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WORKPLACE EXPERIENCE ON QUALITY EDUCATION IN TVET INSTITUTIONS

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Abstract:
Baseline surveys from different countries have found out that there is a weak connectivity between theory and practice in the labour market, which is attributed to the lack of industry involvement in TVET academic programmes. Due to the inability of TVET institutions in the North Rift Region, Kenya to produce workforce with hands-on skills, there was a need for research on training approaches on integration of competency-based education. The purpose of this study was to establish the extent to which workplace experience learning has been integrated in TVET institutions. The study adopted the Diffusion of Innovation Theory. The study utilized the descriptive survey research design. The study targeted 6 principals, 6 industrial liaison officers, 1092 trainers, 18 industry supervisors and 22600 trainees. The sample size was 700 respondents comprising of 6 principals, 6 industrial liaison officers, 293 trainers, 18 industry supervisors and 377 trainees. A purposive sampling technique was used to select principals, industrial liaison officers and industry supervisors. Stratified random sampling and simple random sampling techniques were used to select trainers and trainees from various TVET institutions. The data were collected using questionnaires, interview schedules and document analysis. The instruments were piloted in one of the TVET institutions in the South Rift region of Kenya. Cronbach Alpha coefficient was used

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to test the reliability of instruments. The quantitative data was analyzed using both descriptive and inferential statistics. Descriptive statistics comprised of frequencies, percentages, means and standard deviation. Inferential statistics involved correlation and multiple regression analysis. Qualitative data were analyzed using thematic method. The study findings revealed that workplace experience ($r = .638$, $p < 0.001$) in TVET institutions. The study findings revealed that there was positive linear effect of workplace experience ($\beta 3 = .273$, $p = 0.000$) on quality education. The study concluded that. There were inadequate workshops thus hampering trainees from regularly participating in practical aspects of CBET instruction. Lower academic requirements set for recruitment into the TVET programs were creating a negative attitude and perception that CBET was for low achievers. The study recommended that trainers need to understand the market trends.

Keywords: training approaches, integration, competency-based education, institutions

1. Introduction

1.2 Background to the Study

Competency Based Education and Training (CBET) is an industry and outcomes-based learning program founded on industry-created occupational standards. It is a method that permits trainees to acquire qualifications through the acquisition of skills and knowledge in a required branch of knowledge utilizing well-designed measurement tools. A vital trait of competency-based training is the adaptability it offers the individual trainees as to which time to handle a project and to what extent it takes to finish (Anane, 2013; Leung, 2002). The individual ought to "*always pay consideration on what the career expects of him, additionally knowing how he can optimally use the extraordinary abilities he has*" (Kelechi, 2020). With this model, rather than concentrating on the use of credit hours, capabilities are granted through confirmation of evidence that learning indeed took place. This is as opposed to the traditional approach which places focus on theoretical instruction in training. It is relied upon to upgrade specific industry needs instead of the general knowledge or individual achievement relative to others in the group (Albanese *et al.*, 2008; Anane, 2013; Marguerite, 2014).

The methodology has been developed as a valuable instrument that could be utilized to address deficiencies in contemporary strategies for training. Ansah and Enerst (2013) reported that numerous nations now utilize CBET, which could address the requirements of new trainees in the labour market. For learners to be evaluated competently, they have to exhibit their capacity to perform assignments to the standard expected in the job market (Aboko & Obeng, 2015). CBET programs concentrate on what the trainee is required to do in the work environment rather than simply having hypothetical information. Therefore, the "entire" is more prominent than the *"whole of the parts"* (Harris *et al.*, 2005). Competency is a process, not an endpoint; that is, skills go past formal instruction and learning and experience. They are created through the adoption of the sum total of what has been learnt or experienced formally and informally and, in

some cases, created over a lifetime. This implies learning and working concurrently. It is, therefore, an approach that guarantees that learners pick up the fundamental knowledge, skills, mindset, and values to enhance efficiency in the workplace.

Singapore today is a modern city-state and global centre for industry, business, finance and communications. As a young nation, the educational and training approaches were revised, improved and reformed to stay relevant and responsive to the requirements of graduates, labour market and society. By religiously sticking to its missions and vision, Singapore has developed an exemplary brand of TVET that is widely appreciated by its citizens and the world for its relevance, quality and values in a global economy (Bahl & Dietzen, 2019). Coupled with the economic reform trends, the TVET transformed in light of the changing human resource needs. The education and training system guaranteed that graduates from the different learning institutions had the critical expertise for the numerous new occupations which emerged in a rapidly developing economy.

In the United States of America, there is a resurgence of interest in TVET. On a fundamental level, the current and ongoing transformation aims to improve the quality and image of optional TVET, as well as to use TVET to improve academic results and transition to universities. The goal of the government TVET program is to give education about work, for employment, or via work (Remington, 2018). The goal of the strategic plan for 2011-2014 is to improve higher education and lifetime learning opportunities for kids and adults in order to boost college access, quality, and completion rates. The national policy seeks to improve trainees' academic and technical skills at secondary and tertiary institutions by providing individuals with opportunities throughout their lives to develop the necessary information and abilities, in tandem with the curriculum, to keep the United States of America competitive (U.S Department of Education, 2011).

The African Union also recognizes the critical need for a technological and skilled resource base as a vital strategy for rapid economic growth and development. TVET has been acknowledged as a critical component of Africa's educational system and human resource development program as a result of this recognition (Union, 2007). This will be accomplished through broadening the scope of technical and vocational education and making it more relevant to "*real-world job environments*." Cameroon plans to set up professional vocational training to prepare and encourage adoption into the labor market in its poverty reduction strategy document; Cote d'Ivoire focuses on bolstering professional vocational education; Ghana combines professional vocational learning with youth training and the advancement of highly specialized and entrepreneurial competences; Lesotho and Rwanda combine professional vocational learning with youth training and the improvement of specialized and entrepreneurial aptitudes; and Lesotho and Rwanda combine professional vocational learning with youth training and the improvement of specialized and entrepreneurial aptitudes Chad, Ethiopia, Guinea, Senegal, Sierra Leone, Uganda, and Zambia are among the nations that have prioritized TVET activities in their national development goals.

From the arguments above, it is clear that a TVET framework takes centre stage in a country's social and economic advancement. The issue today is less about the worth

and significance of TVET but how to guarantee its pertinence, responsiveness and quality in a competitive international economy. This concurs with the study findings done by Agrawal and Agrawal (2017), which noted that given the predominant economic trend, two other significant destinations had been recognized and must now be pursued: to train the workforce for self-employment and to raise the productivity of the informal sector.

CBET training is thought to provide trainees with the skills they will need in their career pathways, as well as the ability to adapt to changes in the workplace (Wesselink & Wals, 2011). In general, the content and organization of TVET institutions have altered around the world. Has anything changed in Africa? (Oketch, 2007). Has it altered Kenyan TVET institutions specifically? This was the topic of discussion in this research.

2. Statement of Problem

Technical vocational education and training (TVET) can assume a big role in getting young people to work, yet specialists state that by and large, such projects neglect to respond to work market needs. The existing public technical and vocational education training (TVET) framework in Kenya experiences basic issues, including the absence of work-related and social factors. This shows that Kenya faces a troublesome future because the significance of skills and adequate training cannot be over-underscored—expertise and innovation separate developing and developed nations. Kenya's shortage of skilled masons, electricians, plumbers, painters and other construction workers is holding back projects at a time when the country needs to put up more physical infrastructure. There is a serious skills gap to be addressed. The need to increase the number of artisans exponentially should drive Kenya to quality education in TVET institutions. If this is not done urgently, then the training of an innovative, creative, responsive, and skilled workforce for the industry and for the realization of Kenya Vision 2030 would be a mirage. In the North Rift region of Kenya, the quality of teaching is in doubt as many research results revealed inefficiency, according to Maingi, Cheptoo, Mbeke, Musembi and Gitau (2014). This means that there is a sense of urgency on its integration to enable the country to match training of technical skills with the actual demands of economic sectors and create a deliberate connection between the TVET syllabus, training approach and the aspirations of the Kenya Vision 2030. This study, therefore, assessed the extent to which the integration of the CBET model for quality training has been entrenched as a strategy for meeting the demands of the labour market and, hence, the realization of Kenya Vision 2030.

2.1 Research Objective

To assess the influence of workplace experience on quality education in TVET institutions.

2.2 Research Questions

What is the influence of workplace experience on quality education in TVET institutions?

2.3 Research Hypothesis

Ho$_1$: There is no statistically significant relationship between workplace experience and quality education in TVET institutions.

3. Theoretical Review

The study was based on Bertalanffy's systems theory (1968), as cited by Luhmann, Baecker, and Gilgen (2013). Systems theory is the interdisciplinary study of systems that are cohesive groups of interrelated, interdependent parts that can be natural or human-made. Every system is bounded by space and time, influenced by its environment, defined by its structure and purpose, and expressed through its functioning (Burden, 2018). Systems theory assists in explaining how systems in an institution relate to one another in order to achieve the set goals. The key concept of systems theory is that the whole is greater than the sum of its parts. That is, when holistically examining how smaller systems come together to affect the greater complex system, certain characteristics of the whole complex system cannot be easily explained or rationalized when looking singularly at any one of its systems (Teece, 2018).

Systems theory seeks to explain and develop hypotheses around characteristics that arise within complex systems that seemingly could not arise in any single system within the whole. If a complex system expresses emergent behavior, that means it has characteristics its properties do not display on their own. All the components of any given system interact with each other and have an impact on how it functions as a whole. This is what systems theory describes (Sergiou, Lestas, Antoniou, Liaskos & Pitsillides, 2020). The main assumption of systems theory is that a complex system is made up of multiple smaller systems, and the interactions between these smaller systems create a complex system as it is known (Roberts, 2019). Systems theory assumes certain underlying concepts and principles can be applied universally in different fields, even if these fields evolved separately. This assumption is a crucial factor in systems theory because it is this reasoning that enables people to employ systems theory in a way that benefits those they are assisting (Knoll, Matthes & Heiss, 2020). Following that assumption, a general systems theory that provides universal guidelines for education will enable further integration and unification of the natural and social sciences. This will yield a better understanding of how these sciences are interrelated and affect daily lives.

The application of systems theory involves looking at how all systems came together to make a complex system and how this ultimately gave the end result that none of these properties could be produced on their own without a change to their environment (emergent characteristic). This theory, therefore, offers adequate information to adequately explain the integration of the CBET approach in the training phenomenon. The TVET system is designed to accomplish its goals by bringing together people from all walks of life, both in and outside of the TVET. Integration of the CBET approach in training is one example of a situation that can be explained by functional aspects of the educational system. The integration of CBET approach in training are pegged on how the main players in TVET play their expected roles for quality education.

Working collaboratively ensures quality education. While failing to do so leads to chances of low-quality education. The theory guided this study by showing that the purpose of the educational system is to help people in the community and in the classroom work together to achieve common goals. When it comes to quality education, a broken education system might be blamed for them.

The Weaknesses of Systems Theory is that this approach to an individual's issues is not always adequate to explain their present circumstances (Kosal, 2018). Another problem with social systems theory is the difficulty of drawing actionable conclusions based on what is found. Identifying problems is important, but finding solutions to these problems may create difficulty, especially at the cultural and policy level. Additionally, it may be difficult for social workers to truly understand their clients' social and cultural upbringing and environment, which can impede progress. Despite these weaknesses, social systems theory is important to education and helps researchers reach a better understanding of those they work with.

3.1 Workplace Experience Learning in TVET Institutions

An internship term, also known as Workplace Experience Learning, is a key component of the CBET curriculum. According to Anane (2013), the purpose of workplace experience learning is to give chances to the CBET learner to create strategic thinking, hierarchical, interpersonal and critical thinking aptitudes, mindfulness and specialized skills through working environment involvement in genuine work situations with a restricted level of facilitator assistance. There is a need to move in this direction because many employers hold that the technicians lack practical skills relevant to job tasks (Ringa, 2007). Therefore, there is a need for quality technical training to produce technicians who can perform competently in their chosen vocation without a need for retraining.

CBET training packages were presented in 1996, and the first modules were approved in 1997. They portray the abilities, knowledge and different qualities an accomplished individual needs to perform viably in the working environment. Basically, they endorse the result or 'competency'. In addition, they contain a qualification structure and appraisal rules inside their embraced segments. They may likewise contain abilities from other training packages (Smith and Keating, 2003). They are created through the industry skills councils in partnership with industry. Where there is no preparation bundle scope, suppliers create certified courses, which are guaranteed at the state/domain level to meet the manager or individual needs. Single units of competency enrolments are additionally conceivable. One of the goals in acquiring training packages was to basically streamline direction and regularize strategic plans between the states and regions.

When contrasting the CBET workplace experience to the attachments required by standard HND programs, it is clear that the former is a considerably superior method of producing competent graduates. This is shown in Table 1 below.

Table 1: Major Differences between Two Industry Experiences

Traditional Education Industrial Attachment	**CBET Workplace Experience**
1. Trainees are given introductory letters from their institutions to look for their own places for attachment	Institutions identify, negotiate and sign MOU with appropriate industries for workplace experience.
2. Trainees go for attachment with no training standards/unit specifications; they learn whatever the industries do.	Trainees go to the industry with standards/unit specifications, which they will study in the industry.
3. Attachments are not carefully guided and assessed because no facilitators, assessors or verifiers are identified and trained.	Industry facilitators and assessors are identified and trained to facilitate and assess trainees.
4. There is only periodic and general monitoring of Trainees on attachment	Trainees are closely monitored on a daily, weekly and monthly basis through log books, registers.
5. Effects: some trainees easily dodge the attachment.	Facilitators, assessors and verifiers to ensure that they acquire the requisite competencies.
6. The attachment does not have credit value and may not be part of the certification.	Workplace experience has a credit value and forms part of certification.

Source: Technical Committee Report on the Harmonization of CBET in Ghana (2009).

Training packages are not educational modules. The learning and appraisal techniques (the "how" of learning) are produced by suppliers and their trainers and coaches taking into account learner needs, capacities and circumstances. These will require significant investment to create, execute, and refine (and not without assets and money-related expenses at the supplier level, too) (Abdullah, 2020). A few observers guarantee that the urgency with which industry and governments required the execution of training programs in light of the packages implied that, in the initial stages of utilization, corners were in some cases cut and (in the most pessimistic scenario) that the new was integrated into existing systems. This frequently prompted usage in name, however, not in spirit (ANTA, 2002).

For industrialization, economic improvement, wealth creation, and poverty eradication, plans and methodologies that address the cross-cutting issues of value and pertinence in training, employability, partnership between organizations and industry, and accreditation of training providers (in the formal, non-formal, and informal sectors) are required. This necessitates a competency-based and job-driven TVET framework, with aptitude testing of trainers and trainees as proof of ability. TVET should also be perceived and accepted by all partners as a genuine identification to a well-paid vocation, whether official or informal, or advanced study, rather than as a choice only for early school leavers, the academically challenged, or the impoverished (Afeti, 2014). It is important to acknowledge that TVET is a complex, differentiated socioeconomic system in and of itself, impacted by individuals, states, and businesses with varying interests.

To increase the quality of graduates, a constant collaboration between technical and vocational education institutions and industry should be pursued. Industry and the workplace should be involved from the planning stages forward, including execution, evaluation, and placement of graduates. This is to ensure that technical and vocational education, as a source of labor, and industry, as a consumer, are both relevant. Curriculum development, syllabi, producing a list of new equipment, suggesting

different locations and new study programs are all examples of collaboration at the planning stage. In the implementation stage, on-the-job training for trainees and trainers, the use of facilities in industry by the school institution or the use of school facilities by industry, and the use of expertise by both sides with mutual benefit might all be examples of cooperation (Saibon, Kamis & Zainol, 2019).

To ensure that technical and vocational education meets the needs of users, a link between schools and the workplace should be established through the formation of cooperation and partnerships at the school, regional, and national levels so that mutual benefit can be realized (Lund & Karlsen, 2020). Most technical and vocational institutions collaborate with industry to provide on-the-job training for their trainees in accordance with their curriculum requirements. By forming an advisory group, several schools have established contact with the industry. The committee's product includes, among other things, a certified curriculum tailored to the demands of local businesses. Technical and vocational education organizes education to provide workers in the fields of travel, hotel management, culinary services, and bakery to support the growth of the tourism industry. Since the planning stage of the curriculum, the development and implementation of the program, including frequent on-the-job training of trainees in the real work of the tourism sector and close cooperation between these study programs and relevant industries, have been effectively maintained.

Professional skilled workers should be produced by technical and vocational education (Abdullaha *et al.,* 2020). Professional expertise could be acquired through a dual system of school-based and industry-based education. Actual experience in industry, under the supervision and guidance of professional workers, and in an industrial environment ought to be a part of the technical and vocational education system. The goal of the work experiences is to give CBET trainers the opportunity to practice planning, organizational, interpersonal, and problem-solving skills, as well as self-awareness and technical competence, in a real-world setting with little facilitator support. During the training phase, this is done twice (typically for two months each time). One of the most important parts of CBET is matching training to industry demands. This means that the skills learned in the training course must match the requirements of the jobs, occupations, and working situations. Additionally, the morals, principles, and moral code that support the profession should be compatible (Anane, 2013). Among the most important roles played by industry in the implementation of CBET in the nations under consideration were the creation of occupational profiles, needed competences for each occupation, and performance standards criteria.

In certain nations, vocational education is front-loaded and institutionalized, and it looks remarkably similar to general education sites. This means that before getting their first job, trainees have limited direct experience of real work in their chosen field. In some nations, TVET entails parallel learning in both classrooms and workplace settings (on-the-job or off-the-job but still on-site) and emphasizes the importance of both learning environments. Apprenticeships, as well as more regulated work experience programs, are examples of this dual setup. Learning outside of the classroom allows trainees to apply what they have learned in the classroom to real-world situations (or "genuine"

learning). It also allows for assessment in a real-world setting rather than a synthetic one. As a result, it complements and adds value to learning in a formal setting, as well as vice versa (Qureshi, 1996).

However, such duality raises questions about how vocational trainees can reflect on and integrate their learning from various sites and experiences, as well as how the teaching process can best provide complementary activities so that vocational trainees can reflect on and integrate their learning from various sites and experiences (Harris *et al.*, 2001; Aldinucci *et al.*, 2021). However, in certain circumstances, learning techniques are poorly developed and integrated between sites, resulting in neither site making the best use of the learning opportunities available. This situation emphasizes the necessity of acquiring skills in "*learning to learn*" and the ability to take advantage of academic and non-academic opportunities. As a result, TVET trainers play a crucial role as "*connective specialists*," assisting trainees inefficiently "*connecting" the many forms of learning they encounter"* (Young, 2007). To do so, TVET trainers must keep up with technological advances in their field, maintain and expand their pedagogical skills, and build the skills needed to work across both educational establishments and industrial settings (Guthrie *et al.*, 2009).

In the CBET implementation process, there is evidence of close collaboration between training institutions and industry to ensure that training and competencies are relevant to employment requirements. Individuals can adapt to existing and future business operation patterns by working with industry-led sector authorities to develop, maintain, and update competency standards (Waterhouse & Virgona, 2004). Apprenticeships stress the interaction of individual traits, teamwork, learning how to learn, problem-solving, creative thinking, and the transfer of professional abilities to different contexts, which improves student employability (Reid & Fitzgerald, 2011). It also fosters a type of training that helps trainees transition from adaptive expertise, which focuses on skills for doing normal tasks, to developmental expertise, which encourages problem-solving and creative thinking.

The main issue reported by the commercial enterprises is the lack of item quality and abilities controlled by the trainees. Even though the framework, in a general sense, is intended to meet observed or anticipated industry needs, the current TVET programs in Malaysia are, to a great extent, supply-driven and still need much effort to match training to accessible occupations. Additionally, TVET centres do not track the occupation destinations of their graduates from time to time. Therefore, the organizations have not exploited input from past learners on the nature of the training they have gotten to enhance their educational modules and training packages. To put it plainly, the execution of result assessment and tracer studies that can enhance the business sector responsiveness to training activities is currently missing (Ismael & Hassan, 2013). Ismael and Hassan (2013) did a study on how TVET centres additionally, from time to time, do not track the occupation destination of their graduates and indicate that there is a gap in workplace experience among trainees from TVET to be filled by the current study.

In Ghana, there has been an eminent far-reaching deficiency in skills attainment from the polytechnics and industry-required aptitudes. The aptitude enhancement and,

in addition, hands-on training have the ability to upgrade the firm's development and improvement. The non-appearance of hands-on and entrepreneurial abilities remains an intermittent area of dissatisfaction in formal business observation from the Ghana Employers Association (GEA, 2006). As a result, trainees are connected to commercial ventures for three months as the initial move towards instilling practical knowledge and abilities in their areas of specialization. This is targeted at solving gaps in the theoretical approach of training, which was noted clearly, particularly among agricultural engineering trainees. Trainees were sent to commercial enterprises for a period of two months toward the end of the principal year and for the same span toward the end of the second year. It is significant here that all the CBET trainees had a chance to go to the firms to upgrade their practical skills to their partners on the old approach who only have just six weeks to do their practical experience, are in some cases not able to do the practicum due to inadequacy of places to undertake this critical activity (Anane, 2013). The above study was done in Ghana. However, the current study filled the gap by determining whether the same is happening in the TVET institutions in the North Rift Region, Kenya.

4. Conceptual Framework

The conceptual framework represented the relationship between independent variables, extraneous variables and dependent variables.

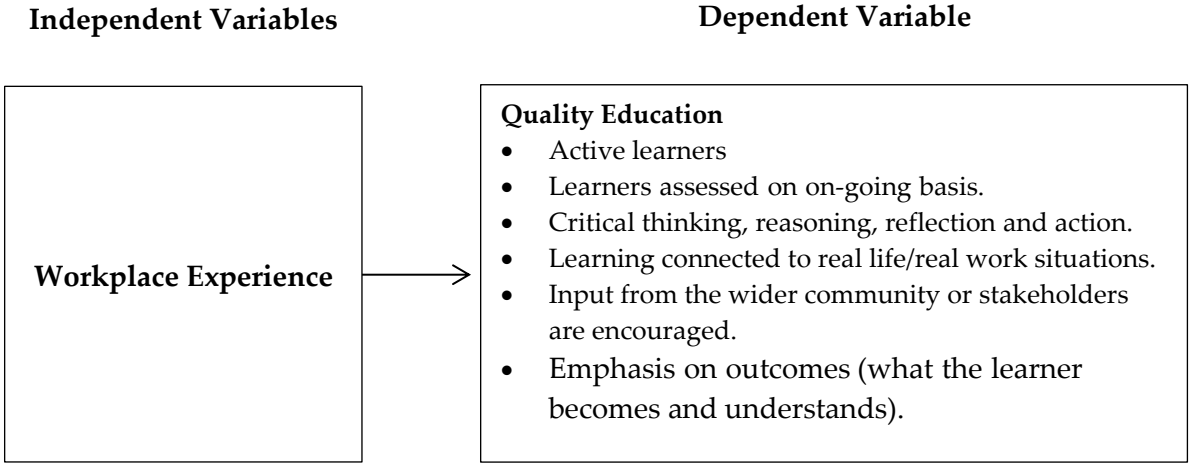

Figure 1: Conceptual Framework

5. Research Methodology

5.1 Research Design

According to Dannels (2018), a research design can be thought of as the structure of research. It is the 'glue' that holds a research project's various components together. Study designs, according to Creswell (2012), are strategies and procedures for research that cover everything from general assumptions to detailed data collecting and analysis approaches. The descriptive survey research design was used in this study. Creswell and Hirose (2019) consider sample surveys to be superior in terms of their ability to provide

required information conveniently. A survey collects data about variables as they are found in a social system such as a TVET institution. The researcher was able to describe, analyze, and investigate the extent to which CBET has been implemented in Kenyan TVET institutions using a descriptive survey research design.

The study adopted an eclectic research methodology, which is an approach to inquiry that combines or associates both qualitative and quantitative forms (Ayiro, 2012). Mixed methods research has been described as a "*critical component in the advancement of social science, especially education research*" (Timans, Wouters & Heilbron, 2019). The mixed methods approach is associated with strategies that include gathering information in a concurrent or consecutive way utilizing strategies that are drawn from both quantitative and qualitative manner that best address the research questions (Almeida, 2018). The use of an eclectic approach ensures that the research will be strengthened and will reduce the wastage of potentially useful information. The basic assumption is that the use of both qualitative and quantitative methods, in combination, provides a clearer understanding of the research problem than either method by itself.

5.2 Description of Study Area

The study was carried out in all the major 6 TVET institutions in the North Rift Region of Kenya (Figure 4.1). The Counties in the North Rift Region include Nandi County, Uasin Gishu County, Elgeyo/Marakwet County, Trans-Nzoia County, West Pokot County and Turkana County. Four of these TVET institutions are located in urban areas, and two are in rural set up. Eldoret Polytechnic and Rift Valley Technical Training Institute (RVTTI) is situated in Eldoret Town, Kitale Technical Institute is in Kitale Town, Aldai Technical Training College in Nandi County, while Olessos Technical Training Institute and Kaiboi Technical Training Institute are located in the rural set up of Nandi County. All these TVET institutions cater for the vocational training needs of the North Rift Region counties and Kenya at large. CBET approach is being implemented in all these institutions for quality training, and more so, Rift Valley Technical Institute in Eldoret is a Centre of excellence in Africa as far as TVET institutions are concerned. North Rift was selected because it had a number of institutions that had piloting programs being undertaken in the institutions. More importantly, from the literature review, Maingi *et al.* (2014) posited that the quality of teaching was in doubt in the North Rift Region, as many research results were inclined towards inefficiency.

5.3 Target Population

According to Asiamah, Mensahiand Oteng-Abayie (2017) a target population is a group of individuals from which samples are taken. The study was conducted in six selected TVET institutions in the counties in the North Rift Region. The selected TVET institutions were Eldoret Polytechnic, Kitale Polytechnic, Kaiboi Technical, O'Lessos Technical, RVTTI and Aldai Technical**.** The selected TVET institutions were located in the following counties: Uasin Gishu, Nandi and Trans Nzoia County**.** The target population comprised the principals, the trainers, industry supervisors, industrial liaison officers and the

trainees enrolled in various departments in the TVET institutions, as presented in Table 2.

Table 2: Target Population

Target	Eldoret Polytechnic	Kitale Polytechnic	Kaiboi Technical	O'Lessos Technical	RVTTI	Aldai Technical	Population
Principals	**1**	**1**	**1**	**1**	**1**	**1**	**6**
Trainers	322	120	80	120	200	250	1092
Industry supervisors	**3**	**3**	**3**	**3**	**3**	**3**	**18**
Trainees	6000	1600	1300	2300	6000	5400	22600
Industrial liaisons	**1**	**1**	**1**	**1**	**1**	**1**	**6**
Total	6327	1725	1385	2425	6205	5655	23722

Source: TVET Institutions Reports (2021).

This targeted population was believed to be in a better position to provide relevant and adequate information on the topic of study by virtue of their direct involvement in the integration of CBET in TVET institutions, hence providing an in-depth understanding of the issue of concern for the study. The principals were able to clarify matters touching on strategies put in place in the efforts to integrate CBET.

5.4 Sample and Sampling Techniques

De Smith (2021) defined sampling as "*the process of selecting a number of persons or the technique of selecting diverse individuals from a population such that the selected group has components representative of the traits found across the population*." Sarstedt, Bengart, Shaltoni and Lehmann (2018) believe that in education research, sampling is usually done to allow for a detailed study of the entire population. A variety of criteria should be considered while calculating sample size, according to Ayiro (2012). This covers the study's objective, population size, the danger of picking a "poor" sample, and the sampling error that can be tolerated. The researcher believed that the selection procedures used were appropriate for the problem being investigated to assess the extent to which CBET has been integrated into TVET institutions in the North Rift, Kenya. Simple random sampling, stratified sampling, and purposive sampling were used in this investigation.

5.5 Sampling of TVET Institutions

The study selected all the six TVET institutions under piloting programmers by CDACC using purposive sampling. The six selected TVET institutions in the North Rift Region, Kenya, were Eldoret Polytechnic, Kitale Polytechnic, Kaiboi Technical, O'Lessos Technical, RVTTI and Aldai Technical. Since the number of well-established institutions in the North Rift was small, the researcher included all of them in the study, leading to a larger percentage of the sample, as advocated by Sharma (2017).

5.6 Sampling of Principals

The 6 principals were selected using purposive sampling since they were automatically selected once their TVET Institutions were chosen. Using purposive sampling, the researcher was able to draw upon a wide range of qualitative information. Using

purposive sampling was the most cost-effective and time-effective sampling method. The principals were chosen purposively since they have information concerning the integration of the CBET approach in training for quality education in TVET. This is because the principals are the administrators and, hence, play a critical role in the implementation of CBET in the TVET.

5.7 Sampling of Industry Supervisors

The 18 industry supervisors were purposely selected to participate in the study. Purposive sampling was used since industry supervisors played a critical role in connecting the industry and institutions in the training. It enabled the researcher to get information on the integration of the CBET approach in training for quality education. Cresswell and Clark (2011) noticed that purposive includes distinguishing proof and determination of people who are capable and very much educated with the integration of the CBET approach in training for quality education in TVET.

5.8 Sampling of Trainers

The researcher obtained a sample size of trainers using Yamane formulae (1967).

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

Where,
n is the sample size required,
N is the population size = 1092,
e is the level of precision = 0.05,

$$n = \frac{1092}{1+1092(0.05)2}$$

n = 293

The trainers from the sampled TVET institutions were selected as respondents through simple random sampling because all trainers have an equal chance of being selected, hence eliminating sampling bias. The number of trainers in each department was identified with the assistance of the heads of departments as per the records. The lottery method of random sampling technique was applied to select the trainers. Acharya, Prakash, Saxena and Nigam (2013) noticed that simple random sampling is the place where each individual has an equivalent possibility of being chosen in the sample from the population.

5.9 Sampling of Trainees

The researcher obtained a sample size for trainees using Krejcie & Morgan's (1970) formula for finite population, which is calculated as follows:

$$S = \frac{X^2NP\,(1-P)}{d^2\,(N-1) + X^2P\,(1-P)}$$

Where:
S represents the required sample size,
X represents the Z value (e.g., 1.96 for a 95% confidence level),
N represents the population size,
P represents the population proportion (expressed as decimal) (assumed to be 0.5 (50%),
d represents the degree of accuracy (5%), expressed as a proportion (.05). It is the margin of error.

$$\mathbf{n} = \frac{\mathbf{1.96^2} \times 22600 \times \mathbf{0.5(1-0.5)}}{\mathbf{0.05^2}(22600-\mathbf{1}) + \mathbf{1.96^2} \times \mathbf{0.5(1-0.5)}}$$

$$n = \frac{21705.04}{57.4579}$$

n = 377

As for the trainees enrolled in each department, proportionate stratified random sampling was used for selection in each department, depending on the size of the department. In this case, the selected departments were considered as strata. From each stratum, simple random sampling was used to identify the trainees to be included in the study. The stratified sampling procedure was used to ensure that each sub-group characteristic is represented in the sample, while simple random sampling was used to ensure that each member of the target population in the strata has an equal and independent chance of being included in the sample (Machmillan, 2012).

5.10 Sampling of Industrial Liaison Officers

Table 3: Sample Size

Target	Eldoret Polytechnic	Kitale Polytechnic	Kaiboi Technical	O'Lessos Technical	RVTTI	Aldai Technical	Population	Sampling
Principals	1	1	1	1	1	1	6	Purposive
Trainers	86	32	21	32	54	67	293	Stratified Simple Random Sampling
Industry supervisors	3	3	3	3	3	3	18	Purposive
Trainees	100	27	22	38	100	90	377	Stratified Simple Random Sampling
Industrial liaisons	1	1	1	1	1	1	6	Purposive
Total	**190**	**63**	**47**	**74**	**158**	**161**	**700**	

Source: Researcher (2021).

The 6 industrial liaison officers were selected using purposive sampling since they were automatically selected once their TVET Institutions were chosen. Using purposive sampling, the researcher was able to draw upon a wide range of qualitative information. The summary of the sampling is presented in Table 3.

5.11 Data Collection Instruments

Within the study process, Creswell (2012) called for the mixing of data-gathering methodologies with data analysis procedures. The following data collection and instrumentation were used in this study: questionnaires, interview schedules and document analysis. The specific research questions established guided the collection of primary data (McMillan, 2012). The nature of the data to be collected, the time available, and the study's objectives all influenced the tool selection (Sharma, 2017).

5.11.1 Questionnaires

Questionnaires are data collection instruments composed of closed, structured or open-ended items (questions). They were convenient to use because they were able to gather large amounts of data from many subjects at less cost. Above all, they were easily administered and analyzed. In this study, the target population were literate and, therefore, unlikely to have difficulties responding to the questionnaire items. In the case of open-ended questions, the researcher gave an opportunity to the respondents to leave an insight into their feelings, hidden motivations, interests and decisions (Creswell & Hirose, 2019). The questionnaires were administered to the trainers and the trainees.

A questionnaire covering items from the four study objectives was formulated and administered to respondents. The questionnaire was subdivided into five main sections. Section A sought the participants' demographic information; Section B contained questions that answered objective one, which aims to establish the influence of staff capacity building on quality education in TVET institutions. Section C had questions on objective two with the aim to establish the influence of classroom instructions on quality education in TVET institutions. Section D contained questions on the influence of workplace experience on quality education in TVET institutions. The section E contains questions on the influence of workplace experience on quality education in TVET institutions. Section F contained questions on quality education in TVET institutions. The use of questionnaires has been recommended by Mugenda and Mugenda (2010) and Sarantakos (2007) as an efficient data collection tool for a large amount of information from many people. This tool has been applauded for its cost-efficiency, time-saving and ease in conducting reliability and validity of tools.

5.11.2 Interview Schedules

Interview schedules were used to provide in-depth data, which may not have been possible through the use of questionnaires. This is because they had an interest or “stake” in the question (Jordan, Clarke & Coates, 2021). With semi-structured interviews, it was easy to clarify confusing questions since they were flexible and very sensitive. As a result, personal information could be extracted from the respondents by honest and personal

interaction through probing. Principals, Industry Supervisors, and industrial liaison officers participated in the interviews. This provided more information on the staff and trainees' reactions to the new CBET integration policy, as well as the extent to which CBET has been entrenched in TVET institutions.

5.11.3 Document Analysis

Elo, Kääriäinen, Kanste, Pölkki, Utriainen and Kyngäs (2014) noted that a qualitative documentary analysis guide is used in the analysis of qualitative data, which becomes a reality when it is credible, dependable, confirmable, transferable and authentic. The researcher used content analysis to draw inferences from textual materials by classifying, tabulating and evaluating texts. The documents analyzed were admission files, appraisal tools, standard units of specification, log books and MOU.

The information from the documentary analysis guide was useful for data triangulation. Therefore, information obtained from the documentary analysis guide was added to the one obtained through the use of questionnaires and interview schedules to give more comprehensive and accurate information on the integration of the CBET approach in training for quality education in TVET in North Rift, Kenya. Stage and Manning (2003) opined that content analysis of existing documents or "texts" is one of the central sources of qualitative data. According to Mugenda and Mugenda (2000), content analysis aims to study existing documents to determine factors explaining a specific phenomenon. Gathii (2021) assert that content analysis through classification, tabulation and evaluation of its key symbols and themes ascertain its meaning and probable effects drawn from inference by systematically and objectively identifying special characteristics of messages. Further, they viewed content analysis as an aid in making inferences about the content of a recorded text, which is used to analyze textual information. Therefore, the researcher used document analysis, which involved studying documents in TVET to get information which aided further in confirming and getting important information which respondents may have left out on issues that may contribute to the integration of the CBET approach in training for quality education in TVET in North Rift, Kenya.

5.12 Validity and Reliability of Research Instruments

5.12.1 Validity

Cohen, Manion and Morrison (2017) define validity as the accuracy of a measuring instrument in measuring the variable that it is intended to measure. Validity of instruments addresses correctness (Mohajan, 2017). The researcher formulated the questionnaire items around aspects of the problem being investigated in order to maintain consistency and relevance to the problem. The researcher analyzed the content and objectives of the study in detail to ensure that they were representative of a universe of items investigated. To determine content validity, the researcher considered the following questions: - Does the instrument really contain a real representation of the desired content? What physiological or underlying constructs were being measured? Does it measure other features as well? Furthermore, does it look like it is measuring

what it claims to measure? (Mohajan, 2017). In this study, the researcher was guided by the above questions to validate the content in the questionnaire and interview schedules.

The questionnaires and interview schedules were presented to the experts and supervisors in the Department of Educational Management Studies at Kisii University, who were asked to confirm whether the items captured the required information. Their comments and suggestions were used as a basis to modify the items and make them more adaptable to the study so as to improve the validity of the instruments. In order to ascertain the face validity of the questionnaires, the researcher ensured that the format of the questions was attractive to the respondents and that the questions formulated were straight and to the point.

5.12.2 Reliability

Mohajan (2017) defined reliability as the extent to which a questionnaire that produces the same results on repeated trials. According to Vakili and Jahangiri (2018), it is the stability and consistency of responses over time or across raters if the study is repeated. It concerns internal consistency, the extent to which items on the test or instrument are measuring the same thing. The test-retest method was used to test the consistency of the draft questionnaire in this study. The questionnaire was administered to the 29 trainers and 38 trainees of the TVET institution, and then the questionnaire was administered after two weeks. Further, 1 principal, 2 industry Supervisors and 1Industrial liaisons participated in the pilot study. The pilot respondents constituted 10 percent of the sample size (Doody & Doody, 2015). With the assistance of SPSS programme, the researcher used Cronbach's Alpha coefficient correlation to establish the extent to which the items in the questionnaire were consistent in eliciting the same responses every time they were administered. The correlation varies between 0.00 and 1.00. If it records 0.00, it means no correlation, and 1.00 means perfect correlation (Tadjine, 2019). If the calculated Cronbach's alpha is 0.8 and above, the instrument is reliable. The trainers' questionnaires yielded a reliability index of .892, while the trainer's questionnaire yielded a reliability index of .826. Based on Tadjine (2019), the two tools were found to be reliable.

5.12.3 Data Collection Procedures

The researcher undertook a reconnaissance visit to the North Rift region where the six TVET institutions were located to familiarize themselves with the study areas and make appointments with the principals and identified persons. A research permit to undertake the research was sought from the National Commission for Science, Technology and Innovation (NACOSTI). The permit was presented to the county Directors of Education and county commissioners in various counties to enable the researcher to obtain an introductory letter for the principals of TVET institutions and industry. The researcher then proceeded to the TVET institutions with the documents and data collection instruments ready to collect data.

The researcher prepared questionnaires based on the objectives and research questions. They were subdivided according to each research objective and into more specific investigative questions about which data were gathered. The questionnaires had

both open-ended and close-ended questions touching on the variables in the research focused on the integration of CBET in TVET institutions. Data on the staff and trainee's opinions, perceptions, attitudes and other variables were treated at 1,2, 3, 4 or 5 Likert point scale option of the questionnaire. According to Jebb and Tay (2021), it is common practice to assume that Likert-type categories constitute interval-level measurement.

A pilot study was done in one of the well-established TVET institutions in South Rift to determine the reliability of the questionnaires. This eliminated pre-empting the study in the institutions in the North Rift. The TVET institution involved in the pilot study was not involved in the actual research study (Ayiro, 2012). With the support of six research assistants, the researcher administered the questionnaires to the trainers and trainees of TVET institutions. The interview schedules were administered to the principals because they oversee the integration of the CBET approach in their institutions. The focus was on issues not covered by the questionnaires. It was to give more insight, probing and clarification (Creswell, 2012) on CBET integration and constraints in the efforts to realize CBET as a strategy for quality training in TVET institutions.

The researcher sought several documents from the principal's office and the officers in charge of overseeing the integration of CBET in TVET institutions. The documents sought included strategic plans, work plans, memorandum with industries, yearly performance targets, lesson plans, previous evaluation reports, service delivery charters, and performance contract documents. These documents provided a deeper insight into the extent to which CBET has been integrated into TVET institutions.

5.13 Data Analysis

After the data was collected, it was cleaned to remove incomplete or inaccurate responses and improve the quality of responses (Gudivada, Apon & Ding, 2017). The Statistical Package for Social Sciences (SPSS) was used to analyze data. Descriptive and inferential statistics were employed for quantitative data. Descriptive statistics were frequency, percentages, means, and standard deviations, while inferential statistics were correlation and multiple regressions. Frequency tables were used to present the data collected for ease of understanding and analysis. The following regression model was used to conduct inferential analysis:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon \quad (1)$$

Where:
Y represents quality of education,
β_0 represents the y intercept,
X_1 represents workplace experience,
β_1, represents the model coefficient,
ε represents the error term.

For purposes of interpreting and analysis of data, the researcher summarized it using tables, frequencies and percentages.

Qualitative data was analyzed qualitatively using content analysis based on analysis of meanings and implications emanating from respondents' information and document analysis. The steps followed during the analysis of qualitative data were as follows;

1) All interview transcripts were read through to comprehend their overall meanings,
2) Relevant statements to study objectives were then captured,
3) Meanings of the extracted statements were articulated,
4) Data was structured into bands of themes and authenticated,
5) These findings were unified into an exhaustive description of the topic.
6) The researcher then summarized the exhaustive description down to shorten highly descriptive statements that captured just those characteristics deemed essential in understanding the study objectives.

The transcriptions and printouts of the qualitative data were read through carefully and repeatedly. From these readings, synopses of each contribution were written up. The participants were given a code to hide their identities. Therefore, qualitative data was analyzed using thematic analysis and presented in the form of verbatim reports. The analysis of the study variable is presented in Table 4.

Table 4: Analysis of Study Variable

Objective	**Research Question**	**Analysis**
To establish the extent of integration of workplace experience in TVET institutions.	How integrated is workplace experience learning in TVET institutions?	- Computation of frequencies, percentages, means and standard deviation - Pearson Product Moment Correlation - Content analysis - Narrative analysis

5.14 Ethical Considerations

In conducting this research, the researcher adhered to various ethical guidelines as stipulated by gatekeepers in Kenya. The researcher sought a letter of introduction from Kisii University before seeking an authorization letter from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher further sought a letter of authorization to collect data from the Ministry of Education and the County Commissioner. Then, permission to collect data was sought from the selected TEVET institution authorities. All participants were required to participate voluntarily and withdraw from the study without facing any legal action. The researcher made sure that assurances presented to the participants pertaining to confidentiality were adhered to. Information was made accessible to any individual who was directly associated with the study.

Additionally, participants were on an intentional basis, and no advantages were attached. This aims to make sure there is collaboration between them. The researcher built up an affinity with the respondents and facilitated the collection of data. The researcher ensured that an endorsement to do the examination had been acquired from

the Ministry of Education. Questionnaires and interviews were completed in an environment that permitted the privacy of the data and the respondents' confidentiality. To avoid plagiarism, an annotated bibliography was created, and citations to books, articles, and documents were made in every piece of information borrowed from previous researchers.

The respondents who were willing to participate in the study were given informed consent forms to fill in order to be involved in the research study. The researcher facilitated the process of filling informed consent forms after the respondents had fully understood the nature of their involvement in the research, including time commitment, type of activities, issues they would be asked to comment about or discuss and the envisaged risks for participating in the research. When seeking consent for this study, the researcher did not compel respondents to sign the informed consent form. Therefore, participation was voluntary. The researcher explained to the respondents during the filling of the consent forms that they were free to withdraw from the study at any point.

Another ethical consideration made in this study involved protecting the identities of the respondents. This entailed masking the identities and protecting confidentiality, as well as secure storage and restricting access to the data. The researcher sought permission from the respondents to make any subsequent use of data. Moreover, the researcher destroyed all raw data when analysis and reporting were complete.

This principle is concerned with building trusting relationships between the researcher and participants. On agreeing to participate in this study, the respondents entrusted themselves to the researcher who had an obligation to protect each participant, as far as possible, from any harm because of participating in the research. The researcher endeavoured to gain the trust of the participants by being open and honest about possible risks and burdens. The researcher ensured that no harm was done to the respondents.

The researcher informed participants that the data collected for this study would stay confidential. They were informed that the findings would serve academic purposes only and would not be shared, except with prior knowledge of the investigator and them. This was meant to safeguard the trust exhibited by the participants in the researcher and to observe the ethical code of conduct on information gathered from the field. To ensure the privacy and confidentiality of the information and participants, the researcher used pseudonyms.

6. Research and Discussions

This section presents the results of the data analysis, interpretations, and discussions.

6.1 Integration of Workplace Experience in TVET Institutions

This section analyses, interprets, presents and discusses descriptive statistics relating to objective two of the study, which was set to establish the extent of integration of workplace experience learning for quality training in TVET institutions. The findings are indicated in the following sub-sections.

6.2 CBET Workplace Experience by Trainers

Trainers were asked to indicate the extent to which they agree or disagree with the statements below on the implementation of CBET in their Institution. A 5-point rating scale was used to score the responses. It had the following scores; 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree. To determine the minimum and maximum length of the 5-point rating scale, the range was calculated by (5 – 1 = 4) and then divided by five as it is the greatest value of the scale (4 /5 = 0.80). Afterwards, one with the lowest value on the scale was added in order to identify the maximum of this cell. The length of the cells was given as 1 – 1.80 (Strongly Disagree), 1.81 – 2.60 (Disagree); 2.61 – 3.40 (Undecided), 3.41 – 4.20 (Agree), 4.21 – 5 (Strongly Agree). Data from the trainers' questionnaire regarding CBET workplace experience is presented in Table 5.

Table 5: Trainers' Descriptive Statistics on CBET Workplace Experience

Statement	SD		D		UD		A		SA		Mean	SD
1. Trainees visit the industry for workplace experience every week.	23	8.2	38	13.6	8	2.9	110	39.3	101	36.1	3.8143	1.28172
2. Trainees go to industries with standards/unit specifications, which they will study in the industry.	61	21.8	41	14.6	11	3.9	72	25.7	95	33.9	3.3536	1.58623
3. Trainees are closely monitored on a daily, weekly, and monthly basis through logbooks, registers, facilitators, and assessors and verifies to ensure that they acquire the requisite competences.	126	45.0	110	39.3	32	11.4	9	3.2	3	1.1	1.76071	.857118
4. Workplace experience has credit-value and forms part of certification.	31	11.1	44	15.7	9	3.2	87	31.1	109	38.9	3.7107	1.40349
5. An advisory committee/Board/Council has been established to validate the curriculum and coordinate the training to suit the needs of local industries.	31	11.1	31	11.1	13	4.6	147	52.5	58	20.7	3.6071	1.24259
6. The learning and appraisal techniques (The 'how' of learning) are provided by the industry and their trainers, taking into account learner needs, capacities and circumstances.	138	49.3	92	32.9	16	5.7	17	6.1	17	6.1	1.8679	1.15176

Trainers were required to rate whether trainees visited the industry for workplace experience every week. Findings in Table 5 indicate that 23 (8.2%) of the trainers strongly disagreed that trainees visit the industry for workplace experience every week, 38 (13.6%) disagreed, 8 (2.9%) were undecided, 110 (39.3%) agreed while 101 (36.1%) strongly

agreed. The results show that the majority of the trainers' (Mean = 3.8143, SD = 1.28172) agreed that CBET trainees visit the industry for workplace experience every week. This implies that individual trainees are able to practice the skills that they have learnt in the classroom. The study findings agree with the study done by Anane (2013). The purpose of workplace experience learning is to give the CBET learner chances to develop strategic thinking, hierarchical, interpersonal, and critical thinking aptitudes, mindfulness, and specialized skills through working environment involvement in genuine work situations with a restricted level of facilitator assistance. Qureshi (1996) agrees that learning outside allows trainees to apply what they have learned in the classroom to real-world situations. As a result, it compliments and adds value to learning in a formal setting and vice versa.

This finding aligns with one of the industry liaison officers who affirmed that the institution provides industrial attachment services to trainees. This is indicated in the following excerpt from industry liaison officer [6]:

> *"We offer industrial attachment and supervision to trainees we link with the industry. In addition, trainees go on educational tours to the industry to enable them to acquaint themselves with new technologies in the industry. As an institution, we have a large number of trainees attending attachment for workplace experience. We have between 3000 – 5000 trainees attending to the attachment at one particular time. Our attachments are carried out in September to November, January to April, and May to July."*

A similar response was given by a principal [4] heading a national polytechnic who had this to say:

> *"CBET programme involves skills as opposed to knowledge. We are now training what the industry needs. For purposes of full implementation of CBET there is collaboration between the training institution and industry. We are currently collaborating with a number of industries such as Nzoia Sugar Company, Kenya Seed, and Central farmers of whom we have MOU."*

On a different caveat, some industry supervisors [8] had a different response in relation to the periodic visits by the trainees:

> *"We do not receive trainees on a weekly basis. They come towards the end of their training module. This has brought a disconnect of what they train and what happens in the industry. How I wish the courses were tailored in a way that half of the training is done in class while the other half is done in the field. This will enable learning by doing."*

From the results, it can be seen that trainees visit the industry for workplace experience. Of importance, however, is to note that these attachments are carried out after trainees have finished their modular. This raise concerns as to whether the weekly industrial experiences are done. Similar findings in China indicate that an audit of TVET organizations in 2004 discovered that numerous essential results had been accomplished,

including industry contribution in the advancement of competency norms, educational programs and trainer materials; endorsement of new educational modules; helping schools to partner with industry; creating industry training arrangements to determine aptitude needs; helping schools to set up work environment training opportunities; helping schools to set up instructor improvement opportunities endeavours; and helping trainers get higher expert capabilities (ACCVETP, 2006). CQNU extended its TVET teacher reform operations in collaboration with Chongqing University of Arts and Science. TVET teacher competency standards and a quality framework were created per national policy, which requires trainers to possess theoretical and practical abilities (MOE, 2006).

Further results in Table 4.13 on whether trainees go to industries with Standards/Unit specifications which they will study at the industry indicated that 61 (21.8%) of the trainers strongly disagreed, 41 (14.6%) disagreed, 11 (3.9%) undecided, 72 (25.7%) agreed 95 (33.9%) strongly agreed. The findings indicate that majority of the trainers (Mean = 3.3536, SD = 1.58623) agreed that there was a standard/unit of specification. A principal [2] reiterated a similar response, saying,

> *"As we spread various programmes to be specific 14, we are also developing occupational standards in order to aid the trainees to study effectively in the classroom and the industry. These are meant to guide our trainees in following up on what is required when they handle specific, general, or otherwise unique situations."*

This is similar to one of the industrial liaison officers [3] who reiterated that trainees had units of specification.

> *"We have a programme specification as an institution that summarizes important information about a program in a single document, and a unit specification does the same for a single unit. The institution maintains a standard form for unit specifications and gives notes to assist in its completion (Refer to Appendix I). Many of the features, such as goals, curriculum, and learning and teaching methods, are comparable to those found in program specifications. It's critical that a unit's intended learning outcomes contribute to the program's overall goals and are appropriate for the level or stage of the program at which the unit is scheduled to be completed."*

Content analysis of the documents showed that the trainees had standard units of specification. All the trainees sampled had standard units of specification. A sample of the standard of specification is indicated in Appendix I. The study findings concur with the study done by Anane (2013), who found that the establishment of the Council has, in effect, brought about a paradigm shift in the TVET sector. In 2009, with assistance from the Japan International Cooperation Agency (JICA), COTVET piloted the CBET system in some selected technical institutions at three levels of the 9-Level National TVET Qualification Framework. These levels were Level 3 (Certificate 1) Electronics at National Vocational Training Institute; Level 4 (Certificate 2) Welding at Accra Technical Training

Centre; and Level 6 (Higher National Diploma (HND) Plant Engineering at Accra Polytechnic. This increases the trainees' access to industrial areas with required units or standards.

Findings in Table 5 indicated that 126 (45%) of the trainers strongly disagreed that trainees are closely monitored on a daily, weekly, monthly basis through logbooks registers, facilitators, and assessors and verifies to ensure that they acquire the requisite competences, 110 (39.3%) disagree, 32 (11.4%) were undecided, 9 (3.2%) agreed while 3 9 (1.1%) strongly agreed. The findings indicated that majority of the trainers (Mean= 1.76071, SD = .857118) strongly disagreed. This implies that trainees may not be effectively acquainted with the relevant skills from both the industry and the institution. Bakri (1984) found that linking technical and vocational education institutions and industry should be done on a constant basis to increase the quality of graduates, which contradicts the conclusions of the current study. Industry and the workplace should be involved from the planning stages forward, including implementation, evaluation, and placement of graduates. This is to ensure that technical and vocational education, as a source of labor, and industry, as a consumer, are both relevant. Curriculum development, syllabi, producing a list of new equipment, and suggesting new locations and new study programs are all examples of collaboration at the planning stage. In the implementation stage, on-the-job training for trainees and trainers, the use of facilities in industry by the school institution or the use of school facilities by industry, and the use of expertise by both sides with mutual benefit might all be examples of cooperation.

Sentiments explaining inefficiencies in supervision both at the institution and the industry are also demonstrated in the following excerpt gathered from a principal [5] heading a TVET institution: -

> *"The intention of CBET was that the institutions will have assessors (internal) who would have been trained by CDACC. It was expected that after training, trainees will go for attachment in an organization. Such an arrangement has already been made. The organizations were also supposed to be "CBETIZED." That is, the foreman, supervisors, and other industrial staff should have undergone CDACC training so that they could assess the trainees. Unfortunately, that has not happened. Institutions have done their part but the industries have not done their part. This makes it impossible for the student who now opts for the conventional KNEC curriculum."*

From the findings, it can be concluded that, indeed, there are underlying challenges in terms of assessors' efficacy in assessing trainees. TVET specialists, according to Guthrie and Loveder (2009), should have refined pedagogical approaches, use more learner-focused, work-focused, and task-centred approaches rather than traditional instructional methods, and have a refined pedagogical approach. I can work with a variety of trainees in a variety of settings and in a variety of learning circumstances, and I understand that the combination of learning and work is an important part of today's workplace.

While one would expect an engineer to design a product from conception to manufacturing and leave the technologists to actualize the design and the technician to service, maintain, and operate the machine, according to Bray-Collins *et al.* (2016), there is no record of anything designed by our own trained engineers. This is in line with the findings of Malloch and Helmy (2015), who claimed that TVET is contested, with a growing gap between rhetoric and reality. In these trying times, it is important to reconsider the current TVET training paradigm for all levels of operation for all individuals, young and old, employed and jobless, in paid and unpaid work.

Trainers were required to rate whether workplace experience has credit –value and forms part of certification. Findings in Table 5 indicate that 31 (11.1%) of the trainers strongly disagreed that trainees' place experience has a credit value and forms part of the certification, 44 (15.7%) disagreed, 9 (3.2%) were undecided, 87 (31.1%) agreed. In comparison, 109 (38.7%) strongly agreed. The results show that the majority of the trainers (Mean = 3.7107, SD = 1.40349) agreed that CBET trainees visit the industry for workplace experience every week. This implies that individual trainees can practice the skills that they have learnt in the classroom.

Findings in Table 5 indicated that 31 (11.1%) of the trainers strongly disagreed that an advisory committee/board/council had been established to validate the curriculum and coordinate the training which suits the needs of local industries, 31 (11.1%) disagreed, 13 (4.6%) were undecided, 147 (52.5%) agreed. In comparison, 58 (20.7%) strongly agreed. The findings indicated that majority of the trainers (Mean= 3.6071, SD = 1.24259) strongly agreed. This agrees with the findings of Alyani and Guile (2017), who observed that TVET trainers must keep up with the technological advances in their field, maintain and expand their pedagogical skills and build the skills needed to work across both educational establishments and industrial settings. Lund and Kurlsen (2020) were of the same view that to ensure that technical and vocational education meets the needs of users, the link between schools and the workplace should be established through the formation of cooperation and partnership at school, regional and national levels so that mutual benefit can be realized.

An interview response from an industry liaison officer [2] confirmed the existence of this advisory committee, as indicated in the following excerpt:

> *"We have a committee of 6 comprising of trainers' representative, an examination officer, ILO, registrar, CBET director and the Deputy Principal who is the chair. Every person is a chairperson in his or her department. There is a policy that authenticates this committee."*

To ensure that technical and vocational education meets the needs of users, a link between schools and the workplace should be established through the formation of cooperation and partnerships at the school, regional, and national levels so that mutual benefit can be realized (UNESCO-UNEVOC, 2012). Most technical and vocational institutions collaborate with industry to provide on-the-job training for their trainees in accordance with their curriculum requirements. By forming an advisory group, several schools have established contact with the industry. It is notable that a few institutions

had not created this linkage. Results indicated that trainees relied on the letters of introduction only to look for internships. This was demonstrated in the following excerpt from industry supervisor [3]:

> *"I wish there was an MOU between the industry and the institution. As it stands, I have never had any interview with the institution. They only have introductory letters that show that they are trainees. We have never gone to the extent of having an MOU. That is what should happen, possibly because this is a new course."*

Finally, findings in Table 5 indicated that 138 (49.3%) of the trainers strongly disagreed that learning and appraisal techniques (The 'how' of learning) are provided by the industry and their trainers, taking into account learner needs, capacities and circumstances, 92 (32.9%) disagreed, 16 (5.7%) were undecided, 17 (6.1%) agreed while 17 (6.1%) strongly agreed. The majority of the trainers (Mean = 1.8679, SD = 1.15176) strongly disagreed, according to the data. This is contrary to the findings by Abdullah (2020), who observed that learning/appraisal techniques must be produced by suppliers and trainers who account for learner needs, capacities and circumstances. This study's findings are contrary to those of Waterhouse and Virgona (2004), who noted that in the CBET implementation process, there is evidence of close collaboration between training institutions and industry to ensure that training and competencies are relevant to employment requirements. Individuals can adapt to existing and future patterns of operation in the business by working with industry-led sector authorities to develop, maintain, and update competency standards. External quality assurance agencies may employ quality benchmarks and standards issued by international standards organizations in addition to quality benchmarks and standards relevant to a particular jurisdiction. ISO 9000, a generic management standard produced by the International Organization for Standardization, is the most widely used standard. (ISO) (Ganter de Otero, 2019).

6.3 CBET Workplace Experience by Trainees

Trainees were asked to indicate the extent to which they agree or disagree with the statements below on CBET workplace experience in their Institution. This was based on the fact that one major component of the CBET programme is an internship period referred to as Workplace Experience Learning. According to Anane (2013), the purpose of workplace experience learning is to give chances to the CBET learner to create strategic thinking, hierarchical, interpersonal and critical thinking, aptitudes, mindfulness and specialized skills through working environment involvement in genuine work situations with a restricted level of facilitator assistance. There is a need to move in this direction because many employers hold that the technicians lack practical skills relevant to job tasks (Ringa, 2007). Therefore, there is a need for quality technical training to produce technicians who can perform competently in their chosen vocation without a need for retraining. A 5-point rating scale was used to score the responses. It had the following scores; 1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree.

To determine the minimum and maximum length of the 5-point rating scale, the range was calculated by (5 – 1 = 4) and then divided by five as it is the greatest value of the scale (4 /5 = 0.80). Afterwards, one with the lowest value on the scale was added to identify this cell's maximum. Data from the trainers' questionnaire regarding CBET workplace experience is presented in Table 6.

Table 6: Trainees' Descriptive Statistics on CBET Workplace Experience

Statement	SD		D		UD		A		SA		Mean	SD
1. The trainees visit the industry for practical's every week.	30	9.2	40	12.3	12	3.7	132	40.6	132	40.6	3.7815	1.28799
2. Trainees go to the industry with training standards/unit specifications, which they will study at the industry	56	17.2	49	15.1	16	4.9	95	29.2	109	33.5	3.4677	1.50402
3. Trainees are given introductory letters from their own institutions to look for their own places/firms for attachment.	23	7.1	25	7.7	3	.9	128	39.4	146	44.9	4.0738	1.18403
4. Attachment is carefully guided and assessed because facilitators, assessors and verifiers have been identified and trained.	17	5.2	55	16.9	21	6.5	123	37.8	109	33.5	3.7754	1.22550
5. There is only periodic and general monitoring of Trainees on attachment.	33	10.2	34	10.5	14	4.3	126	38.8	118	36.3	3.8062	1.30619
6. Some trainees easily dodge the attachment.	122	37.5	78	24.0	22	6.8	52	16.0	51	15.7	2.4831	1.50632
7. Attachment does not have credit value and does not form part of the certification.	136	41.8	101	31.1	16	4.9	34	10.5	38	11.7	2.1908	1.38128

Trainees were required to rate whether they visit the industry for practicals every week. Findings in Table 6 indicate that 30 (9.2%) of the trainees strongly disagreed that they do practical in the industry every week, 40 (12.3%) disagreed, 12 (3.7%) were undecided, 132 (40.6%) agreed while 132 (40.6%) strongly agreed. The results show that most trainees (Mean = 3.7815, SD = 1.28799) agreed that CBET trainees do practicals every week. The CBET programme is practical-oriented and thus requires that the theoretical aspects taught in the classroom are practiced in the industry. It is important to note, however, that these practical aspects are sometimes taught within the TVET institutions, which have created their own industry in the institution.

Similar responses were obtained from the principal interview in one of the TVET institutions. The principal highlighted that, indeed, there were periodic visits to the industry during training as indicated in the following excerpt; principal [4] noted that:

> *"There are periodic visits to the industry during the week involving the training of the medical lab engineering and automotive engineering. It is conducted on a weekly basis. Going by the timetable, the automotive trainees visit the industry on Thursdays for the entire day. Other teams visit tea factories within the TVET institution catchment."*

As a rejoinder, the principal indicated that the institution (TVET) had been forced to identify the industry contrary to an earlier arrangement where CDACC, through the Kenya Association of Manufacturers (KAM), were to organize the identification of the industry. This is indicated in the following excerpt; principal [4] indicated that:

> *"It is the TVET that surveys and identifies the industry. The conversation between the TVET and the Ministry was that KAM was to identify the industry for the TVET institution. However, KAM entered into an MOU with the industry during the piloting phase and then went silent, leaving the TVET institution to survey and identify the industry. In fact, KAM doesn't even have offices in urban towns such as Eldoret, which boasts of several TVET institutions."*

According to the literature, schools in Malaysia significantly improved their formal and informal partnerships with industry. Trainers were needed to increase their technical competence as well as their CBET teaching skills when competency-based training (CBET) was implemented. Formal "return to Industry" programs were a significant component of their professional development, and many trainers were able to obtain professional and academic teaching credentials as a result. The Tenth Malaysia Plan (2011-2015), which emphasizes the need to improve Malaysia's human resources as a major factor in national economic growth, also encourages skill training. The Human Resources Development Fund provides assistance for skill training by contributing significantly to the cost of training at government and commercial training centers (Malaysian Government, 2010).

Further results in Table 6 on whether trainees go to industries with Standards/Unit specifications which they will study at the industry indicated that 56 (17.2%) of the trainees strongly disagreed, 49 (15.1%) disagreed, 16 (4.9%) undecided, 95 (29.2%) agreed 109 (33.5%) strongly agreed. The findings indicate that the majority of the trainees (Mean = 3.4677, SD = 1.50402) agreed that there was a standard/ unit of specification. This is in line with the responses of the trainers, who affirmed that the specifications were given to trainees during industrial attachments. This is important because the trainees will be able to follow standards and thereby establish a certain level of quality and predictability. This came out in the interview response from the industry liaison officer [1], who had this to say:

> *"Specifications are very important not only during the classroom, workshop or industry engagement. A student may be given an assignment involving a car for the trainer to assess and find out whether there is a fault. The student will need to follow the procedures and certain specifics to guide him or her through. The trainee will need to give the specifics, such as his understanding of the environment and whether it is safe and clean. The next specific concern is his own safety. Thereafter, the trainees will take the actual assignment and establish the right tools and equipment to use for this particular assignment. The trainee needs to specify whether the tools are the right size. As the trainee carries out the*

assignment, the assessment will be based on the various units of specification that is laid down."

Findings in Table 6 indicated that 23 (7.1%) of the trainees strongly disagreed that trainees are given introductory letters from their own institutions to look for their own places/firms for attachment, 25 (7.7%) disagreed, 3 (.9%) were undecided, 128 (39.4%) agreed while 146 (44.9%) strongly agreed. The findings indicated that most trainees (Mean = 4.0738, SD = 1.18403) strongly agreed that trainees are given introductory letters from their institutions to look for their own places/firms for attachment. The interview response indicated that industries were available owing to the MOU that has been with a few industries. An excerpt from ILO [3] indicated the following:

"We have sent HOD and deputies out to partner with industry/organization such as James Finlay, Tea factories. We are in the process of drafting an MOU with the Kenya Dietetics Institute to assist in the course that we are introducing on health records."

Trainees were required to rate whether attachments were carefully guided and assessed because facilitators, assessors, and verifiers had been identified and trained. Findings in Table 6 indicate that 17 (5.2%) of the trainees strongly disagreed that trainees work attachment are carefully guided and assessed, 55 (16.9%) disagreed, 21 (6.5%) were undecided, 123 (37.8%) agreed while 109 (33.5%) strongly agreed. The results show that the majority of the trainees' (Mean = 3.7754, SD = 1.22550) agreed that CBET trainees are assessed and guided based on particular verifiers. This concurs with the findings of Ringa (2007), who concluded that there was a need for quality technical training to produce technicians who can perform competently in their chosen vocation without a need for retraining.

In line with the preceding statement, respondents were required to indicate whether monitoring of trainees was periodic. Findings in Table 6 indicate that 33 (10.2%) of the trainees strongly disagreed that there was periodic and general monitoring of trainees on attachment, 34 (10.59%) disagreed, 14 (4.3%) were undecided, 126 (38.8%) agreed while 118 (36.3%) strongly agreed. The results show that most trainees (Mean = 3.8062, SD = 1.30619) agreed that CBET trainees are periodically monitored during trainees' attachment. This implies that trainees will comply with the requirements that are needed during training and while on the job. The study finding concurs with the study done by Waters and Sroufe (2013) who indicated that in addition to this developmental viewpoint, certain practical guidelines are presented for assessment of competence across ages. These include the use of broadband assessments, which are tied to real-life adaptational problems, cognition, and behavior, and tax the integrative capacities of the child. Initial validation of the developmental competence construct and this approach to assessment is presented.

Findings in Table 6 further indicated that 122 (37.5%) of the trainees strongly disagreed that some trainees easily dodge the attachment, 78 (24%) disagreed, 22 (6.8%) were undecided, 52 (16%) agreed while 51 (15.7%) strongly agreed. The findings

indicated that the majority of the trainees' (Mean = 2.4831, SD = 1.50632) strongly disagreed. This implies that all trainees are positioned well to apply whatever they have been taught. Notably, a few respondents, 103 (31.7%), were affirmative in saying that trainees dodge attachment. This may result from inadequate skills acquired by the trainees or probably ineffective monitoring by the industrial supervisors and trainers. Trainees were required to rate whether the attachment does not have credit value and does not form part of the certification. Findings in Table 6 indicate that 136 (41.8%) of the trainees strongly disagreed, 101 (31.1%) disagreed, 16 (4.9%) were undecided, 34 (10.5%) agreed, and 38 (11.7%) strongly agreed. The results show that most of the trainees' (Mean = 2.1908, SD = 1.38128) disagreed that attachment does not have credit value and does not form part of the certification. The study findings agreed with Blaak *et al.* (2013), who found that adequate assessment and certification can improve public perception and acknowledgement of non-formal educational graduates' skills and abilities. In addition, accreditation can combine formal TVET with informal or non-formal TVET training, allowing for social mobility (Hoppers, 2006). This study agrees with the study done by Hill and Werner (2006), which found that students with higher affiliative orientation reported higher levels of school attachment and lower levels of physical and relational aggression. Path analysis indicated that the relation of affiliative orientation to aggression was mediated by school attachment but that the mediational effect was moderated by sex. Male students and students of both sexes with low affiliative motivation may receive special benefits from practices designed to increase school attachment.

6.4 Hypotheses Testing

Correlation was carried out between workplace experience and integration of CBET in TVET institutions ($r = .638$, $p < 0.001$). A significant positive correlation was observed between workplace experience and integration of CBET in TVET institutions. The correlation coefficient between workplace experience and integration of CBET in TVET institutions was .638, which indicates a strong effect size. This correlation indicates that as workplace experience increases, integration of CBET in TVET institutions tends to increase. Table 7 presents the results of the correlation.

Table 7: Pearson Correlation Results between Workplace Experience and Integration of CBET

Correlations			
		Workplace Experience	**Integration of CBET**
Workplace Experience	Pearson Correlation	1	.638**
	Sig. (2-tailed)		.000
	N	280	280
Integration of CBET	Pearson Correlation	.638**	1
	Sig. (2-tailed)	.000	
	N	280	280
**. Correlation is significant at the 0.01 level (2-tailed).			

The hypothesis (H_{01}) stated that there is no statistically significant relationship between workplace experience and quality education in TVET institutions. However, findings in

Table 7 showed that workplace experience has a strong, positive and significant influence on quality education in TVET institutions ($r = .638$, $p < 0.001$). For the hypothesis test, as presented in Table 7, the p-value equals 0.000. This p-value was less than any reasonable significance level. Consequently, the present study rejected the null hypothesis and concluded that the relationship is statistically significant. The sample data support the notion that the relationship between the independent variable and dependent variable exists in the population of TVET institutions in the North Rift. Thus, the hypothesis (H_{01}) was rejected. This implies that workplace experience influences quality education in TVET institutions.

6.5 Regression Analysis

A regression analysis of workplace experience in the provision of quality education data sets was performed.

Table 8: Regression Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.388	.144		2.690	.008
Workplace experience	.273	.064	.283	4.279	.000

It was established that workplace experience has a positive and significant effect on quality education (β_1=. 273, p=0.000). This implies that an increase in workplace experience leads to an increase in quality education by 0.273 units.

7. Summary of Findings, Conclusions and Recommendations

7.1 Summary of Findings

Findings regarding the study objective, which set out to establish the extent of integration of workplace experience learning in TVET institutions, indicated varied responses from the different respondents. Both trainers (Mean = 3.8143) and trainees (Mean = 3.7815) agreed that trainees visit the industry for workplace experience. These results indicated that, indeed, trainers will be able to apply whatever theory they learnt in class in the industry. It is, however, noteworthy that not all TVET institutions have trainees visiting the industry weekly. This was obtained from the industry supervisors. Besides, the duration of the visit was shorter than expected. While in the industry, the respondents, especially the trainers and trainees, indicated that the individual trainees had standards/units of specification they used to study. Trainers (Mean = 3.3536) indicated affirmatively, while trainees (Mean = 3.7815) indicated that they had the specifications to guide them (Table 5).

Respondents (trainers) were required to rate whether the trainees were closely monitored on a daily and monthly basis through log books, registers, facilitators, and assessors, and verification was made to ensure they acquired the requisite competencies. Trainers did not conclusively affirm this statement (Mean = 1.76071). On one hand, this

was attributed to the small industries that the TVET institution had created within their institution. This made them engage the trainees in their own small world rather than outside. However, mentioning that some industries never had trainees visiting their premises weekly is useful. Instead, the industry supervisors quickly mentioned that the trainees visited during the prolonged attachment periods for 3 months. This result meant that TVET institutions were still embracing the KNEC course. Whereas CBET courses such as plumbing, electrical installation, and ICT were being done, there were lapses in organizing the industry visits. Industry supervisors who were supervising the weekly visits responded that TVET organizers came to their industry with CBET in mind but had plans for the normal curriculum. This meant that the CBET trainees were not well-presented during the booking of visits. This response differed from the trainees' (Mean = 3.8062), who agreed that periodic and general visits were made. To the trainees, the 'small industry' that had been created in the institution could have well been taken to reflect the large industry out there.

Trainers agreed strongly (Mean = 3.7107) that workplace experience has a credit value and is part of certification. This was similar to the trainees' responses (Mean = 2.1908) to the same variable asked in the negative, unlike the trainer's statement. The trainees disagreed that attachment did not have credit value and did not form part of the certification. This result implied that industrial attachment was valuable as it improved the value of the certificates. Further findings indicated that an advisory committee/board/council had been established to validate the curriculum and coordinate the training to suit the needs of local industries (trainers' mean = 3.6071). This meant that a Memorandum of Understanding (MOU) was being prepared to guide this engagement. Interviews with the ILO, industrial supervisors, and principals affirmed that MOUs existed within the industry. The MOUs were formal. A cause for worry, however, was that the Kenya Association of Manufacturers, which was mandated to identify the key industries, had not played this part/role effectively. This was witnessed in one of the industries, which was not in the knowhow as to whether they had been mapped for trainees' attachment and the weekly/regular visits by the trainees, yet they were indeed receiving trainees.

Trainers indicated that the learning and appraisal techniques (The 'how' of learning) were provided by the industry, and their trainers, taking into account learner needs, capacities and circumstances, were not being done effectively (Mean = 1.8679). This result was similar to the interview responses from some of the respondents, such as the principals and industrial supervisors. The interview showed that most industries were not 'CBETIZED' and thus ill-equipped in terms of how to learn. The findings also indicated that the trainees were given introductory letters to look for industry attachments. From the trainer's perspective, the attachments were carefully guided and assessed because facilitators, assessors and verifiers had been identified and trained (Mean = 3.7754). Lastly, trainees indicated that they had not dodged the attachment (Mean = 2.4831). This indicated that the attachment was very important.

Correlation analysis revealed that workplace experience strongly, positively and significantly influences quality education in TVET institutions. This implies that

workplace experience influences quality education in TVET institutions. It was further established through regression analysis that workplace experience positively and significantly affects quality education. This implies that an increase in workplace experience leads to an increase in quality education by 0.273 units.

7.2 Conclusions of the Study

The study concluded that workplace experience has a positive effect on quality education. An increase in workplace experience leads to an increase in quality education. Assessment of trainees was done regularly by trainers in the TVET institution because most of the trainers were well placed to do the assessment. Critical thinking amongst trainees was not well established as a result of the methodology that was being used for teaching. The courses offered were packaged to give trainees employable skills.

7.3 Recommendation

Regarding workplace experiences, the study recommends enhancing periodic visits to the industry. TVET institutions and CDACC should identify institutions where trainees will go for their attachment and get quality workplace experience. Attaching the trainees to institutions where they can get workplace experience will expose them to the demands and challenges of the workplace, gain practical experience and give them a competitive edge over graduates with no work experience. With an industrial attachment, trainees can get the real-life experience they are expected to work in when they graduate by applying the principles and techniques theoretically learnt to real-life problem-solving situations. Industrial attachment in identified industries will allow trainees and academic staff to interact with the stakeholders and potential employers and thus appreciate field situations that will generate information for curricula review and improvement. A more integrated and inter-sectorial approach to monitoring and evaluation should be enhanced to include broader coordination and partnership from stakeholders and partnerships from both the private and public sectors.

References

Abdullah, A. G., Mulyanti, B., & Rohendi, D. (2020). TVET learning innovation on automotive virtual laboratory based on cloud OpenStack. *Journal of Technical Education and Training*, *12*(3), 51-60. Retrieved from https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/5541

Abdullah, S. (2020). Entrepreneurship education in technical vocational education and training (TVET) and models of implementation. *Ministry of Higher Education*. Retrieved from https://www.researchgate.net/profile/Shamsuri-Abdullah-2/publication/344526944_ENTREPRENEURSHIP_EDUCATION_IN_TECHNICAL_VOCATIONAL_EDUCATION_AND_TRAINING_TVET_AND_MODELS_OF_IMPLEMENTATION/links/5f7e654a458515b7cf6f363a/ENTREPRENEURSHIP-

EDUCATION-IN-TECHNICAL-VOCATIONAL-EDUCATION-AND-TRAINING-TVET-AND-MODELS-OF-IMPLEMENTATION.pdf

Aboko, A., & Obeng, F. K. (2015). Students' perspective on the competency-based training Programme in Tamale Polytechnic, Ghana. *International Journal of Economics, Commerce and Management United Kingdom*, *3*(3), 1. Vol. 16, No.16 (2), January, 2015. Retrieved from https://ijecm.co.uk/wp-content/uploads/2015/03/3344.pdf

Acharya, A. S., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: Why and how of it. *Indian Journal of Medical Specialties*, *4*(2), 330-333. Retrieved from http://dx.doi.org/10.7713/ijms.2013.0032

Afeti, G. (2018). Revitalising technical and vocational education and training in Africa: Issues outstanding. *Journal of Vocational, Adult and Continuing Education and Training*, *1*(1), xi-xviii. Retrieved from http://dx.doi.org/10.14426/jovacet.v1i1.9

Agrawal, T., & Agrawal, A. (2017). Vocational education and training in India: a labour market perspective. *Journal of Vocational Education & Training*, *69*(2), 246-265. https://doi.org/10.1080/13636820.2017.1303785

Akala, W. J., & 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. https://doi.org/10.1080/13636820.2017.1303785

Albanese A., Mejicano G., Mullan P., Kokotailo P. & Gruppen L. (2008). Defining characteristics of educational competencies *Med Educ* 42(3):248-355. https://doi.org/10.1111/j.1365-2923.2007.02996.x

Aldinucci, A., Valiente, O., Hurrell, S., & Zancajo, A. (2021). Understanding aspirations: why do secondary TVET students aim so high in Chile?. *Journal of Vocational Education & Training*, 1-22. https://doi.org/10.1080/13636820.2021.1973543

Almeida, F. (2018). Strategies to perform a mixed methods study. *European Journal of Education Studies*, *5*(1), 137-147. https://doi.org/10.5281/zenodo.1406214

Alyani, N., & Guile, D. (2017). Learning to innovate by connecting interprofessional judgement–Exploring the digitised creative sector in the Gulf. In Vocational Education and Training in Times of Economic Crisis (pp. 83-105). Springer, Cham. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-47856-2_5

Anane, C. A. (2013). Competency-based training: Quality delivery for technical and vocational education and training (TVET) institutions. *Education research international*, *2*(2), 2307-3713, https://doi.org/ERInt.2013(2.2-14).pdf

Ansah, S., K., & Earnest, K. (2013). *Technical and Vocational Education and Training in Ghana: A Tool for Skill Acquisition and Industrial Development* (publication No. 327797863) [Wisconsin International University College]. Retrieved from https://www.researchgate.net/profile/Ernest-Kissi-2/publication/305475999_Technical_and_Vocational_Education_and_Training_in_Ghana_A_Tool_for_Skill_Acquisition_and_Industrial_Development/links/5e60e3a0299bf182deea5140/Technical-and-Vocational-Education-and-Training-in-Ghana-A-Tool-for-Skill-Acquisition-and-Industrial-Development.pdf

Asiamah, N., Mensah, H. K., & Oteng-Abayie, E. F. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative Report*, *22*(6), 1607. https://doi.org/a8d714a1e510499d620aa697c4226f4d/1

Ayiro L.P. (2012). A Functional Approach to Educational Research methods and statistics: Qualitative, *Quantitative and mixed methods approach*, Eduson Mellen Press, USA. Bennell, P. (2021). The political economy of attaining Universal Primary Education in sub-Saharan Africa: Social class reproduction, educational distancing and job competition. *International Journal of Educational Development*, *80*, 102-303. http://hdl.handle.net/11693/29116

Bahl, A., & Dietzen, A. (2019). Work-based Learning as a Pathway to Competence-based Education. *Management*. http://hdl.voced.edu.au/10707/503530

Bray-Collins, E., Andrade, N., & Wanjiru, C. (2016). Gender and TVET in Africa: A Review of the Literature on Gender Issues in Africa's TVET Sector. *Futures of Education, Culture and Nature-Learning to Become*, *1*, 151-171. http://dx.doi.org/10.7146/fecun.v1i.130245

Burden, R. (2018). Systems theory and its relevance to schools. In *Problem behaviour in the secondary school* (pp. 28-36). Routledge.

Cohen, L., Manion, L., & Morrison, K. (2017). Validity and reliability. In *Research methods in education* (pp. 245-284). Routledge. https://doi.org/10.4324/9780203224342

Creswell J. W & Clark V.L (2012). *Designing and conducting mixed methods research (2nd edition).* Sage. https://doi.org/10.1007/s11136-012-0122-x

Creswell, J. W., & Hirose, M. (2019). Mixed methods and survey research in family medicine and community health. *Family Medicine and Community Health*, *7*(2). https://doi.org/10.1136/fmch-2018-000086

Dannels, S. A. (2018). Research design. In *The reviewer's guide to quantitative methods in the social sciences* (pp. 402-416). Routledge. Retrieved from https://www.routledge.com/The-Reviewers-Guide-to-Quantitative-Methods-in-the-Social-Sciences/Hancock-Stapleton-Mueller/p/book/9781138800137

de Smith, M. J. (2021). *Statistical analysis handbook*. The Winchelsea Press. Retrieved from https://oit.utk.edu/wp-content/uploads/StatsRefSample.pdf

Doody, O., & Doody, C. M. (2015). Conducting a pilot study: Case study of a novice researcher. *British Journal of Nursing*, *24*(21), 1074-1078. Retrieved from https://doi.org/10.12968/bjon.2015.24.21.1074

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, *4*(1), https://doi.org/10.1177/2158244014522633

Ganter de Otero, J. P. (2019). Innovation in TVET: UNESCO-UNEVOC Trends Mapping. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training.

Gathii, J. T. (2021). Studying Race in International Law Scholarship Using a Social Science Approach. *Chi. J. Int'l L.*, *22*, 71. Retrieved from https://chicagounbound.uchicago.edu/cjil/vol22/iss1/9/

Gudivada, V., Apon, A., & Ding, J. (2017). Data quality considerations for big data and machine learning: Going beyond data cleaning and transformations. *International Journal on Advances in Software*, *10*(1), 1-20. https://doi.org/318432363

Guthrie, H., & Loveder, P. (2009). The Ageing TVET Workforce in Australia: Issues and Challenges. International Handbook of Education for the Changing World of Work, 2487-2498. Retrieved from https://link.springer.com/chapter/10.1007/978-1-4020-5281-1_164

Guthrie, H., Harris, R., Simons, M., & Karmel, T. (2009). Teaching for technical and vocational education and training (TVET). In *International handbook of research on teachers and teaching* (pp. 851-863). Springer, Boston, MA. Retrieved from https://link.springer.com/chapter/10.1007/978-0-387-73317-3_55

Harris, R, Guthrie, H, Hobart, B & Lundberg, D (2005). *Competency-based education and training: between a rock and a whirlpool*, Macmillan. Retrieved from https://books.google.com.mx/books/about/Competency_based_Education_and_Training.html?id=nGnOkT06g4UC&redir_esc=y

Harris, R., Willis, P., Simons, M., & Collins, E. (2001). The relative contributions of institutional and workplace learning environments: An analysis of apprenticeship training. *Journal of Vocational Education and Training*, 53 (2), 263 – 278. https://doi.org/10.1080/13636820100200159

Ismail, A., & Hassan, R. (2013). Issues and challenges of technical and vocational education & training in Malaysia for knowledge worker driven. In *National Conference on Engineering Technology* (pp. 1-11). Retrieved from http://dx.doi.org/10.13140/2.1.4555.2961

Jebb, A. T., & Tay, L. (2021). A Review of Key Likert Scale Development Advances: 1995–2019. *Frontiers in Psychology*, *12*(9), 15-90 https://doi.org/10.3389/fpsyg.2021.637547

Jordan, J., Clarke, S. O., & Coates, W. C. (2021). A practical guide for conducting qualitative research in medical education: Part 1—How to interview. *AEM Education and Training*, *5*(3), e10646. https://doi.org/10.1002/aet2.10646

Knoll, J., Matthes, J., & Heiss, R. (2020). The social media political participation model: A goal systems theory perspective. *Convergence*, *26*(1), 135-156. https://doi.org/10.1177/1354856517750366

Kosal, U. (2018). Interpreting the world with world-systems theory: Its significance, strengths, and weaknesses as an alternative approach in social science. *Akademik Bakış*, (67), 41-50. Retrieved from https://abdn.elsevierpure.com/en/publications/interpreting-the-world-with-world-systems-theory-its-significance

Leung, W. C. (2002). Competency-based medical training. *BMJ: British Medical Journal*, *325* (7366), 693. Retrieved from https://pubmed.ncbi.nlm.nih.gov/12351364/

Luhmann, N., Baecker, D., & Gilgen, P. (2013). *Introduction to systems theory* (pp. 50-5900). Cambridge: Polity. Retrieved from https://www.mediastudies.asia/wp-content/uploads/2016/08/Niklas_Luhmann_Introduction_to_System_Theory.pdf

Lund, H. B., & Karlsen, A. (2020). The importance of vocational education institutions in manufacturing regions: adding content to a broad definition of regional innovation systems. *Industry and Innovation*, *27*(6), 660-679. https://doi.org/10.1080/13662716.2019.1616534

Macmillan J. (2012). *Educational Research Fundamentals for the consumers*, (6th edition), Person Education, Inc, Boston. https://doi.org/10.4324/9781351111072

Maingi W.L., Cheptoo C., Mbeke B.K., Musembi J.K., and Gitau G. (2014). The Effect of Quality Assurance on Teaching in Eldoret Polytechnic, Kenya. *Journal of Technology & Socio-Economic Development*, 3(5), 140-154. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-51995-4

Malloch, M., & Helmy, A. (2015). TVET teachers, a reflection on trends in Indonesia and Australia. TVET@Asia, (5). Retrieved from https://tvet-online.asia/wp-content/uploads/2022/08/TVET-teachers-a-reflection-on-trends-in-Indonesia-and-Australia.pdf

Marguerite, J. D. (2014). Competency-based degrees–the quiet revolution. *The New College Guide*, *2014*. Retrieved from https://www.en.unp.ir/news/university/univerity-news/43239

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, *17*(4), 59-82. http://dx.doi.org/10.26458/1746

Mugenda, O. M., & Mugenda, A. G. (2000). *Research methods: Quantitative and qualitative approaches*. Acts Press. Retrieved from https://books.google.com.mx/books/about/Research_Methods.html?id=4WyrAAAACAAJ&redir_esc=y

Oketch, M.O. (2007). To vocationalism or not to vocationalism? Perspective on current trends and issues in Technical and Vocational Education and Training (TVET) in Africa, *International Journal of Educational Development*, *27*(2), 220-234. https://doi.org/10.1016/j.ijedudev.2006.07.004

Qureshi, M. A. (1996). Current Trends and Issues in Technical and Vocational Education in Asia and the Pacific. *Unevoc info*, *8*, 1-3. Retrieved from https://files.eric.ed.gov/fulltext/ED400419.pdf

Reid C. and Fitzgerald P. (2011). *Assessment and Employability*. http://repos.hsap.kcl.ac.uk/content/m10058/1.5

Remington, T. F. (2018). Public–private partnerships in TVET: Adapting the dual system in the United States. *Journal of Vocational Education & Training*, *70*(4), 497-523. http://dx.doi.org/10.1080/13636820.2018.1450776

Ringa M. (2007): *Give Loans to the Poor-Mwiria:* In the Daily Nation, 28th November, 2015

Roberts, V. Z. (2019). The organization of work: Contributions from open systems theory. In *The unconscious at work* (pp. 37-48). Routledge. Retrieved from https://www.taylorfrancis.com/chapters/edit/10.4324/9781351104166-5/organization-work-vega-zagier-roberts

Saibon, R. A., Kamis, A., & Zainol, Z. (2019). Entrepreneurship education: Unemployment issues, people's well-being and entrepreneurial Intentions among

TVET graduates in Malaysia. *International Journal of Psychosocial Rehabilitation*, *23*(4), 953-965. http://dx.doi.org/10.37200/IJPR/V23I4/PR190423

Sarantakos, S. (2007). *A tool kit for quantitative data analysis*. New York: Palgrave Macmillan. Retrieved from http://dx.doi.org/10.1007/978-1-137-03825-8

Sarstedt, M., Bengart, P., Shaltoni, A. M., & Lehmann, S. (2018). The use of sampling methods in advertising research: A gap between theory and practice. *International Journal of Advertising*, *37*(4), 650-663. https://doi.org/10.1080/02650487.2017.1348329

Sergiou, C., Lestas, M., Antoniou, P., Liaskos, C., & Pitsillides, A. (2020). Complex systems: A communication networks perspective towards 6G. *IEEE Access*, *8*, 89007-89030. Retrieved from https://ieeexplore.ieee.org/document/9090214

Sharma, G. (2017). Pros and cons of different sampling techniques. *International journal of applied research*, *3*(7), 749-752. https://doi.org/58765080/2.pdf

Smith, E & Keating, J. (2003). *From training reform to training packages.* Social Science Press. http://hdl.voced.edu.au/10707/156899

Stage, F. K., & Manning, K. (2003). Research in the college context. *New York: Brunner-Routledge*. Retrieved from https://www.routledge.com/Research-in-the-College-Context-Approaches-and-Methods/Stage-Manning/p/book/9781138824782

Tadjine, A. (2019). The wrong use of alpha Cronbach. *Annals of the University of Craiova, Series Psychology, Pedagogy*, *39*(1), 27-34. https://ideas.repec.org/a/edt/aucspp/v39y2019i1p27-34.html

Teece, D. J. (2018). Dynamic capabilities as (workable) management systems theory. *Journal of Management & Organization*, *24*(3), 359-368. Retrieved from https://www.cambridge.org/core/journals/journal-of-management-and-organization/article/dynamic-capabilities-as-workable-management-systems-theory/0F3A795EE011931B83135B324C33393E

Timans, R., Wouters, P., & Heilbron, J. (2019). Mixed methods research: what it is and what it could be. *Theory and Society*, *48*(2), 193-216. https://doi.org/10.1007/s11186-019-09345-5

Union, A. (2007, May). Strategy to revitalize technical and vocational education and training (TVET) in Africa. In *Meeting of the Bureau of the Conference of Ministers of Education of the African Union (COMEDAF II+)* (pp. 29-31). Retrieved from https://au.int/sites/default/files/documents/39018-doc-15._au_2007_tvet_strategy.pdf

Vakili, M. M., & Jahangiri, N. (2018). Content validity and reliability of the measurement tools in educational, behavioral, and health sciences research. *Journal of Medical Education Development*, *10*(28), 106-118. https://doi.org/10.29252/edcj.10.28.106

Waterhouse P. and Virgona C. (2004). Workplace Literacy in the Aged Care and Call Centre Industries: *Two-Dimensional Work* (Adelaide, NCVER.). https://files.eric.ed.gov/fulltext/ED495140.pdf

Wesselink, R., & Wals, A. E. (2011). Developing competence profiles for educators in environmental education organisations in the Netherlands. *Environmental Education Research*, *17*(1), 69-90. https://doi.org/10.1080/13504621003637037

Young M. (2007). Qualification's frameworks: Some Conceptual Issues. *European Journal of Education, 42*(4), 445-447. https://doi.org/10.1111/j.1465-3435.2007.00323.x.