

An Investigation Of Agricultural Training Competencies Needed In Vocational Colleges In North Rift Region, Kenya

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ABSTRACT

The agricultural industry globally is frustrated by chronic mismatch between competencies and work, often leading to economic downturn and youth unemployment. The objective of the study was to assess the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges. The research method used was descriptive. A total of 384 students in TVET institutions studying agriculture were selected from a population frame of 5 TVET colleges using simple random sampling, 16 teaching staff (principals & lecturers) and 14 human resource personnel were purposively selected. Structured questionnaires and interview schedules were employed in collecting the research data from students and human resource personnel. Focus Group Discussions and Key Informants interviews were used to collect data from lecturers and principals respectively. Cronbach Alpha was used to determine the reliability of the questionnaires and a reliability co-efficient of 0.7 was adopted. Hypothesis testing was done by use of chi square at 95% confidence level. The study found that there was a statistically significant relationship between the capacity of the trainers and the quality of training of agriculture in TVET colleges. This study therefore concluded that agricultural training should be matched with the competencies required by the agricultural organizations. It was therefore recommended that for quality training to be achieved there was need to retrain TVET trainers on the competencies they lacked.

Key words: *competency, mismatch, curriculum, infrastructure, market needs, training*

INTRODUCTION

Training on hands-on competencies has been part of human history from medieval times. Historically, Vocational and Technical Education has been known as "Education for work." TVET is a key to economic prosperity in developed countries while in developing countries it is seen as a key to economic self-sufficiency (Zirkle, 2017). Students have been training for specific vocations for thousands of years (Maeko & Makgato, 2014). Women learned domestic competencies from their mothers, and young men trained for specific trades under skilled professionals (Brush, 2016). Technical and Vocational Education and Training (TVET) programs and institutions have played a consistent role in agricultural development and economic growth in developing countries over the past 50 years (Jonnes,

2012). Regardless of its true origin, some believe that vocational education began in 626 BC with the Neo-Babylonian Empire and its knack for apprenticeship-run education (Brush, 2016). Notably, vocational education development began in United States (US) in the early 20th century before the great depression. According to American Radio works, on paper, the creation of Vocational Education programs solved major problems like overcrowded classrooms and demand for a skilled workforce. Vocational Education today is a well-developed schooling system which balances class time and work experience. It increases inclusivity, innovation and prosperity (Jonnes, 2018).

The Sub-Saharan Africa region accounts for more than 950 million people, approximately 13% of the global population. By 2050, this share is projected to increase to almost 22% or 2.1 billion. (OECD & FAO, 2016). Agriculture is a graying sector in Africa given that the average age of farmers is about 60 years, despite the fact that 60 per cent of Africa's population is under 24 years of age. According to Walker & Hofstetter, (2016) ATVET plays a consistent if limited role in approaches to Agricultural development and economic growth over the past 50 years. Formal Agricultural Technical and Vocational Education and Training (ATVET) in many Sub-Saharan African countries were often based on colonial systems where few individuals in the university and colleges benefited (Walker & Hofstetter, 2016). Consensus to provide ATVET in different educational approaches such as formal, non-formal and informal has been put in place, to reach the diverse target groups and to make a wide skill set encompassing technical, soft, entrepreneurial and analytical competencies provision more innovative and up-to-date (FAO, 2014). A major challenge in TVET training in Sub-Saharan Africa is posed by quality in teaching which is characterized by a significant lack of practical relevance and responsiveness to labour market needs, insufficient infrastructure and equipment and extremely low throughputs (Eicker, Haseloff & Lennartz, 2017). Training opportunities for young people in Sub-Saharan Africa and the training offered does not match the needs of the private sector and local administration i.e. they focus much on production competencies than practical competencies. According to Kirui & Kozicka, (2014). A major rising concern in many developing countries is linking of private sector and the education institutions. In Kenya, the government set the target of achieving newly industrialized status by the year 2020 (Obwoye, Mwangi & Nyongesa, 2013). Technical education is necessary if Kenya is to industrialize by the year 2030. Relevant competencies have to be given in Technical Training Institutions. Competency Based Training (CBT) can be used to ensure that the teachers have the necessary competencies to achieve this philosophy (GoK, 2017). This study therefore aimed to investigate how teaching and learning of Agriculture influence the competencies of the learner in TVET colleges.

Problem Statement

Developed and developing countries are confronted by most of the problems that could limit the capacity of expansion in education to stimulate growth and development. Some of these problems are underemployment, low absorption capacity, shortage of professionalism, regional imbalances, and brain drain. (Brown & Slater, 2018). In spite of the various policy formulations in TVET colleges, there is persistence of many problems in the field which require more focused, responsive, functional and qualitative education system (Friedhelm, Gesine & Bernd, 2017). A proper TVET curriculum formulation and implementation would increase employability and marketability of TVET graduates (Kenya News Agency, 2019). Kenya's vision 2030 document noted that there was a mismatch between training and the competencies desired in the industry (Ngure, 2013). Ligami, 2018, observed that TVET institutions in Kenya are still too theoretical and are not providing the real competencies needed by the agricultural sector. The mismatch of the training in TVET colleges is in the context of increasingly commercial and technical 21st century agricultural system which demands for retraining of Agricultural Technical and Vocational Education and Training (ATVET) graduates immediately after employment (Kirui & Marta, 2018). Hence, there was need for critical analysis of agricultural training against competencies needed by agricultural organizations among selected technical and vocational colleges.

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Purpose of the study

Capacity of trainers influences the quality of training in agriculture. The study investigated the existing relationship between indicators of quality training in TVET colleges against competencies needed in the industry.

Main Objective of the study

The main objective of the research was to assess the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges;

Objectives

- i. To assess the extent to which experience of the trainers in the industry influences the quality of teaching of agriculture in TVET colleges
- ii. To assess the extent to which competencies required in training ATVET colleges influences the quality of teaching of agriculture in TVET colleges
- iii. To assess the extent to which competencies lacked by trainers teaching agriculture in ATVET colleges influences the quality of teaching of agriculture in TVET colleges

Research Hypotheses

H_{01} There is no significance difference on the extent to which capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges;

Justification of the research

Research has shown that there are many contributions of TVET on nation's economy (Bappah & Medugu, 2013; Bhurtel, 2015). Currently Kenya is offering financial support to students joining TVET colleges as well as equipping TVET colleges in terms of infrastructure and trainees' employment. Thus, the findings will hopefully improve the employability of the TVET graduates and establish the pitfalls in ATVET training; increase meaningful academic learning and facilitates, social and emotional growth and decrease negative behaviour as well as increase time on task. This study came at an opportune time to look into the status of teaching and learning of Agriculture, the capacity of trainers.

METHODOLOGY

The study was undertaken in the North Rift Region, Kenya. The region was created after a split in the larger former Rift Valley province which currently houses; North Rift, South and Central Rift regions. North Rift region was composed of Nakuru, Baringo, UasinGishu, Trans Nzoia Counties

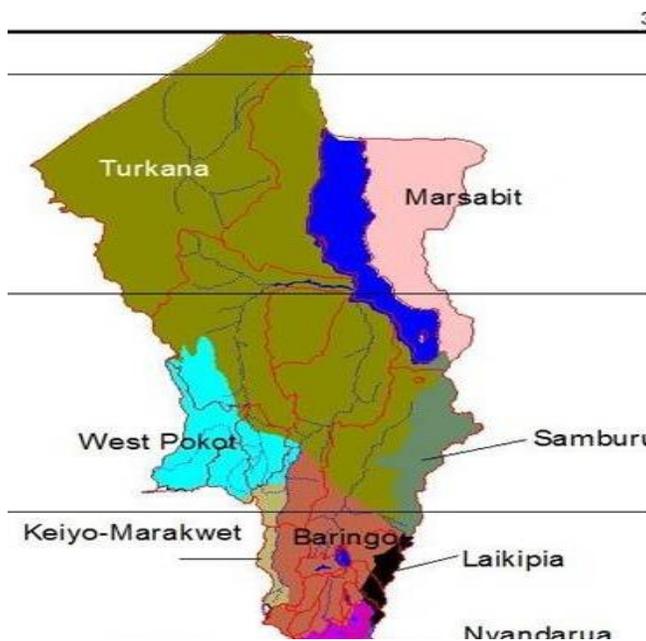


Table 3.1: Geography of the study Area.

This research adopted descriptive research design. This design was suitable for this study since the researcher described how variables influence quality training in production of middle level workforce (Aggarwal & Ranganathan, 2019).

Target population for the study included trained technical teaching staff, students of the technical institutions and 14 human resource personnel of the agricultural organizations in North rift region. A total of 16 trained technical and teaching staff; 6 principals, 10 lectures and 384 students were drawn from the technical institutions that were purposively sampled.

The population comprised of student trainees in TVET institutions in the North Rift Region pursuing agriculture related courses at certificate and Diploma levels in government institutions. Sample respondents for study was purposively drawn from 5 different institutions, one from each County. The institution to be sampled were randomly selected from the list of 10 TVET institutions. Out of the targeted 5 TVET institutions a proportionate number of 25% of the trainees were identified using a table of random numbers, a sample size of 384 trainees from the total population was used in the survey. Yamane's formula method was used to determine the sample size due to the large population sizes (Yamane, 1967; Cochran, 1977)

Split-half reliability was used to calculate the correlation between the two sets of responses. The items were considered reliable since they yielded a reliability coefficient of 0.7, which was the value respectable and desirable (Rosaroso, 2015).

Data Analysis

The study took both quantitative and qualitative analysis. Inferential statistics such as the cross tabulation and use of Chi-square were adopted in order to test the hypothesis stated on the study. Chi-square was used for the test of significance of association and to reflect the strength of the relationship: the greater the chi-square statistic, the stronger the significance (De-Vaus, 2002). On the other hand, qualitative data from the key informants' and FGDs notes were reviewed through content analysis based on particular themes to ensure that relevant information was recorded. The field notes that were collected using unstructured interviews from the key informants and the FGDs were reorganized schematically using word tables. Qualitative data from the FGDs and key informants were used to triangulate the quantitative components in the study where necessary.

RESULTS

The study sought to find out the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges.

4.1 To assess the extent to which the capacity of trainers influences the quality of teaching of Agriculture in selected TVET colleges;

The researcher sought to determine the experience required in agricultural colleges by comparing the experience of the trainers in the industry, trainers' level of education, equipment handling and quality of their graduates. The trainers had adequate experience in the industry, the trainers are very inadequate in equipment handling, the trainers said quality of their graduates was not adequate. According to Huang, (2019), his findings revealed that well-designed and prepared training activities in a training program will result in job training satisfaction, which influences employees work-related attitudes such as job satisfaction. That would further affect their intentions of turnover and job performance. These findings concurred with the findings of Wisshak & Hochholdinger (2019). Their findings indicated that subject-matter knowledge and communication techniques are considered vital for trainers, alongside content specific instructional knowledge such as specific training methods. Trainers are expected to provide clarity and structure, build relationship with trainees and create a constructive learning environment. The findings therefore revealed that experience of the trainers was very paramount in ATVET training institution so as to pass the competences to the learners.

4.2 Competencies required in training ATVET

The researcher sought to determine competencies on course syllabus coverage: Learning hours for competency acquisition and development, time allocated for practical lessons, qualified trainers and time allocated for coverage of the course. Table 4.3 shows that when student respondents were asked their expectations towards requirement in training ATVET colleges, 50.0% of the respondents mentioned that trainers were very adequately qualified, 43.5% of the respondents said trainers were adequately qualified, 3.1% of the respondents highlighted that trainers were very inadequately qualified and 3.4% of the respondents commented that trainers were not adequately qualified.

Table 4.2 Competencies required in training ATVET

Competencies	Very adequate		Adequate		Very Inadequate		Not adequate	
	F	%	F	%	F	%	F	%
Hours for competency	153	47.2	147	45.4	11	3.4	13	4.0
Acquisition								
Time allocated	123	38.0	121	37.3	42	13.0	37	11.4
For practical Lessons								
Qualified	162	50.0	141	43.5	10	3.1	11	3.4
Trainers								
Time allocated for course coverage	124	38.3	148	45.7	25	7.7	27	8.3

The respondents' point of view revealed that trainers were moderately qualified. This concurred with the study by Wilson, (2021), where he found out that most trainers were unable to use the new equipment that had been acquired by TVETs thus re-skilling exercise was inevitable in order to improve teaching standards and quality training in TVET colleges.

On learning hours for competency development 47.2% of the respondents said learning hours for competency acquisition and development were very adequate, 45.4% of the respondents mentioned that learning hours for competency acquisition and development was adequate, 3.4% of the respondents noted that learning hours for competency acquisition and development was very inadequate and 4.0% of the respondents highlighted that learning hours for competency acquisition and development was not adequate. The study of Ogunniyi & Nwalo, (2016). Recommended that more time should be allocated to practical courses so as to encourage the trainers to develop interest in practical. It was clear that learning hours for competency acquisition and development in this study was below 50.0% in adequacy hence could affect competencies acquired by the learners.

On the time allocated for coverage of the course 38.3% of the respondents said the time allocated for coverage of the course was very adequate, 45.7% of the respondents admitted that time allocated for coverage of the course was adequate, 7.7% of the respondents said time allocated for coverage of the course was very inadequate and 8.3% of the respondents admitted that time allocated for coverage of the course was not adequate. The study of Said, Friesen & Al-Ezzah (2014). Recommended that more time should be allocated on practical activities and more emphasis to be put on assessment of practical activities. Generally, the expectation of the respondents towards requirements in training ATVET courses was 50.0% or below 50.0% which is worrying in competencies which should be acquired by the trainees.

4.3 Influence of teaching and learning of agricultural related courses on competencies of learners

The study sought to understand the influence of teaching and learning agricultural related courses in TVET colleges. Teaching and learning agriculture in TVET colleges influenced the competencies of the learners positively according to the findings of the trainers in

TVET colleges. The trainers' respondents said teaching and learning of agriculture instill competencies, make the learners self-reliant and capable of solving farming problems, enhance socially and economically rewarding jobs, make learners acquire competencies through practical conducted. The study of Okoye & Isaac (2015) concluded that TVET mode of delivery was to provide the kind of workers needed in the industry and also to prepare individuals for self-employment. This study is in agreement with the study of Affero, Hassan, Bakar & Hussin (2018). There outcome revealed that the competencies developed in TVET learners produced graduates who are capable to meet the requirement of industries and professional bodies.

4.4 How to improve agriculture training in ATVET colleges to ensure learners are getting the right competencies

The study sought to know how to improve agriculture training in ATVET colleges. The trainers' respondents believed that adoption of competency based curriculum and increasing number of practical hours and reducing lecture hours, addressing emerging issues in agriculture, providing students with materials to initiate and implement projects, competent lecturers and increasing number of academic trips to expose students would improve agriculture training in TVET colleges. According to Adelabu (2021). His study revealed that trainers should be upgraded especially on hands-on practical activities in order to prepare the students to meet the companies' requirements. Ismail, Razali, Aabu & Habriza (2018), acknowledges that for quality training to be attained, trainers should develop personal traits and professionalism, teaching and learning and training and technical and innovation were the main components for quality training to be attained. The results revealed that for quality competencies to be attained by the trainers, quality competencies of the trainers were very critical.

4.5 Competencies lacked by trainers teaching agriculture in ATVET colleges

This study sought to find out whether there were competencies lacked by TVET trainers. The trainers said they lacked the following competencies in teaching ATVET colleges: Curriculum development competency, competency on modern technology e.g. Tissue culture, hydroponics, Green house farming and smart agriculture, competency to handle farm machinery and farm tools, soft skills, competencies to handle physically challenged persons and leadership competencies. Similar research conducted by other studies concurred with this study. Research conducted by Abdurrahman (2021), found out that trainers were facing the following challenges in attaining capacity building in TVET programs: Inadequate funding, poor research attitude, poor training of TVET instructors, poor supervision of teachers, inadequate facilities and poor assessment of TVET students' competency. The study of Kraak & Parterson (2016) found out that to secure TVET programs, adequate quality was vital; the quality in TVET colleges depends so much on competency and commitment of the TVET trainers.

Table 4.3: Relationship between Qualified Trainers and Quality Teaching

The table below shows the inferential statistics of the findings. Chi square was used to test the relationship of the hypothesis at 95% confidence level. H_{01} There is no significance difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges in the North-Rift region yielded the results on the table below.

Qualified Trainers	Value	df	Approx. Sig
Learning hours for competency Acquisition and development	85.776	9	.000
Time allocated for practical lessons	118.220	12	.000
Time allocated for coverage of the Course	46.683	9	.000
Moral integrity	34.886	12	.000
Preparedness in terms of competencies Acquired during training	56.262	9	.000
Expectations of the students to job market	56.039	9	.000
Relevance of the course to employment	30.798	12	.002

On the basis of chi square tests, it was clear that there was a statistically significant relationship between the capacity of the trainers and the quality of training of agriculture in TVET colleges. The H_{01} There is no significant difference on the extent to which capacity of trainers influence the quality of teaching of Agriculture in selected TVET colleges was therefore rejected. Therefore, the researcher suggested that for quality training to be achieved there was need to retraining TVET trainers on the competencies they lacked since those competencies could not be passed to the trainees.

CONCLUSION

The findings revealed that teaching and learning agriculture in TVET colleges influenced competencies of the learners positively, make the learners self-reliant and capable of solving farming problems, enhance socially and economically rewarding jobs. In contrary, the findings revealed that trainers lacked the following competencies: curriculum development, modern technology e.g. tissue culture, hydroponics, green house farming and smart agriculture, how to handle farm machinery, farm tools and farm equipment, soft skills, how to handle physically challenged persons and leadership skills. Based on the findings presented the study as shown that agriculture training has been found to have mismatch training in competencies needed in agricultural organizations. This study therefore concluded that agriculture training should be matched with the competencies required by the agricultural industry.

Recommendation

- i. TVETA and other stake holders should provide in-service training for the TVET trainers. This is because the competencies lacked by the trainers will not be passed to the trainees.
- ii. TVET curriculum should be reviewed to fit the changing needs
- iii. TVETs should incorporate emerging technologies on their teaching and learning
- iv. Farm tools and equipment in TVETs should be modern

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