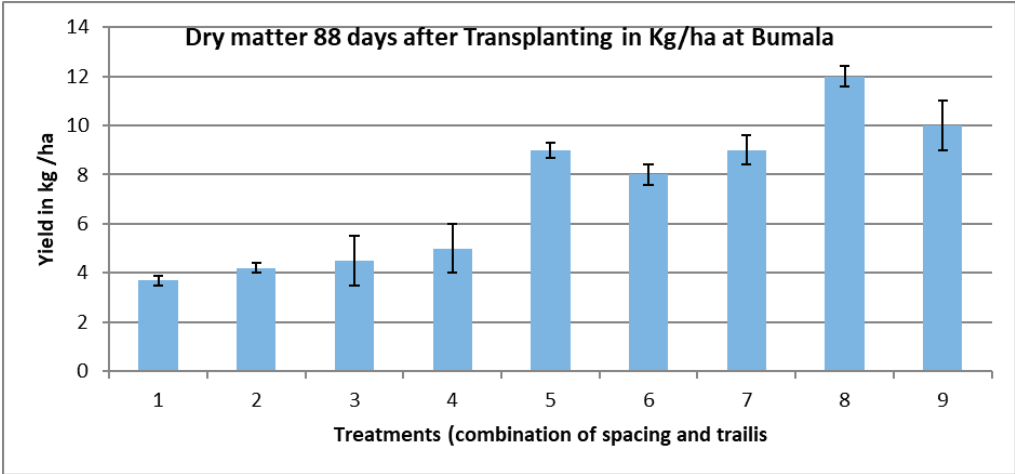


Figure 2: Dry matter at 88 Days After transplanting in Bumala (Tons/ha)

The yield of *Basella alba* expressed on dry matter basis in tons per hectare was significantly influence by the interaction of trellis and spacing in both Bumala and Kabuchai. The highest yield was recorded on treatment 8 (trellis and medium spacing (20 cm by 30 cm) followed by treatment 9 (trellis, pruning and wider spacing (25 cm by 30 cm) and 7 (trellis and narrow spacing (15 cm by

30 cm). While the lowest yield was obtained from treatments with no trellis, treatments 1, 2 and 3 respectively. Rahman *et al.*, (1985) findings showed that spacing of (20 cm by 40 cm) gave the highest yield while the spacing of (40 by 40 cm) gave the lowest yields of green. Spacing of 25 cm by 30 cm with trellis accommodates more plants per unit area and consequently increases yield per plot. Lesser number of plants per unit area caused less yield per plot in wider spacing. The increased yield at 25 cm by 30 cm could be attributed to the increased number of plants per unit area which compensated and resulted in higher yield. Park *et al.* (1993) reported that 24 cm by 24 cm was better than 15 cm by 15 cm or 30cm by 31 cm by 31 cm in consideration of growth and yield of the crop. Akunda, (2001) reported that narrow spacing had the more advantage since plants achieve canopy closure more quickly and intercept light throughout the growing season. Canopy development is a function of spacing, and environment. The relative equidistant plant distribution leads to increased leaf area development and greater light interception early in the season.

Treatments without trellis had low dry matter accumulation in general. These could be attributed to a number of factors including minimum exposure to light that essential for photosynthesis a function of dry matter accumulation, logging on the ground predisposes the plants to pests and diseases which limit plant development and productivity. If not well managed, abiotic and biotic stresses can reduce crop yields. Heitholt *et al.*, 2005 noted that moisture stress reduces the yield benefit from narrow row spacing in Kansas by more than 20%. Trailing using strings and poles provides the best option of staking *Basella alba* in comparison to the use of sticks since it gives higher dry matter than the later. Staking using sticks produced lower yields than string and pole because sticks are often lodged out by wind and termite attack. This disturbs growth and more often causes injury to plants unlike string and poles. Apart from being environmentally friendly, strings are also convenient and easy to use.

Although a comparison of the yield of *Basella alba* from the from the two experimental sites was not an objective of the study, the plant performed better in Kabuchai than Bumala. This observation could be attributed to more favourable soil pH of 6.1, which allows for effective absorption of nutrients, especially Phosphorus and Nitrogen which are essential in root development and vegetative growth respectively than the pH of 4.8 in Bumala (Okalebo *et al.*, 2003). The even and reliable distribution of rainfall at Kabuchai also favoured other metabolic activities and accumulation of dry matter.

4. Conclusions and Recommendations

4.1 Conclusion

For optimum yields appropriate combination of trellis and spacing should be adhered to. Trellis enhances dry matter production and interception of light which is a key requirement for photosynthesis and accumulation of dry matter. It also inhibits logging and predisposition of the vines to pests, diseases and other yield reducing factors. The findings from this study showed that the growth and yield

of *Basella alba* is greatly influenced by spacing between plants and trellis.

The combination of trellis and spacing of 20 cm by 30 cm improved the growth of *Basella alba* and accumulation biomass which provided the highest yield per hectare was obtained (14 tons /ha). The lowest yield was obtained at treatment 1 (no trellis, no pruning and spacing of 15cm by 30 cm (4.8 tons/ha). The medium spacing (20 cm by 30 cm) allowed a larger number of plants per unit area and adequate nutrients which enhances more branches and consequently number of leaves per plant components which determines dry matter accumulation. In contrast narrow spacing without trellis resulted in lower yields due to larger number of plants per unit area increased competition for nutrients and inhibition of light. Wider spacing led to lower plant density which is a main determining factor on the yield.

Farmers are advised to adopt combination of trellis and spacing of 20 cm by 30 cm for higher Indian spinach yields. From field observation trellis as a method of staking are preferred than Stakes (sticks) because they are environmentally friendly, ease to implement and convenient unlike stakes which are often attacked by termites, prone to logging and more laborious.

4.2 Recommendation

From this study the researcher recommends adoption of spacing of 20 cm by 30 cm and use of trellis for optimum yield of Indian spinach. The researcher recommends further studies on the best preservation methods and value addition for Indian spinach to mitigate post-harvest loses and enhance food security and income.

References

- Abukutsa-onyango, M.O., 2007. The Diversity of cultivated African leaf vegetables in three communities in western Kenya. *African journal of food Agriculture, Nutrition and Development*
- Alcantara, V. P. (2005). Design improvement of AVGRIS and online dissemination of GRSU activities and publications (No. RESEARCH). AVRDC-*The World Vegetable Center*.
- Akunda, E. M. W. (2001). Improving Food Production by understanding the effects of intercropping and plant population on soybean Nitrogen fixing attributes. *The Journal of Food Technology in Africa*. Vol 6. No. 4.
- Basela O, Mahadeen A. (2008)., Effect of fertilizers on growth, yield, yield components, quality and certain nutrient content in broccoli (*Brassica oleracea*) *J. Agric. Biol.* 10: 627-632
- Duke, J. A. and Ayensu, E. S. (1985). Medicinal plants of China Reference publications, inc ISBN O-917256-20-4.

- Government of Kenya [GOK] .2008. Food Security and Nutrition Strategy 2nd Graft world health organization/international A Consultative Group. Vitamin A supplements; a guide to their use in the treatment and prevention of vitamin A Deficiency. Geneva; world health organization,2000.
- Grubben,G.J.H. 1997.Tropical Vegetables and their Genetic Resources. Royal Tropical institute, Amsterdam, Netherlads.453pp.
- Grubben, G. J. H. & Denton, O. A. (2004). plant Resources of Tropical Africa 2. Vegetable. PROTA Foundation wagenigen.44;103-111.
- Heitholt, J.J., Farr, J.B. and Eason, R., (2005). Planting configuration x cultivar effects on soybean production in low environments. *CropSci.* 45:1800-1808.
- Lucas 1988: soil and water conservation at Langley Hall in Maumee,
- Okalebo, J. R., Woomer, P. L., Mukhwana, E. J., Musyoka, M. W., Ndungu, K.W., Kifuko, M. N., Kiraithe, C. K. (2003). Evaluation of Soil Fertility management Technologies (Best Bets) on Yield and Uptake of Nitrogen and Phosphorus by Maize and Legumes in Western Kenya: A six NGO study. *African Crop Science Conference Proceedings*, Vol. 6. 480-488.
- Palada, M. C. & Chang, L. C. 2003. Suggested cultural practices for *Basella*. AVRDC International co-operator's Guide. AVRDC pub No 03-553.
- Park K W, Han K S, Won JH 1993: Effect of propagation method, planting density and fertilizer level on growth of water Spinach (*Impomoea aquatic*). *Journal of Korean society of Horticultural science* 34 (4) 241-247
- SAS Institute Inc, 2012.SAS/STAT 9.3 User's Guide, 2nd edn. ed. SAS Institute Inc, Cary, NC.
- Rahman, A. K. M. M., & Hossain, S. M. M. (1985). Effect of spacing and harvesting interval on the growth and yield of Indian spinach. Horticulture Research Report on Vegetable Crops. BARI, Joydebpur, Gazipur, 28.
- Rop, N. K., Mutui, T. M., & Kiprop E. K. (2012). Influence of nitrogen fertilizer on the growth, yield and quality of Indian spinach [*Basella alba L.*]. *Afr. J. Hort. Sci.*:111-117.

Ecotourism Practices and Sustainable Development in Tourism: The Moderating Influence of Greening Technical and Vocational Education and Training in Kenya

Walaba P.

Maseno University, School of Business and Economics, Department of Ecotourism, Hotel and Institution Management, P.O Box. Private Bag, Maseno, Kenya

email: phylliswalas@gmail.com

Abstract

The tourism sector, with its various services, is critical to ending poverty in Kenya. Yet hotels and other types of accommodation significantly contribute to environmental degradation through excessive water and energy consumption, waste generation, and green gas emissions. Empirical evidence has shown the positive influence of ecotourism practices on sustainable development in tourism. Besides, Technical and Vocational Education and Training Institutions (TVETs) have recently become the focus of greening in their skills development programs. However, no empirical evidence has shown how TVETs, through greening, can empower hospitality facilities such as lodges to achieve sustainable development in tourism. Therefore, this study aimed to analyze the moderating effect of greening TVET on the relationship between ecotourism practices and sustainable development in tourism. The study adopted the quasi-experimental design rooted in post-positivism and suited for the a priori hypothesis and cause-effect relationships. The target population was 224 Kenyan lodges listed under the Tourism Regulation Authority (TRA). A sample of 142 hotel managers was drawn from the 142 lodges sampled for the study. Stratified and simple random sampling strategies were used to sample the lodge managers across the hotel circuits in Kenya. Data were collected using the lodge managers' questionnaire and analyzed using the conventional product-indicator approach of the partial least squares structural equation modelling (PLS-SEM). The analysis results confirmed that ecological ecotourism, economic ecotourism, and socio-cultural ecotourism had positive and significant effects on sustainable development. The study further established that greening TVET had significant moderation effects on the relationships between economic ecotourism and sustainable development and the relationship between socio-cultural ecotourism and sustainable development. However, the moderation effect between ecological ecotourism and sustainable development was insignificant. The study concluded that besides ecotourism practices impacting sustainable development positively, their impacts were strengthened by greening TVET. The study recommends that TVET institutions aggressively embrace greening by integrating green practices into the curriculum

and research to encourage stakeholders, including hoteliers, to contribute to sustainable development through greener practices.

Keywords: Ecotourism, Sustainable development, greening TVET, environmental degradation.

1 Introduction

1.1 Background information

The increasing awareness of the negative impacts of climate change, deforestation, and displacement of indigenous people, coupled with the need to preserve natural resources, is responsible for sustainable tourism growth. Defined as travel that recognizes the economic, social, and environmental impacts of tourism (Higgins–Desbiolles, 2018), sustainable tourism considers the needs of visitors alongside those of the host communities, including sustainable transportation, environmentally friendly accommodation, and consumption of foods that are locally and ethically sourced (Postma et al., 2017).

Sustainable tourism proponents advocate for minimizing the impact on host communities and the environment. They argue that despite the numerous benefits it generates for host communities, travel can damage local cultures, create greenhouse gases, and stretch resource use (Boley et al., 2017; Bramwell et al., 2017). Therefore, ecotourism has emerged as sustainable tourism attracting much attention in hospitality establishments. Gyeltshen (2019) argues that ecotourism remedies the negative impacts of tourism on the natural environment. Yfantidou and Matarazzo (2017) contend that ecotourism introduces green tourism that encourages community control, enhances culture, creates employment, and sustains economic development in host communities.

Scholarly evidence underscores the critical role that ecotourism plays in hospitality industry sustainability. Measured through ecological, economic, and socio-cultural practices, ecotourism has enhanced economic conditions, employment, and health education of local people adjacent to the Bhitarkanika wildlife sanctuary in Odisha, India (Das & Chatterjee, 2022). Similarly, environmental management practices inherent in ecotourism, including economic, ecological, and socio-cultural, have positively and significantly impacted hospitality establishments in the Maldives (Moosa & He, 2021). Evidence from Malaysian Borneo also demonstrated the potential of community-based ecotourism to fuel community empowerment (Kunjuraman, 2022).

However, a lack of green and soft skills is emerging as the main threat to global ecotourism adoption in the hospitality sector. For instance, a lack of green knowledge and networks, together with human resource limitations, have featured prominently as barriers to adopting ecotourism in the Hong Kong hotel Industry (Chan et al., 2020).

From Zimbabwe, the low adoption of ecotourism in the Limpopo Trans frontier is reported to have been due to the lack of full empowerment for local institutions (Zanamwe et al., 2018).

With the realization that sustainable ecotourism development requires stakeholder collaboration (Wondirad, 2018), the focus has shifted towards the potential contribution of Technical and Vocational Education and Training (TVET). Research shows that TVET, through the hospitality program, equips students with the required skills for coordinating hotel activities, hiring and training staff, and managing supplies (Olowoyo et al., 2020; Shereni, 2020). Moreover, TVET is associated with the potential to create awareness of the green concept and shape students' values, attitudes, and knowledge towards green economies (Jebungei, 2020). The critical role of TVET in sustainable development has recently seen the integration of green skills and Whole Youth Development (WYD) initiatives in TVET institutions (Adam et al., 2018; Diep & Hartman, 2016; Kamis et al., 2017; Were & Ahmed 2018). Moreover, UNESCO-UNEVOC has recognized the critical role of the green skills strategy in Sustainable Development Goals (SDGs) and has mobilized TVET institutions to engage in advocacy and adopt green practices (Sgarz, 2021).

Kenya has taken a giant step to set the pace in greening transformation in TVET. The role of TVET as the main driver of economic development has been well highlighted in Kenya vision 2030 (Katam & Otieno, 2021). Moreover, as noted by Prof. Hubert Gijzen, the UNESCO Regional Director, the Kenya Government banned the use of petrol vehicles in all national parks by 2030. This ban is in addition to the requirement that all hospitality and tourism establishments in Kenya adopt renewable energy and a circular economy, increase reforestation, and enhance marine conservation by 2030 (UNESCO, 2022).

Sustainability is the mindful use of resources to address current needs while sparing them for future generations' needs (Mulligan, 2017). According to Xess et al. (2021). Preserving natural and cultural resources attracts tourists and determines the success of hospitality establishments. The need to preserve nature among hospitality establishments gets bolstered by the closure of Thailand's Maya Bay beaches in 2018 because of visitors' destruction of corals and the beach's beauty (Koh & Fakfare, 2019). Therefore, hospitality establishments can stand out in environmental, social, and cultural soundness only through sustainability, measured through operational changes, waste reduction, and energy/water conservation (Fernandez-Robin et al., 2019).

Responsible use of productive resources in the hospitality industry, as advocated by the concept of sustainability, focuses on protecting nature. Research indicates that by 2050, the demand for food, energy and water will be widely felt in the hospitality industry, making the balance between health and the ecosystem supreme (Arkitekter, 2021). Empirical evidence has associated the sustainabil-

ity of hotel and tourism establishments with ecotourism practices (Agyeiwaah, 2019; Berjozkina & Melanthiou, 2021) but has failed short of being specific on the role that green skills can play.

Merli et al. (2019) examined the effect of sustainability practices in the hospitality and tourism industry. Using data collected from 312 tourism and hospitality industry managers analyzed through structural equation modelling, they determined that the ecological practice of environmental communication impacted the resource and energy conservation facets of sustainability equally. However, no mention of the role of green skills in these impacts was made.

Hanna et al. (2019) explored the role of active engagement with nature from outdoor adventure tourism in well-being and sustainability. Without being explicit, they argued that destructive practices brought pro-environmentalism and human nature into question. Drawing on data from outdoor interviews with adventure tourists, they determined that outdoor adventure tourism promoted reconnections to nature, which also offered pro-environmental attitudes. However, these ecotourism practices' direct impacts on sustainability were not clarified.

Martinez Garcia de Leaniz et al. (2018) probed the nexus of ecotourism on hotel sustainability by exploring how environmental consciousness moderates the influence of hotel environmental certification on customer response. They focused on hotel customers in Spain to show that green practices were perceived to have a positive effect on hotel image. Moreover, they determined that environmental consciousness moderated the green practices to behavioural intentions relationships. Despite showing the potential impact of the environment, the study failed to show the direct effect of environmental practices on the hotels' sustainability.

Masud et al. (2017) used marine protected areas of Malaysia to explore the management of community-based ecotourism targeting sustainable development. They used the covariance-based structural equation modelling (CB-SEM) to identify environmental knowledge, economic impact, involvement, cultural impact and perceived social impact as antecedents of intention to participate in community-based ecotourism. However, they did not demonstrate the direct effects of these antecedents on sustainability of the establishments in question and the likely contribution of green skills.

Sangpikul (2018) used the Thailand context to explore ecotourism impacts on tour operations. Using data collected from four operators and analyzed for content, they determined that tour operators, through guided tours, engaged in practices that contributed to environmental, social and economic benefits to the host communities and hospitality establishments. The study did not document the individual effects of those benefits on the sustainability of the specific hospitality establishments.

The array of empirical studies confirmed that ecotourism practices, including environmental, economic and socio-cultural, bring benefits to hospitality enterprises and local communities in diverse study contexts.

1.2 Problem Statement

Although Kenya has been a pacesetter in the greening transformation in TVET aimed at skilling for sustainable tourism, some questions about ecotourism and sustainable tourism in lodges and camps in Kenya remain unanswered. For instance, there are no studies linking ecological, economic and socio-cultural ecotourism practices directly to the sustainable development of tourism in Kenya, and the potential moderating influence of green skills among staff trained in TVET on these direct effects. Therefore, this research sought to answer these questions by analyzing the moderating influence of greening TVET on the relationship between ecotourism practices and sustainable development in tourism.

1.3 Objectives of the Study

The three specific objectives that guided this research were to:

- i. Determine the moderating effect of greening TVET on the relationship between ecological ecotourism and sustainable development in tourism.
- ii. Determine the moderating effect of greening TVET on the relationship between economic ecotourism and sustainable development in tourism.
- iii. Determine the moderating effect of greening TVET on the relationship between socio-cultural ecotourism and sustainable development in tourism.

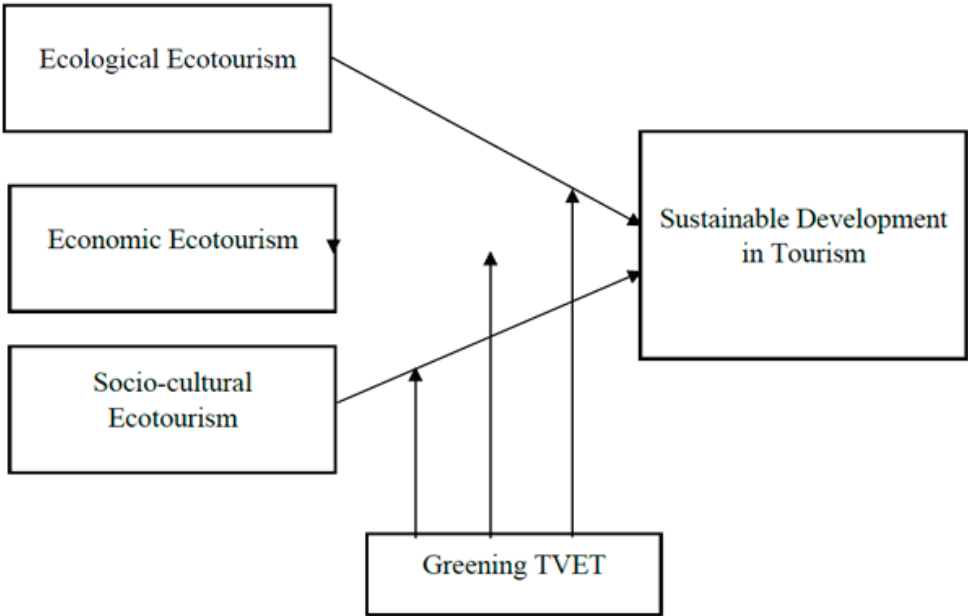


Fig. 1 Conceptual framework

2. Research Methodology

The Confirmatory Composite Analysis (CCA) was used to confirm measurements (outer) models in the partial least squares structural equation modelling (PLS-SEM). Reflective models were conceptualized to examine the moderating effects of greening TVET on each of the relationships between ecological, economic, and socio-cultural ecotourism practices and sustainable development. Under this reflective model, it was assumed that the study constructs explained the indicators. The development of the models involved seventeen manifest variables explained by ecological ecotourism (5), economic ecotourism (3), socio-cultural ecotourism (3), greening TVET (3), and sustainable development (3). The study targeted 224 lodges in Kenya listed under the Tourism Regulation Authority (TRA). Stratified and simple random sampling techniques were used to sample 142 lodges. Strata levels comprised the eight tourism circuits in Kenya namely: Central, South rift, Coast, North rift, Eastern, Southern rift, Western and Nairobi. A total of 142 structured questionnaires were administered to the 142 managers of the sampled lodges. The PLS-SEM analysis involved 142 cases that were deemed ideal (Hair et al; 2017). Data were collected using structured questionnaires.

3. Results and Discussions

The PLS-SEM evaluations were run to determine suitability of the conceptualized models in terms of composite reliability (CR), average variance extracted (AVE). Path coefficients were then used to determine the direct and moderation effects for each of the three independent constructs.

3.1. Construct measurement

This study used sustainable development in tourism as the dependent variable. Several scholars have explored indicators for sustainable tourism and have unearthed themes such as community integrity, quality of life, business viability, and Job creation (Aqyeiwaah et al., 2017; Rasoolimanesh et al., 2020). All these indicators pointed towards performance in terms of the establishment economy, host environment, and social development. Therefore, sustainable development in this study was measured using environmental performance, social-cultural performance and economic performance as recommended by Baksi and Parida (2020). Meanwhile, greening TVET was measured using three dimensions namely: green campus (GC), green research (GR), and green technical curriculum (GTC) suggested by Majumdar (2011). Ecotourism practices depicting independent variables included ecological measured using 5 manifest variables, economical with 3 manifest variables and socio-cultural also with 3 manifest variables (Table1)

3.2. Moderation of greening TVET on the relationship between ecological ecotourism and sustainable development in Tourism

The suitability test results for the conceptual model of ecological ecotourism and sustainable development indicated high levels of internal consistency, as

demonstrated by Cronbach’s alpha and CR values above 0.7 (Table 1). Similarly the results confirmed that convergent validity had been met as determined by AVE values greater than 0.5

Table 1: Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Ecological ecotourism	0.918	0.938	0.752
Greening TVET	0.855	0.913	0.778
Sustainable development	0.882	0.927	0.810

The conceptual model (Fig. 1) and associated path coefficients (Table 2) indicated that although greening TVET did not impact sustainable development in tourism significantly ($t=0.965, p >0.05$), ecological ecotourism impacted sustainable development positively and significantly ($t= 12.922, p <0.05$) and that greening TVET moderated the relationship between ecological ecotourism and sustainable development ($t= 1.992, p <0.05$).

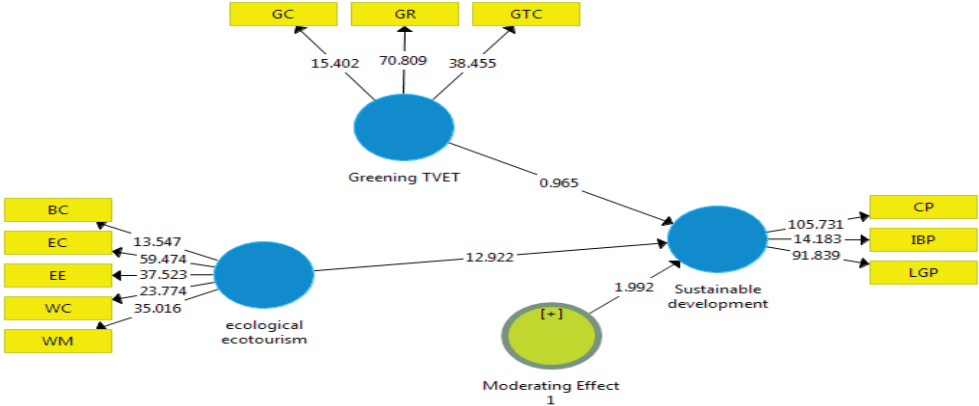


Figure 2: Conceptual model ecological ecotourism

Table 2: Path Coefficients

Construct	Sample Mean	Std. Deviation	T Statistic	p Values
Greening TVET	0.060	0.060	0.965	0.335
Moderating effect	-0.049	0.027	1.992	0.047
Ecological ecotourism	0.747	0.058	12.922	0.000

3.3. Moderation of greening TVET on the relationship between economic ecotourism and sustainable development in Tourism

The PLS- SEM evaluation for the suitability of the economic ecotourism model indicated a suitable model on the account of Cronbach alpha, CR and AVE (Table 3).

Table 3: Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Economic ecotourism	0.840	0.877	0.759
Greening TVET	0.855	0.913	0.778
Sustainable development	0.882	0.928	0.811

Under this model, the conceptual model (Fig. 3) and associated path coefficients (Table 5) indicated that both economic ecotourism ($t=4.428$, $p<0.05$) and greening TVET had positive and significant direct effects on sustainable development. Similarly, greening TVET moderated the relationship between economic ecotourism and sustainable development ($t=3.367$, $p<0.05$) (Table 4)

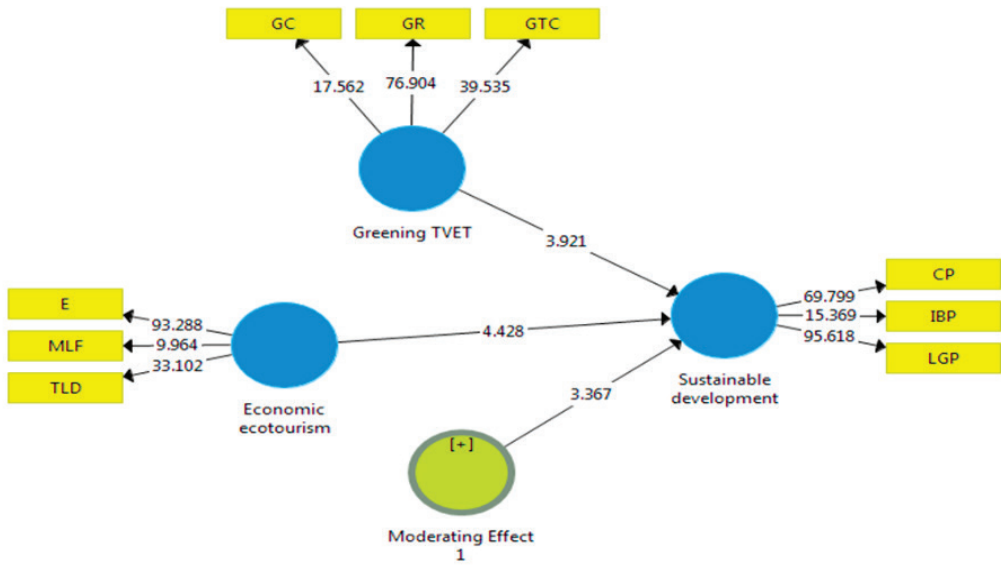


Figure 3: Conceptual model for economic ecotourism

Table 4: Path Coefficients

Construct	Sample Mean	Std. Deviation	T Statistic	p Values
Economic ecotourism	0.331	0.073	4.428	0.000
Greening TVET	0.305	0.078	3.921	0.000
Moderating Effect	-0.134	0.043	3.367	0.001

3.4 Moderation of greening TVET on the relationship between socio-cultural ecotourism and sustainable development in Tourism

The suitability test results for the socio-cultural ecotourism conceptual model (Table 5) also indicated high levels of internal consistency and convergent validity.

Table 5: Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Socio-cultural ecotourism	0.866	0.919	0.791
Greening TVET	0.855	0.913	0.778
Sustainable development	0.882	0.927	0.810

However, the conceptual model (Fig.3) together with the associated path coefficients (Table 6) revealed that whereas socio-cultural ecotourism impacted positively and significantly on sustainable development in tourism ($t= 7.211$, $p<0.05$), greening TVET in this context had no significant effect on sustainable development in tourism ($t=1.063$, $p>0.05$), and did not moderate the relationship between socio-cultural ecotourism and sustainable development in tourism ($t=1.748$, $p>0.05$).

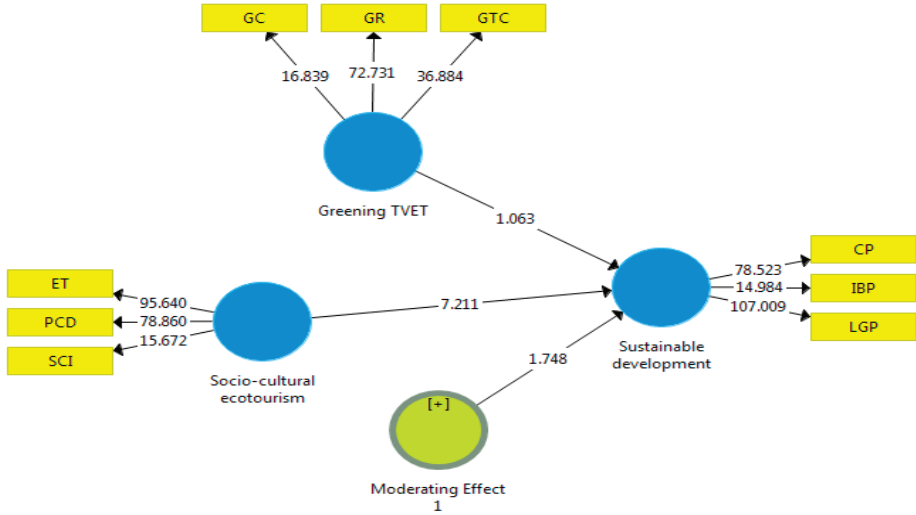


Figure 4: Conceptual model for socio-cultural ecotourism

Table 6: Path Coefficients

Construct	Sample Mean	Std. Deviation	T Statistic	p Values
Greening TVET	0.084	0.088	1.063	0.288
Moderating effect	-0.091	0.054	1.748	0.081
Socio-cultural ecotourism	0.606	0.083	7.211	0.000

3.5 Discussions

This research employed the PLS-SEM approach embedded in post-positivism and based on the theory of sustainable tourism that considered the areas of the economy, society, and the environment to establish the moderating influence of greening TVET on the relationship between ecotourism and sustainable development in tourism. The research documented the direct effects of the three ecotourism practices, including ecological, economic, and socio-cultural, on sustainable development in tourism. Additionally, this research determined that

greening TVET in terms of green campus, green research, and green technical curriculum moderated the relations between ecological ecotourism and sustainable development. These findings pose significant contributions to the future of tourism in Kenya.

By showing that the three ecotourism practices impacted positively and significantly on sustainable development in tourism, this study underscored the importance of ecotourism as a strategy for responsible travel. It also delineated the specific practices to achieve responsible travel that improves the well-being of local people. Indeed, prior research has underscored the importance of proper implementation of ecotourism towards job creation, protection of culture, investment opportunities, and protection of natural resources, making destinations to benefit socio-culturally, economically, and environmentally (Kalaitan *et al.*, 2021; Salman *et al.*, 2020). Given that Kenya has envisioned a future as a preferred ecotourism destination of choice through a seven-pillar wildlife strategy (One Planer Network, 2022; UNEP, 2022), these findings no doubt point towards ecotourism practices that ought to be leveraged in this Vision.

This study also confirmed that greening TVET moderated ecological ecotourism's effects on sustainable tourism development. This is a novel and significant contribution to the discourse on sustainable tourism, which has hitherto lacked studies showing the potential of TVET. This finding underscored the understanding that TVET institutions can contribute greatly to the growth of tourism in Kenya by blending knowledge and skills that enhance ecotourism practices in the hospitality industry. Indeed, the need to anchor TVET institutions with the industry in Kenya has led to the implementation of the new Competence Based Education and Training (CBET) curriculum (Mutua *et al.*, 2019). The positive moderation effects, therefore, confirm that greening TVET in the realm of CBET develops competence in green skills among hospitality students leading to the improved application of ecotourism practices in the hospitality industry and enhancing sustainable tourism.

By finding that greening TVET moderates the relationship between ecological ecotourism and sustainable development in tourism, this study highlighted the potential of green TVETs to handle the threat to biodiversity innovatively and increase chances of enhancing sustainable development consistent with the views of Kintu (2019). Meanwhile, in showing that greening TVET moderated the relationship between economic ecotourism and sustainable development in tourism, this research supported findings by other scholars. Pavlova (2018) demonstrated that a partnership with TVET was an avenue for fostering green skills leading to sustainable economic growth. Similarly, Ali Asadullah (2019) asserted that expenditure on TVET indirectly contributes to economic development through green skills.

4. Conclusions and Recommendations

Ecotourism practices such as ecological, economic and socio-cultural play critical roles in sustainable development in tourism through lodges in Kenya. They are directly responsible for enhancing these tourism establishments' environmental, social-cultural, and economic performance, leading to numerous local benefits. To sustain these benefits accruing from ecotourism, lodges in Kenya may need to leverage staff trained in green TVET institutions. Leveraging these individuals will not only assure green establishments but will also enhance sustainable development.

The finding that greening TVET did not moderate the relationship between socio-cultural ecotourism and sustainable development in tourism was surprising and contradicted several existing research. Ali Asadullah (2019) demonstrated that greening TVET contributed to social inclusion through employment and earnings. Moreover, it has been shown that greening TVET has nurtured responsible skills and an entrepreneurial spirit that have increased social inclusion (Darnjanovic et al., 2021). Therefore, the finding that greening TVET could not moderate the relationship between socio-cultural ecotourism and sustainable development in tourism raised design and methodology questions. Majumdar's (2011) dimensions of greening TVET were five. However, in this study, only three were considered. Perhaps the lack of moderation was caused by not using the green community and green culture dimensions of greening TVET. Therefore, future studies should consider including these two dimensions.

References

- Adam, M. S., Jibrin, D. U., Shuaibu, F., Dahiru, M., Jaja, M. K., & Sule, C. C. A. Y. M. (2018). Greening TVET: An Imperative to Nigeria's Energy Crisis for Sustainable Economic Recovery and Development. In *KANO 2018—Proceedings of the 31st TEPAN Annual National Conference* (pp. 337-346).
- Agyeiwaah, E., 2019. Exploring the relevance of sustainability to micro tourism and hospitality accommodation enterprises (MTHAEs): Evidence from home-stay owners. *Journal of Cleaner Production*, [online] 226, pp. 159–171. <https://doi.org/10.1016/j.jclepro.2019.04.089>
- Agyeiwaah, E., McKercher, B., & Suntikul, W. (2017). Identifying core indicators of sustainable tourism: A path forward?. *Tourism Management Perspectives*, 24, 26-33. <https://doi.org/10.1016/j.tmp.2017.07.005>
- Ali Asadullah, M. (2019). Quadratic Indirect Effect of National TVET Expenditure on Economic Growth Through Social Inclusion Indicators. *SAGE Open*, 9(1). <https://doi.org/10.1177/2158244019830557>
- Arkitekter, W. (2021, February 15). Sustainable Development: How the hospitality

industry could transform, even in the wake of a pandemic. Hospitalitynet. Available at <https://www.hospitalitynet.org/news/4103006.html>

- Baksi, A. K., & Parida, B. B. (2020). Exploring Relationship Between Controllable Metrics and Socio-Environmental Performance Indicators in Responsible Tourism Context Using Temporal Causal Model. *Anais Brasileiros de Estudos Turísticos*, 10(1, 2 e 3). <https://doi.org/10.34019/2238-2925.2020.v10.29960>
- Berjozkina, G., & Melanthiou, Y. (2021). Is tourism and hospitality education supporting sustainability?. *Worldwide Hospitality and Tourism Themes*, 13(6), 744-753. <https://doi.org/10.1108/WHATT-07-2021-0101>
- Boley, B. B., McGehee, N. G., & Hammett, A. T. (2017). Importance-performance analysis (IPA) of sustainable tourism initiatives: The resident perspective. *Tourism Management*, 58, 66-77. <https://doi.org/10.1016/j.tourman.2016.10.002>
- Bramwell, B., Higham, J., Lane, B., & Miller, G. (2017). Twenty-five years of sustainable tourism and the Journal of Sustainable Tourism: looking back and moving forward. *Journal of Sustainable Tourism*, 25(1), 1-9. DOI: [10.1080/09669582.2017.1251689](https://doi.org/10.1080/09669582.2017.1251689)
- Chan, E. S., Okumus, F., & Chan, W. (2020). What hinders hotels' adoption of environmental technologies: A quantitative study. *International Journal of Hospitality Management*, 84, 102324. <https://doi.org/10.1016/j.ijhm.2019.102324>
- Damnjanović, I. (2021). Overtourism and the Local Community Well-Being. In *Mediterranean Protected Areas in the Era of Overtourism* (pp. 93-115). Springer, Cham. https://doi.org/10.1007/978-3-030-69193-6_5
- Das, M., & Chatterjee, B. (2022). Ecotourism a solution or deception for conservation: A case of Bhitarkanika Wildlife Sanctuary, Odisha, India. *Journal of Hospitality and Tourism Insights*, (ahead-of-print). <https://doi.org/10.1108/JHTI-12-2021-0336>
- Diep, P. C., & Hartmann, M. (2016). Green Skills in Vocational Teacher Education—a model of pedagogical competence for a world of sustainable development. *TVET@ Asia*, 6, 1-19.
- Fernández-Robin, C., Celemín-Pedroche, M. S., Santander-Astorga, P., & Alonso-Almeida, M. D. M. (2019). Green practices in hospitality: A contingency approach. *Sustainability*, 11(13), 3737. <https://doi.org/10.3390/su11133737>
- Gyeltshen, N. (2019). Concept of ecotourism. *Druk J*, 5(2), 47-55.
- Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An

- updated and expanded assessment of PLS-SEM in information systems research. *Industrial management & data systems*. <https://doi.org/10.1108/IMDS-04-2016-0130>
- Hanna, J., Hossain, G. S., & Kocerha, J. (2019). The potential for microRNA therapeutics and clinical research. *Frontiers in genetics*, 10, 478. <https://doi.org/10.3389/fgene.2019.00478>
- Higgins-Desbiolles, F. (2018). Sustainable tourism: Sustaining tourism or something more? *Tourism management perspectives*, 25: 157-160. <https://doi.org/10.1016/j.tmp.2017.11.017>
- Jebungei, D. K. (2020). Green Skills and Sustainable Economy in Kenya: The Influence of TVET Trainer Competencies. *Africa Journal of Technical and Vocational Education and Training*, 5(1), 29-40. Retrieved from <http://www.afrivetjournal.org/index.php/Afrivet/article/view/101>
- Kalaitan, T. V., Stybel, V. V., Gutyj, B. V., Hrymak, O. Y., Kushnir, L. P., Yaroshevych, N. B., & Kindrat, O. V. (2021). Ecotourism and sustainable development. Prospects for Ukraine. *Ukrainian Journal of Ecology*, 11(1), 373-383.
- Kamis, A., Alwi, A., & Yunus, F. A. (2017). Integration of green skills in sustainable development in technical and vocational education. *International Journal of Engineering Research and Applications*, 7(12), 8-12.
- Katam, E., & Otieno, D. (2021). A Review Of Technical And Vocational Education And Training Institutions' online Learning As A Response To Corona-Virus Disease 2019 In Kenya. *The Kenya Journal of Technical and Vocational Education and Training*, 96.
- Kintu, D. (2019). Technical Vocational Education and Training Institutions 'contribution to Promoting Sustainable Development. <http://ir.mkсу.ac.ke/handle/123456780/4443>
- Koh, E. & Fakfare, P. (2020), Overcoming “over-tourism”: the closure of Maya Bay, *International Journal of Tourism Cities*, 6(2), 279-296. <https://doi.org/10.1108/IJTC-02-2019-0023>
- Kunjuraman, V. (2022). Community-based ecotourism managing to fuel community empowerment? An evidence from Malaysian Borneo. *Tourism Recreation Research*, 47(4), 384-399. DOI: [10.1080/02508281.2020.1841378](https://doi.org/10.1080/02508281.2020.1841378)
- Majumdar, S. (2011, October). Developing a greening TVET framework. In UNESCO/NEVOC, CSP, GIZ: Transforming TVET for Meeting the Challenges of the Green Economy. Report of the International Consultation Meeting (pp. 27-30).
- Martínez García de Leaniz, P., Herrero Crespo, Á., & Gómez López, R. (2018).

- Customer responses to environmentally certified hotels: The moderating effect of environmental consciousness on the formation of behavioral intentions. *Journal of Sustainable Tourism*, 26(7), 1160-1177, DOI: [10.1080/09669582.2017.1349775](https://doi.org/10.1080/09669582.2017.1349775)
- Moosa, A., & He, F. (2021). Impact of environmental management practices on corporate sustainability: evidence from the Maldives hospitality industry. *International Journal of Emerging Markets*; <https://doi.org/10.1108/IJOEM-06-2020-0700>
- Mulligan, M. (2017). *Introduction to sustainability*. (2nd Ed.) Routledge
- Mutua, P. N., Kimiti, R., & Mulwa, D. (2019). Adaptability of Facilities Applied in Competence Based Education and Training on the Acquisition of Employable Skills among Visually Impaired Learners in TVET Institutions In Kenya. *International Journal of Education and Research* 7(9): 16-30. <http://ir.mkusu.ac.ke/handle/123456780/4918>
- Olowoyo, J. O., Saini, U., Kumar, M., Valdes, H., Singh, H., Omorogie, M. O., ... & Smirniotis, P. G. (2020). Reduced graphene oxide/NH₂-MIL-125 (Ti) composite: Selective CO₂ photoreduction to methanol under visible light and computational insights into charge separation. *Journal of CO₂ Utilization*, 42, 101300. <https://doi.org/10.1016/j.jcou.2020.101300>
- One Planet Network (2022). Inspiring a global movement for sustainable consumption and production. Available at <https://www.oneplanetnetwork.org/>
- Pavlova, M. (2018). Fostering inclusive, sustainable economic growth and “green” skills development in learning cities through partnerships. *International Review of Education*, 64(3), 339-354. <https://doi.org/10.1007/s11159-018-9718-x>
- Postma, A., Cavagnaro, E., & Spruyt, E. (2017). Sustainable tourism 2040. *Journal of Tourism Futures*, 3(1), 13-22. <https://doi.org/10.1108/JTF-10-2015-0046>
- Rasoolimanesh, S. M., Ramakrishna, S., Hall, C. M., Esfandiar, K., & Seyfi, S. (2020). A systematic scoping review of sustainable tourism indicators in relation to the sustainable development goals. *Journal of Sustainable Tourism*, 1-21. <https://doi.org/10.1080/09669582.2020.1775621>
- Salman, A., Jaafar, M., & Mohamad, D. (2020). A comprehensive review of the role of Ecotourism in sustainable tourism development. *e-Review of Tourism Research*, 18(2), 215-233.
- Sangpikul, A. (2018). The effects of travel experience dimensions on tourist

- satisfaction and destination loyalty: The case of an island destination. *International Journal of Culture, Tourism and Hospitality Research*. <https://doi.org/10.1108/IJCTHR-06-2017-0067>
- Sgarz, M. (2021). TVET Advocacy: Ensuring Multi-Stakeholder Participation. New Qualifications and Competencies for Future-Oriented TVET. Volume 2. *UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training*.
- Shereni, N. C. (2020). The role of technical and vocational education and training (TVET) in restoring hospitality sector specific skills in Zimbabwe: a students' perspective. *Journal of Hospitality & Tourism Education*, 32(3), 133-141. <https://doi.org/10.1080/10963758.2019.1655434>
- UNEP (2022). Kenya as an Ecotourism Destination. Available at <https://ninabutler.com/journal/top-ecotourism-and-sustainable-tourism-lodges-in-kenya>
- UNESCO (2022, November 10). Going green and digital: TVET for hospitality and tourism. Available at <https://en.unesco.org/news/going-green-and-digital-tvet-hospitality-and-tourism-0>
- Were, C. M., & Ahmed, F. (2018). Issues affecting the greening of TVET programs for sustainable development in Kenya: A case of TVET institutions in Nairobi County. *Africa Journal of Technical and Vocational Education and Training*, 3(1), 2-12.
- Wondirad, A. N. (2018). Stakeholder collaboration for sustainable ecotourism development in Southern Ethiopia. [991022131142303411.pdf](https://doi.org/10.1080/1742-6596.1950/1/012024)
- Xess, A., Bhargave, H., & Kumar, P. (2021, August). A study on influence of eco-friendly technologies in hospitality industry. In *Journal of Physics: Conference Series* (Vol. 1950, No. 1, p. 012024). IOP Publishing. DOI [10.1088/1742-6596/1950/1/012024](https://doi.org/10.1088/1742-6596/1950/1/012024)
- Yfantidou, G., & Matarazzo, M. (2017). The future of sustainable tourism in developing countries. *Sustainable development*, 25(6), 459-466. <https://doi.org/10.1002/sd.1655>
- Zanamwe, C., Gandiwa, E., Muboko, N., Kupika, O. L., & Mukamuri, B. B. (2018). Ecotourism and wildlife conservation-related enterprise development by local communities within Southern Africa: Perspectives from the greater Limpopo Transfrontier Conservation, South-Eastern Lowveld, Zimbabwe. *Cogent Environmental Science*, 4(1), DOI: [10.1080/23311843.2018.1531463](https://doi.org/10.1080/23311843.2018.1531463)

4

BEYOND TECHNICAL: ROLE OF TRANSFERABLE SKILLS IN TVET TRANSFORMATION

Factors Promoting Acquisition of Employable Skills Among Students in Technical and Vocational Education and Training Institutions in Kenya.

***Okumu, G. J & Kenei, J. K.**

Public Service Commission of Kenya, P. O. Box 30095 – 00100, Nairobi,
Kenya

email: gjokumu@gmail.com

Abstract

The development of transferable skills permits the youth to become agile learners capable of navigating personal, academic, social and economic challenges in the modern and future world. The skills are developed through multiple learning pathways from academic education to vocational training and employment. The purpose of the study was to examine the factors that promote the attainment of transferable skills among students in Technical and Vocational Education and Training (TVET) Institutions in Kenya. Specifically, the study sought to determine the factors that influence acquisition of employable skills in TVET institutions. The target population for this study was 9,045 trainers drawn from 176 institutions spread across 47 counties in Kenya. Slovin's formula was used to determine the sample for each stratum and systematic sampling technique used to select 400 participants who were included in the survey. An online questionnaire was sent to the sampled trainers. Data was analysed using IBM Statistical Package for Social Sciences (SPSS Version 27). Descriptive and inferential statistics were computed and results presented using frequency tables, and percentages. Pearson Product Moment Correlation (PPMC) was used to establish the relationship between the variables, hence providing a holistic view of the transferability of skills in TVET institutions. The findings of the study showed that there was a weak positive relationship between Courses Offered, Training and Learning Resources, Training Methods, Trainers' Qualifications and Acquisition of Employable Skills in TVET institutions ($r=.430, .306, .329, \& .207$) respectively. Based on the findings, the study recommended strengthening Institutional linkages between institutions and industry to give trainers opportunities to attend workshops and seminars. In addition, trainers without pedagogy should be supported to pursue training, obsolete equipment in some institutions be upgraded to keep abreast with technological changes and a policy framework be developed to guide institutions on adoption of digital library systems and subscription of digital library packages.

Keywords: Transferable skills, Trainers, TVET Institutions

1.0 Introduction

1.1 Background information

The Technical and Vocational Education and Training (TVET) sector play an important role in churning out skilled graduates for all sub-sectors of the economy (Afeti, 2014; Kailo, 2020). The training builds capacity for current and future workforce with relevant skills, positive work attitudes, and are responsive to the needs of the changing work environment (Brewer & Comyn, 2015). According to Ondieki, *et al.*, (2019) many employers prefer hiring employees who, besides possessing the requisite technical skills, also possess other skills known as transferable, life, soft, 21st century or social-emotional skills. These include honesty, positive attitudes, initiative, ambition, communication, problem solving, critical thinking, respect, and being a team player among others.

The United Nations Children’s Fund (UNICEF) (2019) defines transferable skills as the skills that allow people to become agile, adaptive learners and responsible citizens; equipped to navigate personal, academic, social, and economic challenges. These include, *inter alia*, negotiation, emotional intelligence, empathy, communication and leadership skills. Transferable skills can therefore be considered as the ‘magic glue’ that connects, strengthens, and develops other skills (UNICEF, 2019). This view was supported by Ondieki, *et al.*, (2019) who observed that transferable skills play a ‘bridging’ and ‘supportive’ function in the acquisition of other skills such as job-specific skills.

Zimmermann *et al.*, (2013) identified Germany, Australia, and Japan as countries that have effectively used TVET to address youth unemployment. They further cited Singapore, South Korea and Hong Kong as countries that have ensured their education system contributes to economic growth. For Africa, following many years of neglect, TVET has become increasingly significant (Afeti, 2014; Ngcwangu, 2015). However, the TVET subsector has failed to provide well-qualified skilled labour to drive the development process. In Kenya, TVET has in many ways been characterised by conflict and controversy (UNESCO, 2012). Further, the sector continues to face many setbacks such as mismatch between transferable skills and their implementation. This study therefore sought to examine the institutional and training factors that promote the acquisition of transferable skills among students in TVET institutions in Kenya.

2.0. Methodology

The study adopted a descriptive survey design. The target population for this study was 9,045 trainers drawn from 176 TVET institutions spread across the 47 counties in Kenya, further stratified into 8 regions. The study used Slovin’s formula to determine the sample size for each stratum and applied a systematic sampling technique to select 400 trainers who were involved in this survey. A questionnaire was sent to the sampled respondents and the data obtained analysed

using IBM Statistical Package for Social Sciences (SPSS) Version 27. Descriptive and inferential statistics were computed and results presented using frequency tables, and percentages. Pearson Product Moment Correlation (PPMC) was conducted to establish the association between the variables, hence providing a holistic view on the transferability of employable skills in TVET institutions.

1.2 Objectives of the study

The main objective of the study was to determine the factors that promote the acquisition of employable/transferable skills among students in TVET institutions in Kenya. Specifically, the study sought to:

- i. Determine relationship between courses offered on acquisition of employable skills;
- ii. Determine effect of training method used on acquisition of employable skills;
- iii. Identify the relationship between provision of training and learning resources on acquisition of employable skills;
- iv. Determine effect trainers' qualification on acquisition of employable skills;
- v. Determine effect of nature of courses offered on acquisition of employable skills;

3.0. RESULTS AND DISCUSSIONS

3.1 Response Rate

A total of 139 responses, which represented a response rate of 35% was obtained from 37 counties clustered into 8 regions. Majority of the respondents were from Kakamega, Uasin Gishu, and Nandi counties with each county having 9 respondents. It can be deduced that the distribution respondents were spread across the 37 counties and 8 regions hence providing representative data.

3.2. Demographic Information of the Respondents

3.2.1. Gender and Age Brackets of Trainers

Out of the 139 trainers who participated in the survey, 49 were female and 90 were male, translating to 35.3% and 64.7% response rates by females and males respectively. The lower ratio of female to male respondents could be attributed to the fact that the TVET courses such as mechanics, building and construction, carpentry, plumbing, welding and electrical installation have been predominantly male dominated (Hicks, et al., 2011).

The distribution of trainers according to age, revealed that most (60%) of the trainers were within the age bracket of 20-35 years, while 56 (40%) were aged between 36 and 60 years of age. This could be attributed to the government's

initiatives of expanding TVET institutions in the recent past which resulted in substantial increased enrolment from 267,365 in 2017 to 498,326 trainees in 2021 (GOK, 2022). The upsurge in enrolment was occasioned by the fact that more learners eligible to join public universities preferred to join TVET institutions. This necessitated the recruitment of over 6,000 trainers who were mainly youthful graduates from the universities. The 40% of the trainers who were aged between 36 and 60 years, were adequately experienced to mentor the new trainers and enhance their competencies.

3.2.2. Experience of the Trainers

The findings on training experience revealed that 72 (51.8%) of the trainers had taught for 5 years and below while 32 (23%) had taught for between 6 and 10 years. Those who had taught for 11-15 years were 19 trainers accounting for 13.7% of the total respondents. Four trainers had 16-20 years of teaching experience while those who had served for 21 years and above were 12 trainers translating to 8.6%. This implies that the trainers were knowledgeable and could effectively provide information on the trainees' acquisition of transferable skills.

It could also be deduced that the 48% of the trainers, who had taught for over 5 years were suitably experienced to impart transferable skills to the trainees. Further, the 25% of trainers who had over 10 years training experience could mentor the young tutors. The long teaching experience also enabled the trainers to effectively impart skills to the trainees. This finding is supported by Bai and Geng (2014) who avers that tutors' teaching experience enhances the impartation of transferable skills to the trainees.

3.2.3. Trainers' academic qualifications

The research sought to determine whether the academic qualifications of the trainers influenced the acquisition of employable skills in TVETs. The findings established that out of 139 trainers, 119 had Bachelor's degree qualifications and above representing 85.6% of the trainers, 18 (13%) had diploma qualifications while two (1.4%) had certificate qualifications. The finding negates the earlier results of the studies conducted by Ferej, Kitainge and Ooko (2012) who found that most of the trainers were diploma holders. A notable finding was that only 4 (3%) of the trainers had either a postgraduate diploma in education or a Training of Trainers Certificate. This implies that though all the 139 trainers had the requisite academic qualifications to teach trainees pursuing TVET courses, 97% did not possess professional qualifications as trainers. According to Postholm (2012), quality education is strongly dependent on the quality of teachers; a function of their knowledge and mastery of subject content; appropriate teaching methods; and professional values. These are improved through continuous professional development. The lack of professional skills, therefore, hampered the impartation of transferable skills to the trainees.

3.4. Courses offered in TVETs and acquisition of employable skills

The study also sought the trainers' perception on the courses offered and the acquisition of employable skills based on a number of specific statements. It was established that the courses mounted were appropriate to the labour market needs with 85.6% of the trainers concurring (Mean=4.31, SD=0.81). This finding mimics the results of studies conducted by Akpomudjere (2019), Kisilu (2016), Njoki (2014), and Yewah (2015) which found that courses offered by the institutions were responsive to the labour market needs. This implied that relevant skills were imparted on the graduates in the courses offered that met the demands of the industry.

On the Trainers' responses with regard to the institutes collaborating with public and private Organisations to enable students to augment training and practical skills, the finding revealed that 63.3% agreed with the statement (Mean= 3.71, SD=1.00). Close collaboration with relevant industries both in the private and public sectors enabled trainees to secure industrial attachment as well as internship opportunities. Most of the courses offered were practical oriented and therefore industrial attachment and internship were crucial for students' acquisition of both technical and transferable skills. Through these programmes, trainees got opportunities to apply theory into practice and hence acquire additional skills.

The findings further revealed that the training offered helped trainees enhance their skill set and innovation, which were essential in the job market requirements, with 83.5% of the trainers supporting the statement, (Mean= 4.14, SD=.77). The findings concur with findings by Kailo (2020) which established that courses offered were significantly relevant to the job market, stimulated trainees' attainment of employable skills and augmented quality orientation.

The study also found that creative skills and the use of ICT boosted the quality and creativity of trainees in the labour market. This was revealed by the trainers' responses where 83.5% agreed with the statement, (Mean=4.16, SD=0.77). The findings were in line with the current technological revolution. The courses considered by the tutors as the most relevant in terms of offering employable skills and enhancing creativity included building and construction technology; Information, Communication and Technology (ICT); electrical and electronic engineering; and automotive engineering.

3.4.1. Relationship between courses offered in TVET institutes and acquisition of employable skills

The Pearson Correlation Analysis was performed to establish the relationship between courses offered and the acquisition of employable skills. The analysis is presented in Table 1.

Table 1: Relationship Between Courses Offered and Acquisition of Employable Skills

Correlations (N=139)

		Courses Offered in TVETs	Acquisition of Employable Skills
Courses Offered in TVETs	Pearson Correlation	1	.430**
	Sig. (2-tailed)		.000
Acquisition of Employable Skills	Pearson Correlation	.430**	1
	Sig. (2-tailed)	.000	
	N	139	139

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

Findings revealed that there was a weak positive relationship between the courses offered and the acquisition of employable skills ($r = .430, n = 139, p = .000$).

The P-Value = .000 is less than .01, hence statistically significant at 95% confidence level, indicating the existence of a positive but weak relationship. The findings were in agreement with Kailo (2020) and Kwasira (2019).

3.5. Provision of training and learning resources in TVETs and acquisition of employable skills

The trainers were requested to rate the extent of accessibility, significance, and appropriateness of training and learning resources and their impact on employable skills among trainees. It was established that there was an adequate and relevant provision of training course books and reference materials in some institutes. The trainers’ rating agreed with the statement with a score of 54%, (Mean 3.16, SD=1.07) while 46% reported on the contrary. The provision of course books and reference materials had improved compared to the findings by Kailo, (2020), which established that 92% of trainers reported inadequacy in the provision of course books and reference materials, thus hampering the acquisition of transferable skills.

The trainers were asked to rate whether the workshops were well-equipped to facilitate the acquisition of employable skills among the trainees. The rating was 58.3% with (Mean=3.32, S. D=1.18) while 41.7% reported on the contrary. The provision of training and learning resources is essential because it facilitates the acquisition of market-driven skills required in various sectors of the economy to propel the country towards the realization of Vision 2030 goals as well as the attainment of the national development agenda. (GOK, 2007). Van der Bijl and

Oosthuizen (2019) singled out the deficiency of modern training resources in TVETs as a hindrance to the acquisition of employable skills. Further, Studies by Njoki (2014) and Anindo et al., (2016) revealed that the majority of the institutes had inadequate teaching and learning resources, which sabotaged skills acquisition.

The trainers were requested to rate the status of equipping libraries in TVET institutes. The findings revealed that 44.6% of the trainers were not in agreement with the statement that the libraries were equipped while 43.9% agreed, (Mean=2.95, S. D=1.21). The results echo the findings of the study conducted by Barasa and Kwasira (2019), which argued that the lack of well-equipped libraries hampered the transferability of skills among trainees. Further, a study by Njuki and Mukundi (2019) found that TVETs in Kenya had gaps in their digital libraries. Well-equipped libraries provide modern textbooks, periodicals and up-to-date research conducted on various subjects to trainees, tutors and other researchers. Well-equipped libraries promote creativity and inquisitiveness of learners, thus making learning more meaningful (Olukunmi and Olabisi, n.d.).

Most of the trainers (62.6%) agreed that training equipment used in Technical and Vocational Colleges were up-to-date, relevant, and appropriate to industry requirements. According to them, the availability and use of training equipment exposed the trainees to practical work, which in turn enabled them to gain hands-on experience, thus influencing the acquisition of employable skills and competencies and making them relevant in the job market. The trainers further argued that practical lessons enabled trainees to develop psychomotor skills and positive attitudes; enhanced critical thinking and creativity skills making them relevant in the job market. 31.6% of the trainers argued that the training equipment currently being used were not relevant to the industry demands, with (Mean=3.36, S.D=1.11). This hampered acquisition of transferable skills amongst the trainees. This finding agreed with Edokpolor and Dumbiri (2019), who found that the use of outdated training equipment and learning materials hampered the effective transfer of employable skills among learners.

The survey further sought views from trainers on whether laboratories in TVETs were well-equipped and contributed positively in influencing learners to acquire employable skills. Findings revealed that 59.0% of the respondents affirmed that well-equipped laboratories fostered trainees' acquisition of employable skills whereas 32.4% were of the view that well-equipped laboratories did not translate to the acquisition of employable skills with (M=3.30, S.D=1.15). The findings matched the results of the study conducted by Chukwumaijen (2015) who found a significant relationship between the existence of well-equipped laboratories and trainees' acquisition of employable skills. The study, therefore, deduced that for the effective acquisition of employable skills among trainees, well-equipped

laboratories should be provided to facilitate learners' acquisition of practical-oriented skills relevant to the demands of the labour market.

3.5.1 Relationship between provision of training and learning resources in TVETs and acquisition of employable skills

The Pearson Correlation analysis was carried out to establish the relationship between provision of training and learning resources and the acquisition of employable skills. The analysis is presented in Table 2.

Table 2: *Relationship Between Training and Learning Resources and Acquisition of Employable Skills*

Correlations (N=139)			
		Train- ing and Learning Resources	Acquisition of Employable Skills
Training and Learning Resources	Pearson Correlation	1	.306**
	Sig. (1-tailed)		.000
Acquisition of Employable Skills	Pearson Correlation	.306**	1
	Sig. (1-tailed)	.000	

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

The findings established a weak positive relationship between training and learning resources and acquisition of employable skills ($r = .306$, $n = 139$, $p < .001$). The P-Value $< .001$ is less than $.05$, and thus statistically significant at 95% confidence level.

3.6 Training methods used by trainers and acquisition of employable skills

This section provides trainers insights on various methods used to transfer skills to learners in TVET institutes. Findings revealed that a majority of the trainers used lecture method (53.2%, $M = 3.41$, $S.D = 0.71$), group discussions (62.6%, $M = 3.59$, $S.D = 0.56$), exercises and activities (65.5%, $M = 3.58$, $S.D = 0.65$), and demonstrations (67.5%, $M = 3.65$, $S.D = 0.52$). The finding on the use of lecture method as a common medium of transferring employable skills to learners in TVETs agrees with the findings of Anindo *et al.*, (2016) who established that lecture method was commonly used in the institutes. However, the method inhibits trainees' ability to acquire employable skills because it is purely theory-based and

therefore offers trainees minimal chances for application in real-life situations. The use of lecture methods by a majority of the trainers could be attributed to lack of skills in pedagogy/andragogy.

Some of the other methods frequently used by trainers were case studies (45.3%, M=3.01, S.D 0.77), role plays (48.9%, M=3.0, S.D=0.78), experimentation (35.5%, M=3.30, S.D=0.78), problem-based learning (51.8%, M=3.21, S.D= 0.70), project learning (56.1%, M=3.05, S.D=0.66); Work-based learning (41.7%, M=2.86, S.D=0.85) and simulation (49.6%, M=2.86, S.D=2.86). Role plays, case studies, experimentation, and work-based learning provided trainees with the opportunity to practically apply the knowledge acquired to real-life situations.

Work-based learning approaches such as industrial attachment and internship programmes offered trainees the opportunity to interact, apply and appreciate the theories and skills acquired in class and convert them into real-life situations. This finding is in consonance with the finding by Audu *et al.*, (2014) who singled out work-based learning, simulation, experimentation, field trip and project work were considered to be effective and efficient approaches for the transfer of employable skills to the trainees.

The teaching methods which were rarely used by trainers were field trips (47.5%, M=2.36, S.D=0.80), fireplace (39.6%, M=1.93, S.D= .083), fish bowl (45.3%, M=2.00, S.D=0.80), Robin Hood (41.0%, M=3.6, S.D=1.88) and River of life (41.7%, M=3.6, S.D=1.90). This could be attributed to a majority of the trainers not having gone through professional training. The trainers further indicated that lack of exposure to professional training made them rely heavily on the lecture method. The lack of professional training impacted negatively on the acquisition of employable skills by the trainees. This finding is supported by Karemu and Gongera (2014) who attributed the mismatch of skills among TVET graduates to over-reliance on the lecture method by the trainers.

3.6.1. Relationship between the training methods used by trainers and acquisition of employable skills

Correlation analysis was performed to establish the relationship between training methods and the acquisition of employable skills in TVET institutes. The analysis is presented in Table 3.

Table 3: The Relationship Between the Training Methods adopted and Acquisition of Employable Skills

Correlations			
		Training Methods	Acquisition of Employable Skills
Training Methods	Pearson Correlation	1	.329**
	Sig. (2-tailed)		.000
Acquisition of Employable Skills	Pearson Correlation	.329**	1
	Sig. (2-tailed)	.000	
	N	139	139

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

Findings revealed a weak positive relationship between training methods and the acquisition of employable skills ($r = .329$, $n = 139$, $p < .001$). The P-Value $< .001$ was less than $.05$, and thus statistically significant at 95% confidence level. This could be attributed to over-reliance on the lecture method by the trainers. The 68% could be explained by other factors.

3.7. Acquisition of Employable Skills

3.7.1. Influence of trainers’ qualifications on trainees’ acquisition of employable skills

The study sought to establish the influence of trainers’ qualification on trainees’ acquisition of employable skills. Findings revealed that 134 (96.4%) of the trainers concurred with the statement that trainers’ qualifications influenced skills acquisition among trainees while 5 (3.6%) did not. This implies that knowledge acquired in college and industrial attachment provided the trainers with a wide experience that enabled them to have mastery of content. This empowered them to create the right attitude and confidence amongst the trainees, positively impacting trainees’ acquisition of employable skills. Those with additional higher qualifications such as a doctorate or master’s degree indicated that they were exposed to additional knowledge and skills that made them experts in their areas of specialization. The higher academic qualifications sharpened the analytical and cognitive skills of the trainers thus enhancing their comprehension of the course content both theoretically and practically.

Further, those with postgraduate diploma in education indicated that the course enhanced their presentation skills, classroom management and mode of delivery of the subject matter. The trainers, therefore, had an upper hand in terms of skill impartation and role models that positively influenced the trainee’s acquisition of employable skills. This finding resonates with the findings by Kailo (2020).

3.7.2. Relationship between trainers’ qualifications and trainee’s acquisition of employable skills

To determine the relationship between trainers’ qualifications and the acquisition of employable skills among trainees, Pearson Product Moment Correlation analysis was used. The analysis is presented in Table 4.

Table 4: *The Relationship Between Trainers’ Qualifications and Acquisition of Employable Skills Amongst Trainee’s*

Correlations			
		Trainers Qualifications	Acquisition of Em- ployable Skills
Trainers Qualifications	Pearson Correlation	1	.207*
	Sig. (2-tailed)		.015
Acquisition of Em- ployable Skills	Pearson Correlation	.207*	1
	Sig. (2-tailed)	.015	
	N	139	139

*. Correlation is significant at the 0.05 level (2-tailed).

The output from the analysis exemplifies a significant and weak positive relationship between trainers’ qualifications and the acquisition of employable skills ($r = .207, n = 139, p < .015$). The P-Value = .015 was less than .05, and thus statistically significant at a 95% confidence level, signifying a positive but weak linkage between trainers’ qualifications and acquisition of employable skills among the trainees.

3.7.3. Participation in industrial attachments

The study sought to establish whether the trainers had attended industrial attachment during the pre-service training. Findings revealed that 129 trainers had attended industrial attachment during pre-service training while 10 had not attended, representing 92.8% and 7.2 % respectively. Industrial attachment is critical for trainers because it enables them to apply skills acquired into practice, sharpen their teaching skills and facilitate the impartation of transferable skills.

The trainers further indicated that industrial attachment equipped them with relevant practical skills, a broad knowledge required by industry and prepared them psychologically to mentor trainees on the expectations of the job market and work ethics. In addition, the trainers were able to share their experience of the industry and offer a more balanced and real engagement with the trainees. This ensured trainees develop better interpersonal skills, team spirit, and other relevant skills required in the job market.

3.7.4. TVETs Trainers' Attendance to Seminars/Workshops

The study sought to determine the frequency of the trainer's attendance of workshops and seminars. The findings revealed that 23.1% of the trainers attended workshops and seminars frequently, 49.6% of the trainers reported that they attended workshops and seminars less frequently while 25.9% indicated that they attended seldomly. Further, 1.4% of the trainers indicated that they attended workshops and seminars very frequently. This implies that though the majority (74%) of the trainers confirmed attendance of workshops and seminars, 50% attended workshops less frequently while very few trainers attended workshops and seminars frequently. This negatively impacted on the ability of the trainers to remain up-to-date on new knowledge in their areas of specialization.

3.7.5. Trainer's responses on the relationship between training undertaken by trainees and acquisition of employable skills

The survey sought to establish the satisfaction level on the extent to which training undertaken by the trainees translated to the acquisition of employable skills. It was established that the overall satisfaction level among the trainers on the extent to which training undertaken by trainees translated to employable skills was moderate. Concerning personal qualities, 61.2% of the trainers were to a great extent satisfied that the training enabled trainees to acquire personal attributes such as responsibility, honesty, and integrity while 19.5% were moderately satisfied with (Mean= 2.96, S.D= 0.66).

On interpersonal skills, 65.5% of the respondents were to a great extent satisfied against 15.1% who were moderately satisfied (Mean=2.98, S.D=0.64). On creativity and initiative skills, a majority of the trainers (46.8%) agreed that they were satisfied to a greater extent that the courses taken by trainees enabled them to improve their creativity and innovation skills, with (Mean=2.92, S.D=0.80).

Over half of the respondents (54%) concurred that trainers acquired problem-solving skills, through training offered by TVET institutions, while 21.6% were moderately satisfied that training translated to the requisite transferable skills (Mean=2.90, S.D= 0.76). Similarly, communication skills (48.9%, M=3.04, S.D=0.79), adaptability and work ethics (58.3%, M=3.0, S.D=0.71), professionalism (47.5%, M=3.04, S.D=0.73), leadership skills (54.7%, M=2.82,

S.D=0.74), negotiation skills (48.9%, M=2.68, S.D=0.79), and entrepreneurship skills (44.6%, M=2.82, M=0.86) were rated to have been acquired through a series of training attended by trainees to a greater extent. Basic skills (reading, writing, speaking, listening) was rated by a majority of trainers to a very greater extent. They were satisfied that the skill was largely acquired through training, with (44.6%, M=3.28%, S.D=0.76).

All the trainers who participated in the survey agreed that courses offered in TVET institutes played a role in the trainees' acquisition of transferable skills that were relevant to the labour market. Leka (2017), argued that insufficient acquisition of employable skills relevant to the market among the trainees could disadvantage the youth seeking employment. Based on this analysis it can be deduced that trainees had acquired employable skills from the courses offered in TVET institutes.

4. Conclusions and Recommendations

4.1. Conclusion

The study established that most trainers were experienced and knowledgeable and could effectively provide information to the trainees. Similarly, the courses offered in TVETs met the demands of the industry. Further, the close collaboration between TVET institutions and industry enabled trainees secure industrial attachment and internship opportunities which improved their acquisition of transferable skills. In addition, findings established a weak but positive relationship between the provision of learning resources, equipping of libraries and acquisition of transferable skills. Even though the provision of course books had improved compared to study done by Kailo (2020), this was still inadequate. Findings established that a few trainers used other learner centred methods in classroom delivery, the majority mainly relied on the lecture method due to lack of professional training. This lack of professional training impacted negatively on the acquisition of employable skills by trainees.

4.2. Recommendations

Based on the findings from this study, the authors recommended that:

- i. Linkages between TVET institutions and industry to be strengthened by giving trainers opportunities to attend workshops, seminars, and industrial attachments to keep abreast with rapid technological advancements.
- ii. Kenyan Government to consider supporting trainers to pursue a course in Training of Trainers or a postgraduate diploma in Education. This will equip the trainers with andragogy skills.
- iii. The government to upgrade obsolete equipment in some institutions to be in line with the advanced technology in the industry.

- iv. The government should upgrade libraries in all the TVET institutes to digital status to enable the trainees acquire both the 21st Century skills and other transferable skills.
- v. The Government should develop and implement a policy framework to guide TVETs in the adoption of digital libraries. Further, the institutes should put in place mechanisms to acquire or subscribe to the available digital library packages.

References

- Afeti, G. (2014). Technical and vocational evaluation and training for industrialization in Africa. Lagos: *Research and Resource Forum*.
- Anindo,J., Mugambi. M. & Matula. D. (2016). Training Equipment and Acquisition of employable skills by trainees in public Technical and Vocational Education and Training Institutions in Nairobi County, Kenya. *International Journal of Advanced Research in Education & Technology (IJARET)*, 1(34).
- Akpomudjere O. (2019). Assessment of the Factors Responsible for Lack of Employable Skills among TVET Graduates from Nigerian Universities. *Journal of Science Technology and Education* 7(4), 56-65.
- Audu, R. (2014). Assessment of the Teaching Methods That impact the Acquisition of Practical Skills. *Asian Social Science*, (21), 35-41.
- Audu, R., Kamin, Y. B., Aede H. B. M., Mohd, Z.A.M & Saud, M. S. B. (2014). Perception of Teachers and Administrators on the Teaching Methods that Influence the Acquisition of Generic Skills. *International Education Studies*, 7(11).
- Bai, B., & Geng, X. (2014). Transferable skills in technical and vocational education and training (TVET): Policy and practice in China. *TVET@ Asia*, 3, 1-12.
- Barasa, D. T., & Kwasira, J. (2019). Influence of availability of learning resources in Youth Polytechnics on youth's economic empowerment in Kakamega County. *The Strategic Journal of Business & Change Management*, 6(2), 1606-1618.
- Brewer, L. & Comyn P. (2015). Integrating core work skills into TVET systems: Six country case Studies. International Labour Organization (ILO), New Delhi.
- Edokpolor, J. E., & Dumbiri, D. N. (2019). Resource adequacy and utilization for teaching and learning effectiveness in vocational education programmes in south-south Nigerian universities. *Journal of vocational education studies*, 2(1), 1-12.

- Chukwumaijen, B. et al. (2015). Towards Quality TVET Programs in Nigeria, Challenges.
- Ferej, B. A., Kitainge, K., & Ooko, Z. (2012). Reform of TVET Teacher Education in Kenya: Overcoming the Challenges of Quality and Relevance. *Triennale on Education and Training in Africa*, 1–23.
- Government of Kenya, (2022). Economic Survey, 2022. Kenya National Bureau of Statistics, Nairobi, Kenya.
- Government of Kenya, (2007). *Kenya Vision 2030*. Government Press, Nairobi.
- Hicks, J. H., Kremer, M., Mbiti, I., & Miguel, E. (2011). Vocational education voucher delivery and labor market returns: a randomized evaluation among Kenyan youth (*Report for Spanish Impact Evaluation Fund (SIEF) Phase II*). Washington, DC: World Bank.
- Hondonga, J., Ramaligela, M. S., Makgatoa, M. (2021). Investigation on possible mismatch between TVET skills acquired in high school and workplace skills needed by Zimbabwean migrants in Botswana: a case study of Botswana’s South East District, South Africa. Routledge.
- Igbinlola, O. A. & Olabisi, I. A. (n.d). Relevance of Library and Information Centres in Technical and Vocational Educational Development Towards the Transformation Agenda and Sustainable Development in Nigeria.
- Kailo, M. (2020). Institutional Factors and the Acquisition of Employable Skills among Students in Technical, Vocational Education and Training Institutions in Kilifi County. Unpublished Master’s Thesis, University of Nairobi.
- Karemu, G. A., Gongera, E. G. (2014). An Evaluation of Strategy Implementation on Organizational Performance: Case of Public Technical, Vocational, Education Training (TVET) Institutions in Kiambu County, Kenya. *Industrial Engineering Letters*, 4(1): 35-50.
- Kisilu M. K. (2016). Training for the Future? A Case of Automotive Training in TVET Institutions in Kenya. *British Journal of Applied Science & Technology* 16(4), 1-10.
- Leka, W. (2017). Youth Employment: The Impact of Technical and Vocational Education and Training (TVET) in Enhancing Youth Employability in the Labor.
- Ngcwangu, S. (2015). The ideological underpinnings of World Bank TVET policy: Implications of the influence of human capital theory on South African TVET policy. *Education as Change*, 19(3), 24-45.
- Njoki, M. N. (2014). Strategies Influencing Production of Middle-Level Workforce

- in Public Technical, Vocational Education, and Training Institutions in Nairobi Region, Kenya.
- Njuki, W. & Mukundi, R. M. (2019). Towards Full Adoption of Digital Libraries in TVET Institutions in Kenya.
- Olukunmi, I.A & Olabisi, I.A. (n.d). Relevance of Library and Information Centres in Technical and Educational Development Towards the Transformation Agenda and Sustainable Development in Nigeria.
- Ondieki, C. M. M., Kahihu, N. & Muthoni, S. (2019). Integration of Soft Skills into The TVET Curriculum in Kenya. *Journal of Multi-Disciplinary Engineering Science and Technology*. (JMEST), 6(9).
- Paryono, P. (2014). Transferable skills in Technical and Vocational Education and Training (TVET) in Brunei Darussalam.
- Postholm, M. B. (2012). Teachers' professional development : a theoretical review. *Educational Research*, 54(4), 405–429.
- Sultana R. G. (2012). Career management skills in Europe: A critical review. *Journal of Education and Work*, 25, 225–248.
- United Nations Children's Fund (UNICEF) (2019). Global Framework on Transferable Skills. New York.
- UNESCO (2012). Youth and Skills: Putting Education to Work, EFA Global Monitoring Report.
- United Nations Children's Fund (UNICEF), (2022). The 12 Transferable Skills from UNICEF's Conceptual and Programmatic Framework, UNICEF, New York.
- Van der Bijl, A. & Oosthuizen L. J. (2019). Deficiencies Technical and Vocational Education and training Lecturer Involvement Qualifications and its Implications in the Development of Work-Related Skills. *South African Journal of Higher Education*, 33(3).
- Yewah, C. O. (2015). Institutional Factors Influencing Quality Training in Technical, Vocational and Entrepreneurship Training in Siaya Sub-County, Kenya.
- Zimmermann, K. F. et al., (2013). Youth Unemployment and Vocational Training. World Bank Discussion Paper.

Impact and Role of Transferable Skills to the TVET Graduates towards the Job Market in the 21st Century in the Kisumu National Polytechnic, Kenya

Mboya, S.

The Kisumu National Polytechnic, P.O Box 143 – 40100, Kisumu, Kenya

email: mboyats@gmail.com

Abstract

Life skills are essentially the abilities gained through study and direct life experience that enable individuals to effectively deal with the obstacles that they face on a daily basis. Creativity, critical thinking, problem-solving, decision-making, communication and teamwork, as well as personal and social responsibility, are examples of basic life skills. The failure of TVET colleges to provide life skills training results in graduates who, despite having the necessary technical abilities, are unable to succeed at work or start their own business and lack the tenacity to recover from unavoidable setbacks. As a result, employers who are often dissatisfied with the TVET system and must often invest their own resources in capacity building their personnel have been pushed. The goal of this study was to analyze the possible impact of integrating life skills curriculum within Kenya's TVET system on trainees' learning and course completion outcomes. The descriptive and explanatory design was used in the study, and data was collected via questionnaires as well as library research. The data was analyzed using the chi-square statistical technique at the 5% level of significance, and the results were presented in frequency tables and percentages. The respondents were chosen via random sampling. The findings revealed a strong association between the role of transferable skills in TVET graduates' employability. Furthermore, it has an impact on the job market in terms of exposing students and acquiring the necessary soft and transferable skills to positively put them in the appropriate industries. The findings of this study will assist the Ministry of Education, TVET institutions, and other institutions of higher learning in incorporating life skills into their curriculum, resulting in enhanced learning and livelihood outcomes.

Keywords: Transferable skills, life skills, technical skills

1. Introduction

1.1. Background information

The provision of high-quality education and training through technical and vocational education and training is one of the many avenues that Kenya's vision 2030 is attached to (Afeti, 2014; the Republic of Kenya, 2015). Employable skills are also known as work readiness skills and include, but are not limited to, interpersonal skills, critical thinking skills, communication skills, numeracy and

literacy skills, teamwork, theoretical and practical knowledge, decision-making skills, responsibility and dependability (Rowe and Zegwaard, 2017; Aman, 2014). TVET programs are critical in presenting skills needed to boost work chances. Particularly, aptitude, interpersonal skills, and personal characteristics have a substantial impact on individuals' employability through enhancing employees' knowledge following training (Sail & Alavi, 2009 and Nilsson, 2010).

Future generations are prepared for productive lives through TVET training and skills development opportunities, which give learners the fundamental skills they need to keep learning (ILO, 2010). One of the most crucial instruments for providing young people with the necessary skills might be high-quality, marketable TVET and skill development, both formally and informally. Therefore, in TVET and skill sectors, basic skills are becoming increasingly crucial. Although general education systems have received the majority of emphasis up to this point, technical and soft skill training are equally important in the development of essential abilities for employment. For training structures, it is extremely difficult to develop fundamental competencies and guarantee lifelong learning for everyone. It is crucial to change learning practices in order to better prepare people for the workforce and to develop accurate and effective assessment techniques so that the skills acquired can be appropriately recognized and valued by the industry employers, in addition to ensuring quality basic education through the general education system (Tymon, 2013).

Research on employee selection and career development and progress shows that individuals with more abilities are valued higher by employers (Fugete *et al.*, 2004). Transferable skills are pointers that enhance the employability of individuals (Bangerter *et al.*, 2012). From the employer's point of view, they are hired if their skills match the requirements of the labor market (Hennemann & Liefner 2010). Everything kept constant, people with better transferable skills will have better jobs than people with less skills. Therefore, employees should invest in developing their skills to increase their chances of getting hired, getting a job, or finding a new job easily (RPIC-ViP, 2011).

Transferable skills can assist job applicants in displaying socially desirable behaviors, such as being polite, listening to people, or showing curiosity, during job applications and interviews (Hogan *et al.*, 2013; Van der Heijden, 2006). Graduate trainees should be chosen based on their social skills and moral character (Neuenschwander & Nägele 2014; Stalder 2002; Stalder & Stricker 2009). Employers must rely on other information since graduate trainees lack work experience. To ascertain whether the graduate applicants would succeed and fit well in the firm, they must base their hiring decision on academic records and the soft skills displayed during the job interview.

1.2 Statement of the Problem

The future industrial, productivity and economic growth of a country depend on its youth who have the ability, skills, and enthusiasm (Bartel, *et al.*, 2015). For Kenya to leap forward to socio economic development, a critical mass of well qualified technicians, engineers, craftsmen, and artisans must be trained effectively (the Republic of Kenya, 2015). One of the most crucial tools for giving young people the abilities they require both inside and outside of the classroom is high-quality, on-demand technical training and skill development. Employers prefer to hire graduates with soft skills such as a positive attitude, integrity, initiative, personality, adaptive work ethic, communication, respect, adhering to rules, and teamwork above those with just the necessary technical skills. However, most TVET colleges do not include training these skills in their curricula. Despite having the essential technical skills, graduates who lack the necessary life skills do not succeed in the profession. Employers are consequently left with a great deal of dissatisfaction with the whole TVET program and frequently find themselves spending their own money to help employees improve their abilities. Employers also deal with a high rate of staff churn and rising personnel retention costs. As a result, technical vocational education and training have a poor reputation among employers, prospective students, and their parents, which makes young people prefer to pursue academic degrees and higher education as their career paths. This in turn results in a shortage of technically skilled workers who are marketable on the job market and in the economy. Since there haven't been many research in this field, the goal of this study was to ascertain how transferable skills affect TVET graduates' preparation for the job market in the twenty-first century.

1.3. Research Objectives

Thus, the purpose of the study was to achieve following specific objectives:

- i. To determine the strength of transferable skills education imparted to the TVET students on their employability and resource utilization.
- ii. To determine the extent to which students through the TVET curriculum integrated with transferable skills exposed and linked to the industries within their competence for their employability.

1.3.1. Research Questions:

The following research questions were formulated to guide the study:

- i. How effective is the transferable skills education in the impartation of the right employability skills and resource utilization.
- ii. To what extent are students through the TVET curriculum integrated with transferable skills exposed and linked to the industries within their competence for their employability.

Based on the purpose of the study, the researcher formulated the following research hypotheses:

- vi. H_0 : There is no relationship between knowledge on transferable skills and employability of the TVET graduates.
- vii. H_1 : There is relationship between knowledge on transferable skills and employability of the TVET graduates.
- viii. H_0^2 : There is no impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries' learning and course completion outcomes.
- ix. H_2 : There is impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries' learning and course completion outcomes.

2. Methodology

In generating this research work, the researcher used an explanatory and descriptive research survey design. The case studies were created through a combination of desktop research and documentary examination, supplemented by interviews and questionnaires to capture the perspectives and opinions of many stakeholders. Self-prepared questionnaires were distributed to 356 respondents, all of whom were students at The Kisumu National Polytechnic. During the review of literature, secondary data was generated from newspapers, journals, media, and reports. The surveys were largely made up of questions about the impact of transferable abilities on the trainee's employability. The replies were scored on a four-point Likert scale, with strongly agree (SA) receiving four points, agree (A) receiving three points, disagree (D) receiving two points, and strongly disagree (SD) receiving one point. Inferential statistics (Chi-square at a 5% level of significance) was employed during data analysis, and the hypothesis was tested using the proportion tests.

3. Results and Discussion

3.1. Response Rate

Sample population distribution by gender was as shown in Table 1.

Table 1: *Gender distribution of the respondents*

Response	Frequency	Percent
Male	386	69.4
Female	170	30.6
Total	556	100.0

From the table 1 above, it shows that 69.4% of the respondents were male and 30.6% of the respondents were female.

Table 2: *The Distribution and Sample Size of Respondents*

Response	Frequency	Percent
Administrators	15	2.7
Trainers	121	21.8
Technical staffs	52	9.3
Students	356	64.0
ILO's	12	2.2
Total	556	100.0

Table 2 shows that 15 respondents which represent 2.7% were administrators, 121 respondents that represent 21.8% were trainers, 52 respondents that represent 9.3% were technical staffs and 356 respondents that represent 64.0% were students while 12 respondents that represents 2.2% were ILO's (Industrial Liasson Officers).

3.2. Trainers' Teaching Experience

The instructors were enquired on the duration in years they had been training in TVET institutions to ascertain their acquaintance level on the impartation of employable skills among trainees.

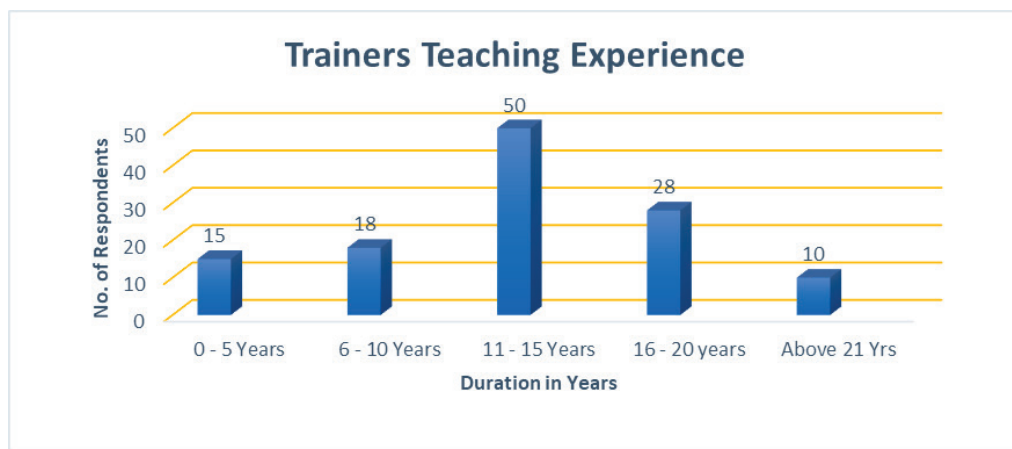


Figure 1: *Trainers teaching experience*

The values in Figure 1 represent the duration the trainers had spent teaching in the institution. The above data indicates that most of the trainers had spent between 6 years and above. This infers that they were acquainted with the tasks in the institution thus able to effectively and efficiently impart skills to the trainees.

3.3 Industrial Attachment of TVET Trainers

The study also established whether trainers had carried out industrial attachment during their pre service training to be able to impart the skills acquired to the trainees.

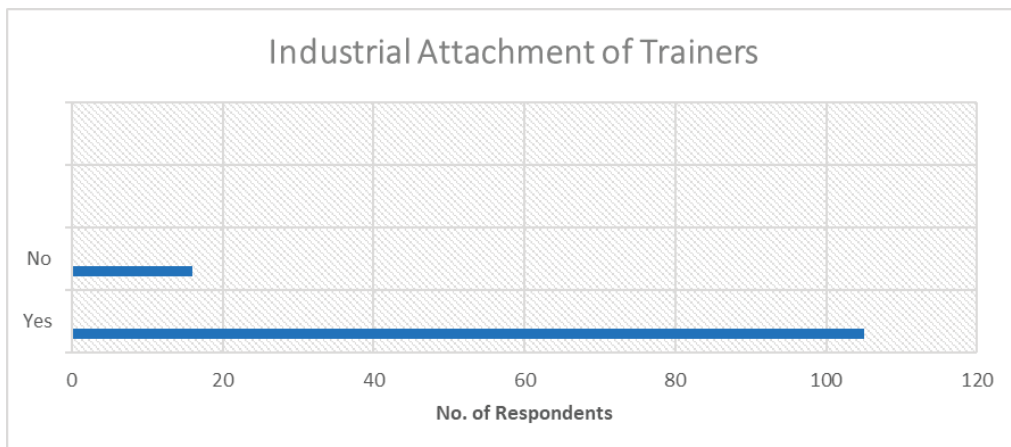


Figure 2: *Industrial Attachment of Trainers*

Findings in Figure 2 reveal that majority of the respondents concurred their participation in industrial attachment had aided their imparting employable skills in the trainees in their respective trainings. This therefore, attests that trainers in TVET are abreast of the modern technologies in the industries hence better impartation of employable skills among trainees.

3.4 Test of Hypotheses

There is no relationship between knowledge on transferable skills and employability of the TVET graduates.

Table 3: *There is a relationship between knowledge on transferable skills and employability of the TVET graduates.*

Response	Observed Frequency, O	Expected Frequency, E	Residual, (O - E)	$(O - E)^2$	$\frac{(O - E)^2}{E}$
Strongly Agreed	381	139.0	242.0	58564.0	421.32
Agreed	114	139.0	-25.0	625.0	4.49
Disagreed	52	139.0	-87.0	7569.0	54.45
Strongly disagreed	9	139.0	-130.0	16900.0	121.58
Total	556				601.84

Table 4: Test statistic

There is a relationship between CBET curriculum and entrepreneurship skills.

Chi-Square 601.84a

Df 3

Asymp. Sig. .000

(c) 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 139.00

The research therefore rejects the null hypothesis, “There is no relationship between knowledge on transferable skills and employability of the TVET graduates.” as the calculated value of 601.84 is greater than the critical value of 7.815 at 5% level of significance.

Therefore, the alternative hypothesis is accepted that “There is a relationship between knowledge on transferable skills and employability of the TVET graduates.”

3.4.1 Test of hypothesis two

There is impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries’ learning and course completion outcomes.

Table 5: *There is impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries’ learning and course completion outcomes.*

Response	Observed Frequency, O	Expected Frequency, E	Residual, (O - E)	(O - E) ²	$\frac{(O - E)^2}{E}$
Yes	497	185.33	311.67	97138.19	524.14
No	42	185.33	-143.33	20543.49	110.85
Undecided	17	185.33	-168.33	28334.99	152.89
Total	556				787.88

Table 6: Test statistic

There is impact of CBET curriculum on industrial linkages

Chi-Square 787.88a

Df 2

Asymp. Sig. .000

(d) 0 cells (0.00%) have expected frequencies less than 5. The minimum expected cell frequency is 185.33

The researcher therefore rejects the null hypothesis, “There is no impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries’ learning and course completion outcomes.” as calculated value of 787.88 is greater than the critical value of 5.991 at 5% level significance.

Therefore, the alternate hypothesis is accepted that states, “There is impact of integrating life skills or transferable skills curriculum in the public TVET system in Kenya on the beneficiaries’ learning and course completion outcomes.”

3.5. The impact of transferable skills and employability of the TVET graduates.

There is no relationship between TVET graduates’ understanding of transferrable skills and their employability. The assessment data for the relationship between knowledge on transferable skills and employability of TVET graduates was gathered from administrators, trainers, technical staff, and students and tallied as a percentage. According to the present statistics in Figure 3, the majority of participants 68.5% (n = 381) strongly agreed, 20.5% (n = 114) agreed, with a low number of 9.4% (n = 52) disagree and 1.6% (n = 9) disagree and strongly disagree against the entire sample of 556 respondents.

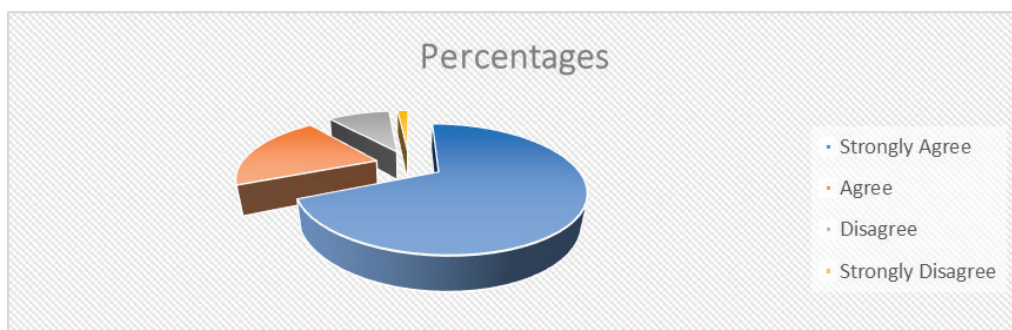


Figure 3: Percentage response on the impact of transferable skills and employability of the TVET graduates.

The research findings in regards to the two hypothesis are as shown in the subsequent tables;

Table 7: *The impact of transferable skills to the TVET graduates towards the job market in the 21st century*

Variables	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly disagree (2)
Administrators	66.7%	13.3%	13.3%	6.7%
Trainers	82.6%	12.4%	3.0%	2.0%
Technical staff	57.2%	29.4%	9.0%	4.4%
Students	76.2%	12.3%	7.8%	3.7%
ILO's	81.5%	11.4%	4.2%	2.9%

Table 8: *Students' response on the influence of courses offered and acquisition of transferable skills*

	<i>Strongly Disagree (SD)</i>	<i>Disagree (D)</i>	<i>Agree (A)</i>	<i>Strongly Agree (SA)</i>
<i>Relevance of TVET to the labor demand</i>	3.9% (14)	5.1% (18)	14.9% (53)	76.1% (271)
<i>Chances of acquiring new skills</i>	5.1% (18)	4.2% (15)	20.5% (73)	70.2% (250)
<i>Career Guidance and Counselling helps trainees make informed choices</i>	4.8% (17)	5.9% (21)	31.2% (111)	58.1% (207)
<i>Creative skills and use of ICT in TVET enhances quality and creativity in the job market</i>	2.8% (10)	5.3% (19)	30.1% (107)	61.8% (220)
<i>Laboratories and Workshops influence trainees' acquisition of employable skills</i>	2.0% (7)	2.8% (10)	32.0% (114)	63.2% (225)

Table 8, presents students views on the courses offered in TVET. The results shows that the courses offered by the TVET were relevant to the labor market demands. Majority of the trainees 76.1% (271) strongly agreeing to the fact. The findings coincide with that of Kisilu (2016) and Akpomudjere (2019) who noted that the TVET courses were labor market responsive. The findings also revealed that career guidance and counselling help trainees in in making informed choices before enrolling for courses at TVET institutions as shown by 58.1% (207) of the respondents strongly agreeing and 31.2% (111) agreeing. Based on the findings, the researcher interpreted to imply that proper career guidance, laboratories and workshops and use of ICT plays a pivotal role in heightening the moral and influences their acquisition of employable skills, (Coward et., al., 2014).

Table 9: *Trainers’ response on the level of trainees’ acquisition of transferable skills*

	Not at All	Small Extent	Moderate Extent	Great Extent	A Very Great Extent
<i>Personal Qualities</i>	7.4% (9)	20.7% (25)	32.2% (39)	24.8% (30)	14.9% (18)
<i>Interpersonal Skills</i>	5.8% (7)	18.2% (22)	30.6% (37)	35.5% (43)	9.9% (12)
<i>Creativity Skills</i>	8.3% (10)	22.3% (27)	24.0% (29)	28.9% (35)	16.5% (20)
<i>Problem Solving Skills</i>	4.2% (5)	27.3% (33)	16.5% (20)	28.9% (35)	23.1% (28)
<i>Communication Skills</i>	0% (0)	7.4% (9)	9.9% (12)	49.6% (60)	33.1% (40)
<i>Basic Skills</i>	5.0% (6)	16.5% (20)	14.9% (18)	24.8% (30)	38.8% (47)
<i>Adaptable Work Ethics</i>	0% (0)	23.2% (28)	24.8% (30)	35.5% (43)	16.5% (20)
<i>Professionalism</i>	3.3% (4)	5.8% (7)	7.4% (9)	18.33.9% (41)	49.6% (60)

From the findings in Table 9, it can be deduced that trainers were moderately and to a greater extent satisfied with trainees’ acquisition of relevant transferable and employable skills. Interpersonal skills, communication skills and adaptable work ethics were to a greater extent had impact on trainees’ acquisition of transferable skills.

3.5.1. Discussion

According to our data, 556 people completed and returned the questionnaire, representing a 100% response rate. Males made up 69.4% of the participants,

while females made up 30.6%. The bulk of participants (64.0%) were students, followed by trainers (21.8%), technical personnel (9.3%), administrators (2.7%), and Industrial Liaison Officers (2.2%). According to the present data, there is a clear association between the role of transferable skills in TVET graduates' employability. Furthermore, it has an impact on the job market in terms of exposing students and acquiring the necessary soft and transferable skills to positively put them in the appropriate industries.

From the above findings interpersonal skills, communication skills and adaptable work ethics were to a greater extent had impact on trainees' acquisition of transferable skills. Majority of the respondents concurred their participation in industrial attachment had aided their imparting employable skills in the trainees in their respective trainings. Based on the findings, the researcher interpreted to imply that proper career guidance, laboratories and workshops plays a pivotal role in heightening the moral and influences their acquisition of employable skills.

3.5.2. Competency of Technical Skills Developed

According to the literature on other surveys, CBET training in TVET institutions improves youth competency levels and technical skill acquisition when compared to the traditional approach, which is deemed ineffective in improving youth competency and thus not consummate to industry and job market requirements. Furthermore, CBET trainers have higher knowledge levels than traditional approaches. Traditional approach students reported that their transferrable abilities at work were not as excellent as their theoretical instruction, making them less competent. Amimo (2012) held similar views and cited "today's pedagogical practices at our universities and colleges, which she observed are short of these much-needed transferable soft skills" as the largest impediment to graduate trainees' employability in Kenya.

Nonetheless, according to a 2017 Brookings Institute survey, youth employment in Kenya is limited mostly by poor job performance of current TVET graduates, which makes businesses hesitant to assign them to new responsibilities. The Brookings Institute's points of view reflect the survey results accurately. According to the report, CBET programs generate competent TVET graduates with highly sought-after technical skills, as well as learned soft skills integrated into TVET programs.

4. Conclusions and Recommendations

4.1. Conclusion

This study concludes that TVET curriculum delivery and training is the rave and spur of the moment. Any country left behind in this call will remain perennially undeveloped. This underscores the recent attention given to CBET among students of TVET institutions in Kenya. The belief is that when students are exposed to

the theories, concepts and principles of transferable skills through the TVET curriculum, their entrepreneurial spirits and employability will be fired to propel them into thinking of how to create jobs for themselves and others and possess the skills required by the job market demands.

The study deduced a significant relationship between courses offered in the TVET institutions and trainees' acquisition of transferable skills. Furthermore, the development of transferable skills allows trainees to become active learners and citizens capable of navigating personal, academic, social and economic challenges in the contemporary and future world successfully. It also enables other prerequisite skills to be developed, connected and reinforced to meet the labour market standards and improves the employability of the trainees.

4.2. Recommendation

The foundation of every state lies on its education system and training of the youth in acquisition of relevant skills in line with the labour demand of the job market. TVET requires consistency in quality delivery. In reference to the findings of this study, the researcher made the following recommendations; TVET institutions, government and industries should work together to enhance trainees' acquisition of transferable skills thereby increasing their chances of employment. Secondly, TVET institutions need to give due attention to demand driven and market oriented practical training by encouraging trainers to attend TVET workshops and seminars to gain confidence on the learner centered method of curriculum delivery. Thirdly, there is also need for the Ministry of Education to develop a policy on training of transferable skills in all the TVET institution and making it a mandatory skill during the course of training.

References

- Afeti G (2012). Technical and vocational education and training for industrialization. Afr. Res. Resour. Forum, 1-16.
- Amimo, Catherine A. (2012). *“Tailoring Higher Education in Kenya to the Demands of the Postindustrial Work Place.”*
- Akpojumere, O. (2019). *Assessment of the factors responsible for lack of employable skills among TVET graduates from Nigerian Universities.* ATBU Journal of Science, Technology, and Education, 7(4), 56-65.
- Atchoerena, D. & Delluc, A. (2001) *Revisiting Technical and Vocational Education in Sub Saharan Africa: an update on trends innovations and challenges.* Paris.
- Bartel, A., Figas, P., and Hagel, G. Analyse zu den anforderungen von unternehmen an zukünftige mitarbeiter. BI-Spektrum (2015), 3-8.
- Coward, C., Caicedo, S., Ruach, H., Vega, N.R., 2014. Digital opportunities:

innovative ICT solutions for youth employment. International Telecommunications Union. ITU.

- Creswell, J. W. (1994). *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks. CA: Sage.
- Fugate, M., Prussia, G. E., & Kinicki, A. J. (2012). Managing employee withdrawal during organizational change: The role of threat appraisal. *Journal of Management*, 38(3), 890914. doi: 10.1177/0149206309352881
- Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior*, 65, 14–38.
- Hawke, G. (2004). ‘Generic skills’ in a changing work environment. In J. Gibb (Ed.), *Generic skills in vocational education and training*. (pp. 124–135) Adelaide: National Centre for Vocational Education Research Ltd.
- Hogan, R., Chamorro-Premuzic, T., & Kaiser, R. B. (2013). Employability and career success: Bridging the gap between theory and reality. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 6 (1), 3–1.
- ILO: Global Employment Trends for Youth, October 2010 (Geneva, 2010), p. 41.
- Kombo, K.D. and Tromp, L.A.D. (2006). *Proposal and Thesis Writing: An Introduction*. Paulines Publishers, Nairobi, Kenya.
- Mugenda, O. & Mugenda, A. (1999). *Research methods. Quantitative & Qualitative Approaches*. Nairobi: Acts Press.
- Nilsson, S. (2010). Enhancing Individual Employability: The Perspective of Engineering Graduates. *Education + Training*, 52, 540-551. <http://dx.doi.org/10.1108/00400911011068487>
- Nägele, C., & Neuenschwander, M. P. (2014). Adjustment processes and fit perceptions as predictors of organizational commitment and occupational commitment of young workers. *Journal of Vocational Behavior*, 85 (3), 385–393.
- Neuenschwander, M. P., & Nägele, C. (2014). *Sozialisationsprozesse beim Übergang in den Lehrbetrieb (SoLe)*. Schlussbericht im Auftrag des SBFJ. Solothurn: Fachhochschule Nordwestschweiz, Pädagogische Hochschule, Institut Forschung und Entwicklung, Zentrum Lernen und Sozialisation.
- Orodho, A.J., Kombo DK (2002). *Research Methods*. Nairobi. Kenyatta University, Institute of Open Learning.

- Republic of Kenya (2020). Constitution of Kenya 2010, Government Printers, Nairobi.
- Republic of Kenya (2015). *National Education Sector Plan (NESP), Volume Three: Programme Rationale and Approach for TVET, University and Science, Technology and Innovation 2015/2016- 2019/2020*. Nairobi, Ministry of Education.
- Republic of Kenya (2013). *The Technical and Vocational Education and Training Act*, 2013. Nairobi. Government Printer.
- Rowe, A. D., & Zegwaard, K. E. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning [Special issue]. *Asia-Pacific Journal of Cooperative Education*, 18(2), 87-99.
- RPIC-ViP. (2011). *Transferability of skills across economic sectors*. Luxembourg: Publications Office of the European Union.
- Stalder, B. E., & Stricker, C. (2009). Traditionelle Arbeitstugenden sind nach wie vor zentral. *Panorama*, 5, 13–14.
- Sail and Khadijah Alavi (2009). Social skills and social values training for future k-workers. *Journal of European Industrial Training*. 34(3): 226-258
- [Stalder F](#) (2002). ‘The Failure of Privacy Enhancing Technologies and the Voiding of Privacy’ *Sociological Research Online*, Vol. 7, (2), <http://www.socresonline.org.uk/7/2/stalder.html>
- Tymon, A. (2013). The student perspective on employability. *Studies in Higher Education*, 38 (6), 841–856.
- United Nations Children’s Fund, Final results framework of the UNICEF Strategic Plan, 2018 2021, E/ICEF/2017/18, New York, 17 July 2017, p.26.
- Van Der Heijde, C. M., & Van Der Heijden, B. I. J. M. (2006). A Competence-Based and Multidimensional Operationalization and Measurement of Employability. *Human Resource Management*, 45(3), 449–476. <https://doi.org/10.1002/hrm.20119>
- Wilton, N. (2012). The impact of work placements on skills development and career outcomes for business and management graduates. *Studies in Higher Education*, 37 (5), 603–620.