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Constraints Experienced in Provision of Quality Education in TVET Institutions

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Abstract

Globally, there have been concerns about the quality of training from both providers and industry due to the changing nature of working place and technological advancement. This study purpose to assess the constraints experienced in integrating CBET approach 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. 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. 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 there was positive linear effect of and constraints experienced (β=. 295, p=0.000) on quality education. The study concluded that lower academic requirements set for recruitment into the TVET programs was creating a negative attitude and perception that CBET was for low achievers. The study recommended that. Trainers need to understand the market trends.

Keywords: Constraints Experienced, Trainers, Competency-Based Education, Institutions

Background to the Study

In recent years, concerns about the quality of training in Technical and Vocational Education and Training (TVET) institutions have gained significant attention across the globe. As the demand for skilled labor grows, TVET institutions are under pressure to adapt their training models to meet the evolving needs of industries and align with technological advancements. One such approach that has been proposed to improve the quality and relevance of TVET is the Competency-Based Education and Training (CBET) approach. This approach emphasizes a practical, industry-focused model of education that is designed to produce graduates who are fully equipped with the skills and competencies required by employers.

The integration of CBET in TVET institutions, however, has faced a variety of challenges. These constraints not only hinder the effective delivery of quality education but also limit the ability of TVET institutions to adequately prepare students for the workforce. These challenges include outdated curricula, insufficient resources, lack of industry collaboration, inadequate teacher training, and perceptions of TVET as a second-choice option for lower-achieving students. Addressing these constraints is crucial to improving the quality of TVET education and enhancing its role in economic development. This study focuses on exploring the constraints faced by TVET institutions in integrating the CBET approach, particularly within the context of technological advancements and industry expectations.

A lot of enthusiasm for Competency Based Education and Training (CBET) approach was noted when training packages were introduced in 1996 (Mulcahy & James, 2018). Not long after, the National Centre for Vocational Education Research in Bonn, Germany engaged a team of scholars to research on CBET and their findings were published in the late 1990s. For a beginning, a great part of research posits that competence is a more extensive idea than the capacity to perform work environment assignments. From that point forward, there has been a constant flow of knowledge; some have been from Australia, and a significant part of the latest material coming from Europe and the United Kingdom (UNESCO, 2003; Benjelloul, 2017). This has been necessitated by concerns about training from both providers and industry over its quality. If they have no consumer experience with training, industry is especially dubious of the standard and quality of it. This is in accordance with a baseline survey on CBET implementation in TVET conducted in Ghana by Japan International Cooperation Agency (JICA) (2008), which found a weak connectivity between theory and practice, which was attributed to the lack of industry involvement in TVET academic programmes.

Countries all around the world recognize that in order to remain economically competitive and maintain and encourage investors, they must acquire and develop the necessary information, skills, including values. More so the policies for skills development must meet the needs and expectations of learners, local employers and the wider society (Okoli et al., 2020; Schröder, 2019). As a result of major political, economic, and social trends, TVET is currently undergoing a transformation. Efforts are being made to come up with relevant ideas and strategies for dealing with TVET's new challenges. In the last 25 years, as youth unemployment has worsened, new forms of production have emerged, and globalization has raised demand on education and training systems to promote national growth, these reforms have become more urgent (Oketch, 2007).

From 2005, many countries including aid agencies such has UNESCO and the World Bank have had a deliberate attempt and a shift in focus from issues of general literacy through EFA and UPE to specific aspects such as skills development in TVET for employability, effective citizenship and functional literacy for the world of work (Kelechi, 2020). This agrees with the recommendations made by Tarno and Omondi (2014) who posited that quality training in TVET should focus on viable collaboration between trainers and trainees. To emphasize on the above, UNESCO and the German Government established the UNESCO-UNEVOC International Centre in Bonn in 2002. This activity re-engineered in TVET the role of providing quality skill development for the labor market.

The government of Finland acknowledges that TVET plays a critical role in increasing economic competitiveness and development. Since 2008, the government has implemented the strategy that goes for fortifying the system of TVET suppliers who have been urged to converge and work together for better service delivery. TVET is offered both to youngsters and grown-ups engaged in economic activities. TVET organizations are asked to build up their provision in cooperation with the world of work, and to support competence development within small and medium sized enterprises. The government, through foresight endeavors, attempts to deliver data about the sorts of abilities and talented individuals required later in the labour market and the means in which this requirement can be satisfied through the learning process (UNESCO-IBE, 2012). TVET is consistently enhanced in Finland through national development programmes and ventures.

Education spending has played a crucial influence in South Korea's rapid and sustained growth. The goal of developing strategies has been to achieve consistent productivity growth by enhancing the value-added of output. A highly educated workforce was required to do this. Current changes and new innovations in South Korea in the improvement of aptitudes and the workforce for the knowledge-based economy acknowledges and stresses that: proper training and learning is paramount, training for the labour market to meet the specific needs of commercial enterprises and different sections of the economy and the need to keep abreast with the changing needs of the economy (Mathews & Hu, 2007).

Malaysia has put in place various initiatives to move the nation towards its objective of turning it into a highly developed economy by the year 2020. The availability of exceptionally gifted human capital lies at the heart of this yearning, and their lack has hindered the country's efforts to advance from a middle-income to a highly developed economy (Leong, 2011). In this framework, Technical and Vocational Education and Training (TVET) play an important role in developing the skilled workforce needed to accelerate the country's economic transition. As a result, strategic planners in various African countries, as well as international donors, now realize the value of TVET in national development. The growing importance of TVET among African governments is evident in the many Poverty Reduction Strategy Papers that governments have produced in collaboration with the World Bank (Leong, 2011). It has recognized and designated the TVET sub-sector as one of its top goals for poverty reduction

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.

After independence, Kenya adapted a policy to rapidly expand its formal school system as a means to social and economic development. This formal education adapted was geared towards training people for white collar jobs and lacked practical knowledge, the expanded education system also led to rapid enrolment in schools. This led to many school leavers who remained unemployed. Thus, the Kenya government together with non-governmental organizations (NGOs) looked for resolutions to solve the school leavers' problem. This led to the emergence of vocational training centers and in particular the youth polytechnics programme (Mutua & Muriithi, 2015). Boahin and Hofman (2012) observed that internship programs in training institutions are poorly structured, resulting in poor monitoring and supervision, and also those trainees' internships do not often correlate to their study programs.

As a result, the Kenyan government created the TVET policy in 2012 to steer the reform of the TVET sector and provide knowledgeable and employable graduates to help Kenya achieve its Vision 2030 goals. Kenya's Vision 2030 is built on a foundation of science, technology, and innovation in the economic, social, and political spheres. Competency Based Education and Training (CBET) have lately been integrated into the Kenyan education system by policy makers and managers of TVET institutions, thanks to the new TVET policy in effect since 2012. Trainees' placement, monitoring, and assessment are all ensured by collaboration between training schools and industry. Stronger collaborations between industry and TVET universities will pave the way for proper training and educational program development (GOK, 2012).

Statement of Problem

Technical vocational education and training (TVET) can assume a big role in getting ready young people for work, yet specialists state that by and large such projects neglect to respond to work market needs. Existing public technical and vocational education training (TVET) framework in Kenya experiences basic issues including absence of work related and social real factors. This shows that Kenya faces a troublesome future because the significance of skills and adequate training can't be over-underscored. It is expertise and innovation that separates between the 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 innovative, creative and responsive skilled workforce for 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 TVET syllabus, training approach and the aspirations of the Kenya Vision 2030. This study therefore investigated the constraints experienced in provision of quality education in TVET institutions.

Research Objective
To investigate the constraints experienced in provision of quality education in TVET institutions.

Research Questions
What are the constraints experienced in the provision of quality education in TVET institutions as assessed by the managers, trainers and trainees?

Research Hypothesis
Ho_1: There is no statistically significant relationship between constraints experienced and quality education in TVET institutions.

Significance of the Study
The significance of this study cannot be overstated, as it seeks to address the pressing issue of improving the quality of education within TVET institutions. The results of this research will provide valuable insights into the factors that affect the successful implementation of the CBET approach, which is key to bridging the gap between the education system and the labor market. By identifying the constraints experienced by TVET institutions, the study will help policymakers, education authorities, and practitioners better understand the challenges and opportunities associated with CBET. This will allow for more informed decision-making and the development of targeted interventions aimed at improving the quality of TVET programs. For TVET institutions, this research will provide a deeper understanding of how to enhance the relevance and effectiveness of their training programs. By focusing on industry collaboration, curriculum development, and teacher training, TVET institutions can better align their offerings with the skills demanded by employers. For trainers and educators, the study highlights the importance of adapting teaching methods and content to meet industry needs, ultimately improving the outcomes for students.

The study's findings will also be beneficial to employers and industry leaders who are often frustrated with the skills gap and the lack of industry-ready graduates. By addressing the constraints faced by TVET institutions in implementing the CBET approach, this research will contribute to developing a more efficient and effective workforce that can meet the needs of the modern job market.

Theoretical Review
The study was guided by Rogers' Diffusion of Innovation Theory developed by Rogers in 1995. The theory sought to explain how new ideas are adopted. This theory proposes that there are five attributes of an innovation that affect adoption: relative advantage, compatibility, complexity, trial-ability and observability. Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' theory suggests that new ideas that have a clear, unambiguous advantage over the previous approach is more easily adopted and implemented. According to Link and Reece (2021) if a potential user sees no relative advantage in using the new ideas, it will not be adopted. Compatibility is the degree to which new idea fits with the existing values, past experiences, and needs of potential adopters. According to Agner, Barile, Chandler and Berry (2020) the more compatible the innovation is, the greater the likelihood of adoption.

Complexity is the degree to which new idea is perceived as difficult to understand and use. Furthermore, Rogers suggested that new innovations may be categorized on a complexity-simplicity continuum with a qualification that the meaning or the relevance of the new idea may not be clearly understood by potential adopters. When key players perceive new ideas as being simple to use, the new ideas are more easily adopted (Tortorella, Fogliatto, Cauchick-Miguel, Kurnia & Jurburg, 2021). Trial ability is the degree to which new idea may be experimented with on a limited basis. Because new idea requires investing time, energy and resources, new ideas that can be tried before being fully implemented are more readily adopted. Finally, observability is the degree to which the results of new idea are visible to the adopters. If there are observable positive outcomes from the implementation of the new idea then the new idea is more adoptable.

Rogers' diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments (Medlin, 2001; Parisot, 1995). In fact, much diffusion research involves technological innovations so Rogers (2003) usually used the word "technology" and "innovation" as synonyms. For Rogers, "a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome" (p. 13). It is composed of two parts: hardware and software. While hardware is "the tool that embodies the technology in the form of a material or physical object," software is "the information base for the tool" (Rogers, 2003, p. 259). Since software (as a technological innovation) has a low level of observability, its rate of adoption is quite slow.

For Rogers (2003), adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (p. 177). Rogers defines diffusion as "the process in which an innovation is communicated thorough certain channels over time among the members of a social system" (p. 5).
As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

Rogers' diffusion of innovations theory is the most appropriate for investigating the adoption of integration of competency-based education in technical and vocational education training (Rogers & Wallace, 2011). In fact, much diffusion research involves new ideas so Rogers (2000) usually used the word "technology" and "innovation" as synonyms. For Rogers, "a new idea is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome".

For Rogers (2000), adoption is a decision of "full use of new idea as the best course of action available" and rejection is a decision "not to adopt new idea". Rogers defines diffusion as "the process in which new idea is communicated through certain channels over time among the members of a social system. As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of new ideas. Despite the fact that each study uses the theory in slightly different ways, the lack of attachment has left the theory inert and difficult to apply consistently to new challenges. Diffusion is difficult to quantify since individuals and human systems are complex. Quantifying what exactly drives an innovation's uptake is extremely difficult, if not impossible. A new behavior or technology is influenced by a number of factors. Diffusion theories can never

account for all variables, and as a result, they may omit important adoption determinants. This wide range of variables has often resulted in contradictory exploration outcomes, lowering heuristic quality.

The pro-innovation prejudice, in particular, assumes that all innovations are beneficial and should be implemented. Another flaw in this hypothesis is the limited data stream from sender to recipient. The message sender has an objective to convince the collector, and there is practically zero converse streams. The individual executing the reform controls the course and result of the battle now and again, this is the best approach. However different cases require a more participatory methodology. In complex situations where the adopter is accepting data from numerous sources and is returning input to the sender, a restricted model is inadequate and various correspondence streams should be inspected.

Constraints Experienced in Integrating CBET In TVET Institutions

Learning and teaching must encourage skills, information, values, and attitudes that reflect and respond to the requirements and expectations of individuals, the global community, a country, and the workplace (UNESCO, 2013). As a result, there are various issues in the advancement and change of TVET globally influencing its picture and status which are still a major issue in several nations. TVET has an essential part to play in the advancement of new abilities and new economic structures, and also their regionalization and internationalization. Every nation has an awesome potential for job and employment creation, which must be well thought out and executed through the procurement of sufficient training, particularly in TVET. These approaches, with respect to the research findings on current issues in several nations, could affect economic advancement, structural change and speeding up of technological change through specialized and professional training (Qureshi, 1996).

There are three key distinctions between the difficulties that face general education and those that face TVET. To begin, it is important to note that TVET is more complicated than general education from a theoretical, organisational, and political standpoint. TVET systems and institutions are regularly anticipated to seek after competing training purposes and meet competing interests. Apart from preparing trainees for work, they are anticipated to furnish learners with essential proficiency and numeracy aptitudes, bolster individual's potential and offer courses into advanced education. Throughout many nations, TVET institutions coexist with school systems and higher education systems in an uneasy way. The fact that ministries of education generally share responsibility for TVET policy with ministries of labor and/or employment makes articulation with other sections of the education system and the labor market difficult (Marope, Chakroun & Holmes, 2015).

Second, TVET systems and institutions have arguably been in crisis for many years, owing in part to the complications indicated above. TVET policy and public institutions have been neglected for political and administrative reasons. TVET has been largely ignored by funding organizations in low-income nations, which have opted to focus on general education. Several public TVET institutions lack the necessary leadership, managers, and strategic planners to govern effectively. What are more, open TVET establishments are progressively in rivalry for trainees and resources with private suppliers (Marope, Chakroun & Holmes, 2015).

Competency Based Education and training is a costly type of learning and instruction due to its demand for specialized training facilities, ideal laboratories and educational learning materials. All these accompany enormous costs particularly when the student population expands making it difficult because of budgetary limitations of TVET establishments (Anane, 2013). In addition, issues have been identifying with the collaboration between TVET institutions and workplace: - Who does have the capacity to make decisions in such situations; how can such connections be built and maintained; who pays; and how can TVET workers be trained to function well in both environments? While research on learning in the classroom and in institutions is well-established and abundant, research on training in the workforce has only lately begun to be supported by learning theories formed from research (NCVER, 2003). The need to allow for sufficient customization to meet the needs of individual businesses and individual learners in the packaging rules for awarding is an issue. In some new commercial enterprises training requirements may cover a good number of modules, however packaging regulations may keep a legitimate capability being recognized. This puts weight on suppliers to create licensed courses to meet their customer needs, or when they have to address the necessities of specific learners or suit an assorted quality of learner needs. The stress put on work environment experience and appraisal inconveniences some graduates and people, particularly those not effectively utilized in business related to their areas of specialization (Anane, 2013). In addition, it is believed that every work environment can give a rich and diverse learning environment that will cover the full range of encounters required by the training module. This may not be the situation.

Individual Trainees demand improved paths, especially between schools, TVET, and advanced education, as well as solutions to the needs of overseas trainees (Guthrie et al, 2009). Graduates' failure to arrange and explain their own particular earlier capabilities propose that graduates require hierarchical and intelligent abilities that are vital to bolster individual and expert advancement (Peter, 2018). Both trainers and coaches require excellent educational abilities and capabilities to bolster learners in portfolio advancement towards the upgrading of the aptitudes of basic reflection and explanation of their related involvements. Inventive procedures, for example, the e-portfolio (Alamineh, 2022) and an on-line facility to offer quality data on RPL for both trainees and staff could enhance awareness, lessen cumbersome physical items and records, minimize the tedious and grave assignments of the appraisal process and serve as a quality control as it screens the confirmation procedure.

In the nations that have progressed like Singapore and Malaysia, the advancement in development was attributed to high level technical skills. Nonetheless, the experience of these nations additionally demonstrates that their modern lift-off came after investment in high literacy levels and basic essential aptitudes. The sheer absence of abilities of various kinds in Africa and the needs of poverty eradication imply that African nations must seek the improvement of aptitudes at all levels of the range (basic, auxiliary, and tertiary levels), with every nation underscoring the expertise level that relate best to their present phase of economic advancement and the necessities of the local industries. In the meantime, the essential prerequisite of building a general public endowed with a surplus of fundamental numeracy and proficiency aptitudes can't be disregarded (Atchoarena & Deuluc, 2002).

In several communities globally, the place of "educator" remains a respected one. In others, it once was, yet it has turned out to be progressively harder to intrigue and enroll, and even

hold educators for a number of reasons. For example, professional trainers have regularly been seen (and consider themselves) to be 'less of value' to those educating in more "scholarly" content fields. Research has found that such feelings on professional trainers are the reported reasons for steady loss of educators (Tadele & Terefe, 2016). In a little scale study in Ohio, professional and specialized educators reported more elevated amounts of task and assignment stress than scholarly trainers (Tufa, 2021). In Australia, solid worries of specialized and further trainers were pressures in the present environment and questions over their ability to keep up proficient benchmarks and avail quality education (Chijioke, 2013).

The TVET teaching staff is aging in several nations. There are already severe shortages, and vacancies are difficult to fill because work in their own field may be more gratifying. If TVET institutions have trouble hiring and maintaining a committed and high-quality workforce, they will struggle to meet their commitments to learners, industry, and society as a whole. Furthermore, because the TVET workforce is often part-time (as it is in Australia), casual trainers are less engaged with the TVET institution in principle and their fellow teaching colleagues in specifically. If all staff, including casuals, are not involved in building a shared understanding of how an effective and integrated set of methods to teaching and learning will be delivered to learners, it may impair how integrated the learning experience is for the learners (Guthrie & Loveder, 2007).

Furthermore, TVET trainees come from progressively diverse backgrounds. For example, in some nations, a large proportion of these trainees come from socially, linguistically, and culturally diverse backgrounds, putting a strain on support programs such as literacy and numeracy, as well as counseling for special needs trainees. This raises the issue of the degree to which TVET educators are satisfactorily arranged to address the issues of the differing scope of learners they may experience (Guthrie *et al.*, 2006). As of now, there is deficiency of qualified specialized and professional coaches. The majority of the staffs who are enrolled specifically after college and school studies are evaluated in view of their scholarly capabilities with no significance given to their abilities. Again, qualified tutors with work encounters are not willing to end up being trainers because of the poor compensation plan (Guthrie, 2013).
Due to frequent use and quick obsolescence, teaching equipment, particularly desk-top computers, has a short lifespan. The quick depreciation of these assets should be included into financial planning. The mix and duplication of training equipment has an impact on the efficient utilization of specialty teaching areas. A proliferation of large items of equipment (for example turning and milling lathes) consumes workshop space and may limit the capacity to diversify TVET courses and to respond to flexibility to changing demands. An alternative approach is one in which workshops accommodate multi-functional equipment. Common items are available for different TVET courses and savings accrue in workshop space requirements and in the purchase, maintenance and replacement of specialist equipment. The use of adjacent equipment bays and mobile cabinets can facilitate multi-functional spaces in workshops (Gasskov, 2008).

Work experience in the workshop costs a lot of money, but the costs of obtaining materials, maintaining, and repairing them are extremely low. Furthermore, the actual work outcomes are unusable due to the inadequacy of the production value's applicability. It would be beneficial to the efficiency of technical and vocational education if practical activities could

assist breeds and trainees in developing an entrepreneurial mindset. A small number of African countries can financially fund TVET at a level that can improve training quality.

Ethiopia spends only 0.5 percent of its education budget on TVET, whereas Ghana only spends roughly 1%. Mali has a respectable 10% and Gabon has a respectable 12.7 percent. On a per-trainee basis, it must be recognized that TVET is quite expensive. Gabon spent up to $1,820 per TVET trainee in 1992. Because of lower trainee-to-instructor ratios, pricey training facilities, and learning materials that are "misused" in the course of classroom hands-on instruction, unit costs are expected to be greater in TVET foundations than in essential and auxiliary schools (World Bank, 2000).

Change inside such frameworks can regularly be fast, regular and difficult to those assigned to train. However, for a myriad of purposes around the world (for example, in Australia, due to the emphasis on industry leadership), trainers have not always been seen as partners in these transformations, and as a result, policy reforms have not always had the impact they should have at the institutional and classroom levels. Fortunately, in Europe and other TVET systems, trainers are now regarded as critical to the success of changes (Grollmann & Raunner, 2007). TVET in Malaysia is by all accounts the final destination for less qualified potential trainees for scholarly alternative. This discernment has been worsened by the lower academic requirements set for recruitment into TVET programs and the restricted prospects for advanced studies and expert advancement of TVET graduates. The perception that TVET's primary purpose is to offer space for school dropouts, rather than a critical approach to developing qualified people for the labor market and long-term lives, has also contributed to its poor societal image. Furthermore, TVET-based degrees and occupations continue to be misunderstood and undervalued in the workplace. Many employers do not recognize the certification due to the highly fragmented landscape, with many ministries and agencies issuing certifications (Affeti & Haski, 2013).

The issue in Ghana today in executing this new strategy in the teaching of TVET trainees is that partners have not had the capacity to influence its integration and hence actualizing just a few components of the competency-based training in the Ghanaian educational centres (Boahin & Hofman, 2012). Apart from this, other factors constraining the integration of the CBET ideas are financing, class sizes and adequacy of commercial enterprises for the trainees to undertake their practicums (Anane, 2013). The objective of accomplishing self-conviction and the potential for self-regulation and lifelong learning, in any case, might be hard to accomplish even with availability of small-scale firms in Ghana. However, creative collaboration amongst industry and training organizations, for example, a 'joined school processing plant' could result in mutual benefits, including enough training facilities and equipment, highly trained specialized trainers, working environment experience, smooth advancement of potential trainees from school to work and improve production (Boahin & Hofman, 2014).

The empirical literature also emphasizes the significance of viewing TVET in a non-productivity light. While hard skills are job-specific and productivity-oriented, soft skills such as self-esteem, honesty, and integrity should be supplemented. Using data from the Chinese port city, Shi (2012) show that teenagers with both hard and soft skills are related with self-

realization, which leads to positive job motivation and engagement. Unemployed adolescents with proper TVET training, according to the report, will follow a similar path.

TVET includes a non-formal component in which school dropouts and people without a high school diploma are accommodated in order to gain useful labor market and life skills. This component of TVET imparts reading, numeracy, and occupational skills, as well as life skills, at least in African settings (Eble, 2019). The non-formal component's success is determined by its flexibility in terms of program location, schedule, and language of teaching, as well as practical relevance to daily life and module structure (Indabawa & Mpofu, 2006). The seasonal nature of rural livelihoods emphasizes the significance of flexibility in timing. In agricultural homes, for example, such a program is unlikely to succeed during planting and harvesting seasons (Indabawa & Mpofu, 2006). In a study of the intersection of livelihood skills training and basic education for illiterate and semi-literate youth and adults, Oxenham, (2002) argue that where vocational training comes before literacy skills, the program is more likely to succeed because participants can immediately appreciate its relevance to work.

Locational flexibility allows training to be delivered as close to the target groups as possible, while financial access can be improved by keeping training costs within reach (Indabawa & Mpofu, 2006). Language flexibility necessitates communication in the native tongue (World Education Forum, 2000). The success of non-formal TVET in a community is also dependent on a thorough understanding of the community's requirements, the assessment of limits prior to structuring the training program, and short-term payoffs from participants to assure the program's long-term viability.

The organizational structure of the non-formal TVET institutional framework should allow active local participation in the creation of training courses to better understood community training requirements and potential obstacles (Rieckmann, 2018). Furthermore, local engagement should guarantee that a diverse range of community interest groups are included in the course content and delivery structure, ensuring that the course content and objectives are tailored to the requirements and restrictions of the community. However, while the content and design of the course should be tailored to the needs and circumstances of the community, there must be a common thread, especially where situations are comparable across communities. A procedure that simplifies the recruitment of trainers should be in place to assure homogeneity. Additionally, funds could be put aside to ensure that a pool of trainers is prepared to teach in the non-formal TVET framework. Standardized training would make certification more uniform. Furthermore, because the informal economy employs the majority of young people in developing economies like Uganda, only a pro-poor TVET approach targeted on the informal economy will be successful in creating skills that lead to economic progress and social transformation (Palmer, 2007). This study was conducted in Uganda whereas the present study will be conducted in Kenya.

Accreditation and competent assessment are critical in combating unfavorable perceptions of TVET as being outside of conventional general and academic education. In a study of the potential of non-formal vocational education in Uganda to improve the quality of life of those who have been excluded from formal education, McGrath et al. (2020) found that adequate assessment and certification can improve public perception and acknowledgement of non-formal educational graduates' skills and abilities. In addition, accreditation has the ability to

combine formal TVET with informal or non-formal TVET training, allowing for social mobility (Hoppers, 2006). The study established the experience of the external users of TVET without highlighting the experiences related to constraints of TVET sector in Kenya.

Internal conditions of TVET institutions must be improved in order to speed up the transfer of TVET graduates into work. Indeed, Okumu and Bbaale (2019) suggest in an evaluation of non-formal training in South Africa that the smooth transition of graduates to employment is dependent on the quality of conditions at training institutions. The main internal conditions that assist the transition of TVET graduates to gainful work include suitable trainee selection, adequate financial resources, training objectives, acceptable training requirements assessment criteria, and skill acquisition (Okumu & Bbaale, 2019). This transition is also likely to be enabled by appropriate training materials and adequately trained trainers with vocation-specific practical expertise (Okumu & Bbaale 2019). TVET's effectiveness is dependent in part on periodic and extensive labor market surveys (Palmer, 2007) to avoid creating skills for which the market is already saturated and supplying skills in areas where there is an insufficient supply (Palmer, 2007). As a result, resources are not squandered because talent supply is tied to labor market demand.

Finally, the environment in which post-skills training takes place is equally as significant as the setting in which occupational skills are acquired (Palmer, 2007). Someone who has been trained as a plumber, for example, will need plumbing gear and equipment in order to work. Recent TVET graduates, on the other hand, often lack the necessary collateral to get official credit. Using the informal credit market may be challenging since young graduates lack the necessary social capital to leverage it, and borrowers may be taken advantage of by loan sharks who charge exorbitant interest rates. In this context, it is critical to ensure TVET graduates' easy transition into productive activities by providing post-training activities (Palmer, 2007) based on a needs assessment, just as governments overhaul the skills-training environment. The above studies were done in other countries of the world and different challenges facings the growth of TVET institutions were identified. None of the above studies focused on the challenges facing integration of CBET in TVET institutions in the North Rift Region, Kenya which was filled by the current study.

Conceptual Framework

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

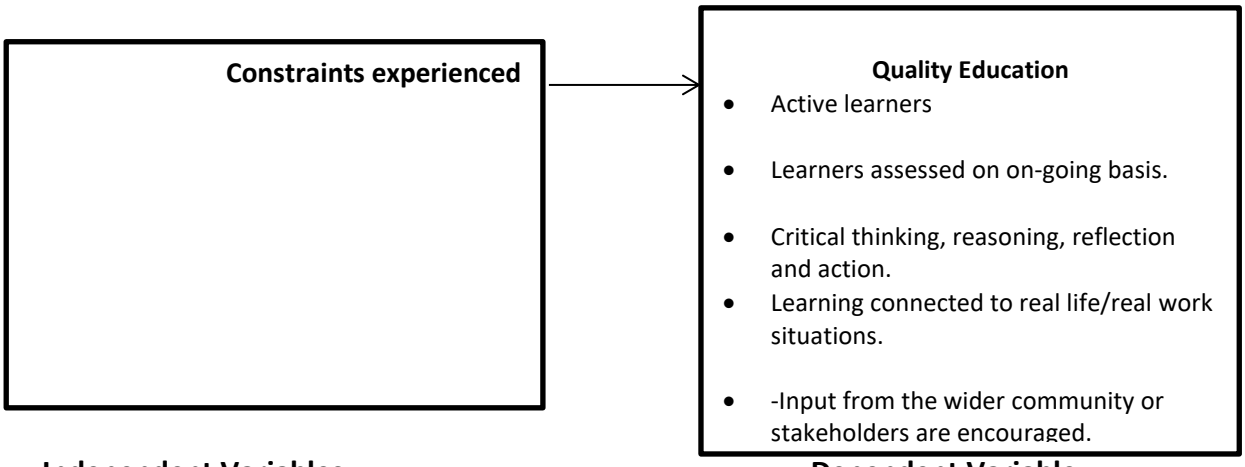

Figure 1: Conceptual Framework

Research Methodology

Research Design

According to Dannels (2018), a research design can be thought of as the structure of research. It's 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 survey to be more superior in terms of its 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 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 addresses the research questions (Almeida, 2018). The use of eclectic approach ensured 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 method, in combination, provides a clear understanding of the research problem than either method by itself.

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 this 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 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 incline towards inefficiency.

Target Population

According to Asiamah, Mensah and 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 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 1.

Table 1
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 provide an in-depth understanding of the issue of concern for the study. The principals were able to clarify on matters touching on strategies put in place in the efforts to integrate CBET.

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) believes 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 in TVET institutions in the North Rift, Kenya. Simple random sample, stratified sampling, and purposive sampling were used in this investigation.

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 the 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).

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 methods. The principals were chosen purposively since they have information concerning integration of 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.

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 integration of CBET approach in training for quality education. Cresswell and Clark (2011) noticed that purposive includes distinguishing proof and determination of people that are capable and very much educated with integration of CBET approach in training for quality education in TVET.

Sampling of Trainers

The researcher obtained 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.

Sampling of Trainees

The researcher obtained sample size for trainees using Krejcie & Morgan, 1970 formula **for finite population which is calculated as under:**

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

Where:

S represent required Sample size

X represent Z value (e.g., 1.96 for 95% confidence level)

N represent population size

P represent population proportion (expressed as decimal) (assumed to be 0.5 (50%)

d represent degree of accuracy (5%), expressed as a proportion (.05); It is margin of error

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

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

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 equal and independent chance of being included in the sample (Machmillan, 2012).

Sampling of Industrial Liaison Officers

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 for the sampling is presented in Table 2.

Table 2
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)

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).

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 with 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 used, the researcher gave an opportunity the respondents to leave an insight into their feelings, hidden motivations, interest 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 answer objective one that 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 influence of workplace experience on quality education in TVET institutions. Section F contained questions on quality education in TVET institutions. Use of questionnaire 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 easy in conducting reliability and validity of tools.

Interview Schedules

Interview schedules were used to provide in-depth data which may not be 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 interview 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 institution.

Document Analysis

Elo, Kääriäinen, Kanste, Pölkki, Utriainen and Kyngäs (2014) noted that qualitative documentary analysis guide is used in 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 through classification, tabulation and evaluation of texts. The document analyzed were; admission files, appraisal tool, standard units of specification, log books and MOU.

The information from documentary analysis guide was useful for triangulation of data. Therefore, information got from documentary analysis guide was added to the one got through the use of questionnaires and interview schedule with aim of giving a more comprehensive and accurate information on integration of 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 in order to determine factors that explain 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 aids in making inferences about the content of a recorded text which are used to analyze textual information. Therefore, researcher used document analysis which involved studying documents in TVET so as to get information which aided further in confirming and getting important information which respondents may have left out on issues that may contribute to integration of CBET approach in training for quality education in TVET in North Rift, Kenya.

Validity and Reliability of Research Instruments

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? And 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 face validity of the questionnaires, the researcher ensured that the format of the questions is attractive to the respondents and the questions formulated are straight and to the point.

Reliability

Mohajan (2017) defined reliability as the extent to which a questionnaire 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. Test-retest method was used to test consistency of the draft questionnaire in this study. The questionnaire was administered to the 29 trainers and 38 trainees of the TVET institution identified and then the same were 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 the Cronbach's Alpha coefficient correlation to establish the extent to which the items in the questionnaire were consistent in eliciting 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 trainers questionnaire yielded a reliability index of .826. Based on Tadjine (2019) the two tools were found to be reliable.

Data Collection Procedures

The researcher undertook a reconnaissance visit to the North Rift region where the six TVET institutions were located to familiarize with the study areas and make appointments with the principals and identified persons. A research permit to undertake the research was sought from 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 as per the objectives and research questions. They were sub-divided 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 opinion, 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 institution 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 were not involved in the actual research study (Ayiro, 2012). With the support of six research assistants, the questionnaires were administered by the researcher to the trainers, and trainees of TVET institutions. The interview schedules were administered to the principals because they oversee the integration of 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 for 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 contracts documents. These documents provided a deeper insight into the extent to which CBET has been integrated in TVET institutions.

Data Analysis

After the data was collected, it was cleaned to remove incomplete or inaccurate responses to improve the quality of responses (Gudivada, Apon & Ding, 2017). The Statistical Package for Social Sciences (SPSS) was used to analyze data. For quantitative data, descriptive and inferential statistics was employed. 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:

$\mathbf{Y= \beta_0+\beta_1 X_1 +\varepsilon}$ ..... Equation 1

Where: **Y** represents quality of education

$\boldsymbol{\beta_0}$ represent the y intercept

$\mathbf{X_1}$ represents workplace experience

$\boldsymbol{\beta_1}$, represent model coefficient

ε represents 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 analysis of qualitative data were as follows;

i. All interview transcripts were read through to comprehend their overall meanings.
ii. Relevant statements to study objectives were then captured.
iii. Meanings of the extracted statements were articulated.
iv. Data was structured into bands of themes and authenticated.
v. These findings were unified into an exhaustive description of the topic.
vi. 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 form of verbatim reports. The analysis of study variable is presented in Table 3.

Table 3
Analysis of Study Variable

Objective	**h Question**	**Analysis**
i. 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

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 for authorization letter from the National Commission for Science, Technology and Innovation (NACOSTI). The researcher further sought letter for authorization to collect data from Ministry of Education and County commissioner. Then permission to collect data was sought from the selected TEVET institutions 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 attached. This aims at making sure there is collaboration from them. The researcher builds 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 annotated bibliography was done where a citation to books, articles, and documents was done in every 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 are 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 protection of confidentiality, secure storage and restricting of access to the data. The researcher undertook to sought permission of the respondents for any subsequent use of data. Moreover, the researcher destroyed all raw data when analysis and reporting was 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 endeavored to gain the trust of the participants by being open and honest about possible risks and burdens. The researcher ensured no harm came to 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 on the researcher and to observe the ethical code of conduct on information gathered from the field. To ensure privacy and confidentiality of the information and participate the researcher used pseudonyms.

Research and Discussions

This section presents data analysis results, interpretations and discussions.

Constraints Experienced in the Integration of CBET

This section analyses, interprets, presents and discusses descriptive statistics relating to objective four of the study which was set to determine the constraints experienced in the integration of CBET approach in the TVET institutions. The findings are indicated in the following sub sections.

Constraints Experienced in the Integration of CBET by Trainers

Trainers were asked to indicate the extent to which they agree or disagree with the statements below on the constraints experienced in the integration of CBET approach in the

TVET institutions. 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) then divided by five as it is the greatest value of the scale (4 /5 = 0.80). Afterwards, one which is the least value in 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 constraints experienced in the integration of CBET approach in the TVET institutions is presented in Table 4.

Table 4
Trainers Descriptive Statistics on Constraints Experienced in the Integration of CBET

Statement	SD		D		UD		A		SA		Mean	SD
1. Inadequate capacity building of teaching staff and trainees on CBET.	152	54.3	74	26.4	14	5.0	23	8.2	17	6.1	1.8536	1.20482
2. Lack of teaching aids and equipment.	24	8.6	28	10.0	14	5.0	78	27.9	136	48.6	3.9786	1.30874
3. Ineffective leadership and management by Departmental Heads.	127	45.4	101	36.1	11	3.9	26	9.3	15	5.4	1.9321	1.16045
4. Lack of role models to inspire trainees on TVET.	176	62.9	88	31.4	2	.7	13	4.6	1	.4	1.4821	.76648
5. The role of the trainer and trainee in CBET process overlooked/not seen as crucial in making reforms work.	41	14.6	36	12.9	7	2.5	96	34.3	100	35.7	3.6357	1.44535
6. Demotivated trainers.	11	3.9	21	7.5	13	4.6	114	40.7	121	43.2	4.1179	1.05937
7. Graduate failure to arrange and explain their own capabilities vital to bolster individual and expert advancement.	43	15.4	13	4.6	13	4.6	97	34.6	114	40.7	3.8071	1.41115
8. High literacy levels and inadequate basic essential aptitudes among the trainees.	93	33.2	144	51.4	17	6.1	26	9.3			1.9143	.87158

9.	Inadequate workshop space requirements for effective CBET class instruction.	20	7.1	13	4.6	3	1.1	112	40.0	132	47.1	4.1536	1.13655
10.	Lack of modern, suitable and adequate learning materials.	12	4.3	17	6.1	10	3.6	84	30.0	157	56.1	4.2750	1.07401
11.	Extensive class sizes which hinder individual interaction with the trainers and training equipment.	12	4.3	17	6.1	10	3.6	84	30.0	157	56.1	4.2750	1.07401
12.	Lack of qualified educators with relevant knowledge on entrepreneurship.	11	3.9	21	7.5	13	4.6	114	40.7	121	43.2	4.1179	1.05937
13.	Inadequacy of places/firms to undertake workplace experience.	26	9.3	39	13.9	10	3.6	87	31.1	118	42.1	3.8286	1.35172
14.	Lower academic requirements set for recruitment into TVET programs.	48	17.1	21	7.5	14	5.0	93	33.2	104	37.1	3.6571	1.46780
15.	Limited financial support for TVET which can't enhance quality training.	9	3.2	10	3.6	6	2.1	103	36.8	152	54.3	4.3536	.93517

The findings in Table 4 showed that 152 (54.3%) of respondents strongly disagreed that there was inadequate capacity building of teaching staff and trainees on CBET, 74 (26.4%) disagreed, 14 (5.0%) undecided, 23 (8.2%) agreed and 17 (6.1%) strongly agreed. This indicates that majority of the respondents strongly disagreed that inadequate capacity building of teaching staff and trainees on CBET. The results were further shown in mean and deviation, (Mean= 1.8536, SD=1.20482). These findings concur with study by Mwagunga et al. (2020) who found that trainers had good understanding of the concept and objectives of CBET Curriculum. It further found that, the government supports TVET institutions in hiring of more qualified trainers and technical support staff; stakeholders, that is, parents, industries, government.

Table 4 demonstrates the constraints faced in the integration of CBET approach in the TVET institutions. The findings indicates that 24 (8.6%) strongly disagreed that there is lack of teaching aids and equipment, 28 (10.0%) disagreed, 14 (5.0%) Undecided, 78 (27.9%) agreed and 136 (48.6%) strongly agreed. This shows that majority of the respondents strongly agreed that there is lack of teaching aids and equipment. Amongst the constraints pinpointed by trainers include lack of teaching aids and equipment (Mean = 3.9786, SD = 1.30874). This

implies that the various courses that require these facilities will be constrained to offer or rather integrate quality teaching to the trainees. This concurs with the findings of the study by Sappa et al. (2018) who posited that courses that need these facilities won't be able to provide or, better yet, incorporate quality instruction for the students.

The findings from the Table 4 also showed that 127 (45.4%) of the respondents strongly disagreed on the statement that there existed ineffective leadership and management by Departmental Heads, 101 (36.1%) disagreed, 11 (3.9%) undecided, 26 (9.3%) agreed and 15 (5.4%) strongly agreed. This implies that majority of the respondents strongly disagreed on the statement that ineffective leadership and management by Departmental Heads. The results were further showed in mean and deviation (Mean=1.9321, SD=1.16045). This rhymes with the findings of the study done by Takyi-Amoako and Assie-Lumumba (2018) who posited that leadership and management by Departmental Heads have important implications for how leadership is conceptualized and the way leadership development and training are provided in vocational training schools.

The results from Table 4 further revealed that 176 (62.9%) of the respondents strongly disagreed on the statement that there was lack of role models to inspire trainees on TVET, 88 (31.4%) disagreed, 2 (0.7%) undecided, 13 (4.6%) agreed and 1 (0.4%) strongly agreed. This implies that majority of the respondents were of the contrary opinion on the statement that lack of role models to inspire trainees on TVET. The results were further showed in mean and deviation (Mean=1.4821, SD=0.76648). This concurs with the study by Najoli (2019) who elucidated that the main obstacles to women enrolment and exemplary performance in TVET courses include; cultural stereotypes and lack of role models as well as other socio-cultural factors.

Another constraint involves the role of the trainer and trainee being overlooked. The findings show that 41 (14.6%) strongly disagreed that the role of the trainer and trainee in CBET process overlooked/ not seen as crucial in making reforms work, 36 (12.9%) disagreed, 7 (2.5%) undecided, 96 (34.3%) agreed and 100 (35.7%) strongly agreed further (Mean = 3.6357, SD = 1.44535). It is important that skills training in the TVET institutions are undergoing tremendous reforms that requires for a closer collaboration of all stakeholder's key of which are the trainers and trainees. Likewise, Mulder, (2018) pointed out that when competency-based education is implemented, the amount to which the trainer's and learner's roles alter might be readily overlooked. They also mentioned the importance of paying structural attention to the development of trainers and managers when it comes to providing competency-based education.

For any programme to run efficiently motivated workforce or personnel is needed. The findings indicated that 11 (3.9%) strongly disagreed that for any programme to run efficiently motivated workforce or personnel is needed, 21 (7.5%) disagreed, 13 (4.6%) undecided, 114 (40.7%) agreed and 121 (43.2%) strongly agreed. On the contrary as demonstrated in Table 4 trainers may be demotivated as indicated by (Mean = 4.1179, SD = 1.05937). Demotivation may arise from the intensive efforts that are needed in running the CBET approach to instruction. This rhymes with study by Salleh et al. (2016) who posited that the trainers may have brought about low morale given the same remuneration that is being experienced amid heavy workload.

Aspects of learners failing to explain their own capabilities were reported by respondents especially the trainers. The findings indicated that 43 (15.4%) strongly disagreed that aspects of learners failing to explain their own capabilities were reported by respondents especially the trainers, 13 (4.6%), disagreed, 13 (4.6%) undecided, 97 (34.6 %) agreed and 114 (40.7%) strongly agreed. This shows that majority of the respondents were of the opinion that aspects of learners failing to explain their own capabilities in TVET. Further, the results were shown in mean and deviation (Mean = 3.8, SD = 1.4115). This concurs with study by Kintu et al. (2017) who noted that some of the student characteristics/backgrounds and capabilities are significant predictors for student learning outcomes in blended learning in TVET.

Another constraint involves high literacy levels and inadequate basic essential aptitudes among the trainees of which 93 (33.2%) strongly disagreed on this statement, 144 (51.4%) disagreed, 17 (6.1%) undecided and 26 (9.3%) agreed. This implies that most of the respondents were of the contrary opinion on what involves high literacy levels and inadequate basic essential aptitudes among the trainees. The findings were further shown in mean and deviation (Mean=1.9143, SD=0.87158). This is in line with the study by Anindo et al. (2016) who posited that in order to achieve the desired result of developing the employable skills among trainees necessary for the world of work, government should support TVET institutions by providing modern equipment for use by trainees.

CBET approach requires maximum space utilization. This may not be the case as demonstrated in Table 4 where by majority of the trainers indicated that it was constraining carrying out practical aspects of training as the findings showed that, 20 (7.1%) strongly disagreed that it was constraining carrying out practical aspects of training, 13 (4.6%) disagreed, 3 (1.1%) undecided, 112 (40.0%) agreed and 132 (47.1%) strongly agreed. (Mean = 4.1536, SD = 1.13655). The study agrees with the study done by Acquah, Frimpong and Borkloe, (2017) who found that inadequate funding, lack of infrastructural support and lack of policy guidelines and institutional support are the major challenges in the implementation process.
Principal [4] interviewed complained that:

> *Classes are congested, making it difficult to walk about and connect with fellow trainees. Consider a case in which the trainers are teaching a class of more than 100 trainees, with four streams for each subject. In such a case, the CBET technique is not used since if it is, the trainees may not be able to complete the curriculum.*

From the above finding it is clear that large class sizes tend to affect student – teacher interaction. This prevents student to student interactions and student to trainer's exchanges. This implies that the small and inadequate workshops may not allow all trainees to regularly participate in practical aspects of CBET instruction. Anane (2013) concluded in his study saying that the effective delivery of TVET requires that institutions not only have adequate teaching spaces, but that they also have adequate teaching aids and equipment. Conventional and more up to date support that improve educator- focused learning incorporate: - straightforward photocopied handouts, writing boards, whiteboards, laser pointers, and so forth, overhead projectors for slides and transparencies, video-projectors connected to VCRs/DVD players for tape/DVD presentations and so forth. Advanced planning is vital and

offers impact to the management committees' vision for their organizations, their accepted missions and their overall strategic plans for the specified periods (Anane, 2013).

The findings from Table 4 further showed another constraint, lack of modern, suitable and adequate learning materials of which, 12 (4.3%) strongly disagreed on this statement, 17 (6.1%) disagreed, 10 (3.6%) undecided, 84 (30.0%) agreed and 157 (56.1%) strongly agreed. This implies that most of the respondents were of the opinion that there is lack of modern, suitable and adequate learning materials. The results were further shown in mean and deviation (Mean= 4.2750, SD=1.07401). This concurs with study by Munishi and Emmanuel (2016) who elucidated that there is need for provision of basic needs in TVET which are up to date and efficient for learning.

Coupled with inadequate space is the extensive class size which hinders individual interaction with the trainers and training equipment. Results indicated that this is a constraint of which, 12 (4.3%) strongly disagreed, 17 (6.1%) disagreed, 10 (3.6%) undecided, 84 (30.0%) agreed and 157 (56.1%) strongly agreed (Mean = 4.2750, SD = 1.07401). Similar sentiments were made by a principal who reiterated the intensive resource base that is required for the CBET. This is presented in the following excerpt from principal [6]: -

> *CBET requires resources. Plumbing for instance requires pipes and reservoirs unlike in the conventional training which is basically theoretical. It is not easy in plumbing if you were to teach plumbing the KNEC way you will require a drawing of how the reservoirs turns and how it goes to the cisterns. CBET requires less English but with more action. In CBET there will be a lot of pipes that will be cut and joined and it goes that way. Sometimes factors beyond the institution have made it difficult to acquire this equipment thus making it difficult to impart skills.*

According to Gasskov (2008), due to heavy use and rapid obsolescence, teaching equipment, particularly desk-top PCs, has a short lifespan. The quick depreciation of these assets should be included into financial planning. The mix and duplication of training equipment has an impact on the efficient utilization of specialized teaching areas. According to him, and in line with the findings of the current study, the growth of large items of equipment (such as turning and milling lathes) consumes workshop space and may limit the ability to diversify TVET courses and respond to changing demands. Workshops that accommodate multi-functional equipment are an alternative method. Common items are available for various TVET courses, resulting in cost savings in workshop space, as well as the procurement, maintenance, and replacement of specialized equipment. In workshops, neighboring equipment bays and transportable cabinets can help create multi-functional spaces (Gasskov, 2008).

Inadequate entrepreneurship skills were cited by respondent to impact on effective CBET instruction. This is indicated in Table 4 in which majority of the trainers agreed that there existed demotivated trainer, further, 11 (3.9%) strongly disagreed, 21 (7.5%) disagreed, 13 (4.6%) undecided, 114 (40.7%) agreed and 121 (43.2%) strongly agreed further the results were shown in mean and deviation, (Mean = 4.1179, SD = 1. 05937). Skills based training goes hand in hand with job marked skills. This is necessary to enable the trainees to be able to chart in the skills-based market. Without adequate entrepreneurship skills trainers cannot pass the same to the trainees. This response is similar to what one industry supervisor in a

hospitality sector and automotive sector pointed out. This is demonstrated in the following excerpt from industry supervisor [7];

> *There is a serious disconnect that need to be corrected. The earlier the better. This is a job market that has competition. Thus, to compete training should be unique. Normal isn't always the best. We need to work on the passion among the trainees. The trainee should look at the client. Most trainees cannot even compete with those who didn't go for training. My best workers happen not to have gone to college but they have learnt the hard way and work passionately. Trainees should be taught how to learn their jobs and be passionate. This should be done beyond the normal classroom instruction. This will enable them correlate the body and what ought to be done. Some trainers even don't greet they just say "sema" (a sheng colloquial to mean hallo. Etiquette needs to come in.*

A major concern in the CBET instruction as demonstrated in Table 4 is the limited financial support for TVET which cannot enhance quality training. Further, the findings showed that 9 (3.2%) strongly disagreed that there was limited financial support from the industry, 10 (3.6%) disagreed, 6 (2.1%) undecided, 103 (36.8%) agreed and 152 (54.3%) strongly agreed. This shows that majority of the respondents agreed that there was limited financial support from the industry, the government and other support agencies. Results showed that this was a constraint (Mean = 4.3536, SD = 0.93517).

Another constraint is inadequacy of places/firms to undertake workplace experience of which 26 (9.3%) strongly disagreed on that statement, 39 (13.9%) disagreed, 10 (3.6%) undecided, 87 (31.1%) agreed and 118 (42.1%) strongly agreed. This implies that most of the respondents opined that there is inadequacy of places/firms to undertake workplace experience. The results were further shown in mean and deviation (Mean=3.8286, SD=1.35172). This concurs with the study done by Ngugi and Muthima (2017) who noted that there is scarcity in terms of firms where people can undertake workplace experience.

Lastly, lower academic requirements set for recruitment into the TVET programs was pointed out to a constraint which indicated that 48 (17.1%) strongly disagreed that lower academic requirements set for recruitment into the TVET programs, 21 (7.5%) disagreed, 14 (5.0%) undecided, 93 (33.2%) agreed and 104 (37.1%) strongly agreed (Mean = 3.6571, SD = 1.46780). This may be discouraging to would be trainee who performed well in the secondary level of education. As indicated in the trainees' demographic sections a relatively large number of trainees 89 (27.3%) did have primary education. This may have an impact on trainees who passed well at high level of education as they may perceive the CBET training to be for the trainees with lower academic achievements. Similar sentiments were made by a principal who mentioned that less emphasis has been made in regards to the entry behavior. This is demonstrated in the following excerpt from principal [3];

> *No emphasis on grades during entry. This is a challenge because majority of the trainee will not comprehend the English language which is a language of instruction. It will be difficult for the trainees with lower academic achievements to even write a report.*

Guthriee et al (2006) is in agreement with these findings saying that, learners in TVET come from increasingly diverse environments. For example, high proportions of these learners in

some countries come from socially, linguistically and culturally diverse backgrounds, which may place heavy demands on support services such as literacy and numeracy and counseling for a special needs learner. This raises the issue of the degree to which TVET educators are satisfactorily arranged to address the issues of the differing scope of learners they may experience (Guthrie et al, 2006).

Findings in Table 4 indicated that there was limited funding (Mean = 4.3536, SD = 0.935174) thus impacting on the quality of training. This was supported by interview response from one of the ILO who affirmed that due to low costing in terms of fees payment the TVETs institution have been left to grapple with financial implications. ILO [5] noted that:

> *TVET institutions have not been directed well from the Ministry in terms of costing and the financial implication of CBET. Instead, the institutions are using similar fees structure with the KNEC which caters for basic requirements unlike CBET that needs to cater for extensive equipment. This implies that the parents' ought to bear the extra cost. This hasn't augured well with the parents who have developed a negative attitude towards the programme by labeling it expensive.*

Aspects of costing in the present trainees are in line with Anane (2013) assertion that Competency Based Education and Training is a costly type of learning and instruction due to its demand for specialized training facilities, ideal laboratories and educational learning materials. All these accompany enormous costs particularly when the student population expands making it difficult because of budgetary limitations of TVET establishments (Anane, 2013).

Constraints Experienced in the Integration of CBET by Trainees'

Trainees were asked to indicate the extent to which they agree or disagree with the statements below on the constraints experienced in the integration of CBET approach in the TVET institutions. 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) then divided by five as it is the greatest value of the scale (4 /5 = 0.80). Afterwards, one which is the least value in 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 constraints experienced in the integration of CBET approach in the TVET institutions in Table 5.

Table 5
Trainees Descriptive Statistics on Constraints Experienced in the Integration of CBET

Statement	SD		D		UD		A		SA		Mean	SD
Inadequate capacity building of trainers and trainees.	166	51.1	109	33.5	13	4.0	16	4.9	21	6.5	1.8215	1.14078
Lack of role models to inspire trainees in TVET.	36	11.1	37	11.4	16	4.9	89	27.4	147	45.2	3.8431	1.39111
Inadequate workshop space required for effective CBET class instruction.	12	3.7	19	5.8	7	2.2	100	30.8	187	57.5	4.3262	1.02954
Lack of modern, suitable and adequate learning materials.	26	8.0	34	10.5	7	2.2	92	28.3	166	51.1	4.0400	1.29396
Large classes sizes which hinder individual interactions with the trainers and training equipment.	29	8.9	37	11.4	17	5.2	129	39.7	113	34.8	3.8000	1.27415
Inadequacy of places to undertake the workplace experience.	13	4.0	16	4.9	13	4.0	143	44.0	140	43.1	4.1723	1.00054
Lower academic requirements set for recruitment into TVET programs.	136	41.8	101	31.1	16	4.9	34	10.5	38	11.7	2.1908	1.38128
Poor image of TVET by society e.g. The notion	79	24.3	15	4.6	16	4.9	87	26.8	128	39.4	3.5231	1.61118

that TVET creates room for drop-outs.												
Trainees in TVET systems are not recognized as crucial in the CBET reform process.	75	23.1	56	17.2	49	15.1	58	17.8	87	26.8	3.0800	1.53148
Inadequate labour market to accommodate the graduates.	12	3.7	26	8.0	20	6.2	90	27.7	177	54.5	4.2123	1.10324
Lack of support services for special needs learners in TVET e.g., counselling, literacy and numeracy skills.	14	4.3	9	2.8	13	4.0	134	41.2	155	47.7	4.2523	.97707

Table 5 demonstrates the constraints faced in the integration of CBET approach in the TVET institutions by trainees. Amongst the constraints pinpointed by trainees include inadequate capacity building of trainers and trainees which was not a major constraint (Mean = 1.8215, SD = 1.14078). This implies that the trainers had been trained adequately. This agrees with the earlier sentiments from the trainers who had earlier indicated that indeed they had gone for capacity building.

Other constraint involved the lack of role models to inspire trainees in TVET. Findings indicated that 36 (11.1%) strongly disagreed, 37 (11.4%) disagreed, 89 (27.4%) agreed while 89 (27.4%) strongly agreed. This implies that majority of the trainees (Mean 3.8431, SD = 1.39111) felt that there was lack of role models. This is in line with the study by Najoli (2019) who noted that one of the major hindrances to trainees being encouraged and psyched up in TVET is because of lack of role models who they can look up to.

Further findings indicated that 12 (3.7%) of the trainees strongly disagreed that there was inadequate workshop space required for effective CBET class instruction, 19 (5.8%) disagreed, 100 (30.8%) agreed while 187 (57.5%) strongly agreed. This implies that majority of the trainees (Mean = 4.3262, SD = 1.02954) felt that there was inadequate space which rhymes with the study by Munishi and Emmanuel (2016) who observed that there is ample space and rooms for effective CBET class instruction.

For any programme to run efficiently it is critical that modern, suitable and adequate learning materials are provided. In regard to this 26 (8%) of the trainees strongly disagreed that there is lack of modern, suitable and adequate learning materials, 34 (10.5%) disagreed, 92 (28.3%)

agreed while 166 (51.1%) strongly agreed. This finding shows that there was lack of modern suitable and adequate learning materials (Mean = 4.0400, SD = 1.29396). This concurs with the study by Anindo et al. (2016) who elucidated that for school programmes to smoothly run, modern equipment and necessities are needed for it to be realized.

Finding in Table 5 further indicated that 29 (8.9%) of the trainees strongly disagreed that large classes hindered individual interactions with trainers, 37 (11.4%) disagreed, 129 (39.7%) agreed while 113 (34.8%) strongly agreed. From the finding majority of the respondents agreed that, large classes hindered individual interaction (Mean = 3.8, SD = 1.27415). This corresponds with the study by Kanyangale and Sibanda (2021) who posited that interactions between trainee and trainers are greatly impacted by size of classes.

Majority of the respondents 143 (44%) agreed and 140 (43.1%) strongly agreed that there was inadequacy of space to undertake work place experience. On the contrary 13 (4%) strongly disagreed while 16 (4.9%) disagreed. From the finding it can be said that trainees (Mean = 4.1723, SD = 1.0054) had inadequate space to undertake work place experience. This implies that integration of CBET may be hindered as it requires space to practice the skills which rhymes with study by Oviawe et al. (2017) who noted that inadequacy of space affects work place experience and hence integration of CBET.

Table 5 indicated that majority of the trainees 136 (41.8%) felt that lower academic requirements was a constraint, 101 (31.1%) disagreed, 34 (10.5%) agreed while 38 (11.7%) strongly disagreed. From the finding lower academic achievement (Mean = 2.1908, SD = 1.38128) was not seen as a constraint. This concurs with the study by Anaekwe (2020) who noted that lower academic requirements are restrictions in TVET education.

Further information showed that 79 (24.3%) of the respondents strongly disagreed that poor image of TVET by society for instance the notion that TVET creates room for drop outs, 15 (4.6%) disagreed, 87 (26.8%) agreed while 128 (39.4%) strongly agreed. From the finding, majority (Mean = 3.5231, SD = 1.61118) agreed that poor image was a constraint. This implies that CBET programmes are likely to encounter low enrolments which concurs with the study by Olayele (2021) who noted that preconceived negative notion of TVET institution is a great determinant of TVET education success.

Inadequate labour market to accommodate the graduates was cited by the trainees to be constraint as indicated by 177 (54.5%) of the trainees who strongly agreed, 134 (41.2%) respondents who agreed while a few 12 (3.7%) strongly disagreed and 26 (8%) disagreed. This implies that majority of the trainees may not take up CBET courses and this aligns with the study by Postiglione and Tang (2019) who posited that lack of enough space to accommodate graduates is a constraint in TVET institution.

Lastly, findings indicated that there was lack of support services for special needs learners in TVET institutions for instance there seemed to be lack of counseling, literacy and numeracy skills as indicated by 155 (47.7%) respondents who strongly agreed, 134 (41.2%) respondents who agreed, 14 (4.3%) strongly disagreed while 9 (2.8%) disagreed. The majority of respondents agreed that support services to the special needs learners in TVET was lacking (Mean=4.2523, SD=0.97707). This concurs with the study by Munyaradzi et al. (2021) who

noted that support like guide and counselling, literacy and students with disabilities is a great hinderance in TVET education and it being embraced.

Hypotheses Testing

Correlation was carried out between constraints experienced and integration of CBET in TVET institutions ($r = .688$, $p < 0.001$). A significant positive correlation was observed between constraints experienced and integration of CBET in TVET institution. The correlation coefficient between constraints experienced and integration of CBET in TVET institutions was .688 indicating a strong effect size. This correlation indicates that as constraints experienced increases, integration of CBET in TVET institution tends to increase. Table 6 presents the results of the correlation.

Table 6

Pearson Correlation Results between constraints experienced and integration of CBET

Correlations			
		Constraints experienced	Integration of CBET
Constraints Experienced	Pearson Correlation	1	.688**
	Sig. (2-tailed)		.000
	N	280	280
Integration of CBET	Pearson Correlation	.688**	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 constraints experienced and quality education in TVET institutions. However, findings in Table 6 showed that constraints experienced has a strong, positive and significant influence on quality education in TVET institutions ($r = .688$, $p < 0.001$). For the hypothesis test as presented in Table 6, 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 concludes 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 constraints experienced influences quality education in TVET institutions.

Regression Analysis

Regression analysis for workplace experience in provision of quality education data sets was performed.

Table 7
Regression Model Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.388	.144		2.690	.008
Constraints experienced	.295	.070	.306	4.201	.000

It was established that constraints experienced has a positive and significant effect on quality education (β_1=. 295, p=0.000). This implies that an increase in constraints experienced leads to increase in quality education by 0.295 units.

Summary of Findings, Conclusions and Recommendations
This section analyzed, interpreted and discussed descriptive statistics relating to objective of the study which was set to determine the constraints experienced in the integration of CBET approach in the TVET institutions. Amongst the constraints pinpointed by trainers include lack of teaching aids and equipment (Mean = 3.9786, SD = 1.30874). Other constraints involved the role of the trainer and trainee being overlooked (Mean = 3.6357, SD = 1.44535) as presented in Table 4.

For any programme to run efficiently motivated workforce or personnel is needed. On the contrary as demonstrated in Table 4 trainers were being demotivated as indicated by (Mean = 4.1179, SD = 1.05937). Demotivation arose from the intensive efforts that are needed in running the CBET approach form of training. This according to the trainers may have brought about low morale given the same remuneration that is being experienced amid heavy workload. Aspects of learners failing to explain their own capabilities were reported by respondents especially the trainers (Mean = 3.8, SD = 1.4115). CBET approach requires maximum space utilization. This was not the case as demonstrated by majority of the trainers who indicated that it was constraining carrying out practical aspects of training (Mean = 4.1536, SD = 1.13655). This implies that the small and inadequate workshops may not allow all trainees to regularly participate in practical aspects of CBET instruction.

Coupled with inadequate space is the extensive class size which hinders individual interaction with the trainers and training equipment.
Inadequate entrepreneurship skills were cited by respondent to impact on effective CBET instruction. Skills based training goes hand in hand with job market skills. This is necessary to enable the trainees to be able to map in the skills-based market. Without adequate entrepreneurship skills trainers cannot pass the same to the trainees.

A major concern in the CBET instruction as demonstrated in Table 4 is the limited financial support for TVET which cannot enhance quality training. Respondents indicated that there was limited financial support from the industry, the government and other support agencies. Lastly, lower academic requirements set for recruitment into the TVET programs was pointed out to be a constraint. As indicated in the trainees' demographic sections a number of trainees 89 (27.3%) did have lower academic achievement. This may have an impact on trainees who

passed well as they may perceive the CBET training to be for those with low levels of education. Findings in Table 4 indicated that there was limited funding (Mean = 4.3536, SD = 0.935174) thus impacting negatively on the quality of training.

Correlation analysis revealed that there was a statistically significant relationship between constraints experienced and quality education in TVET institutions. This implied that constraints experienced correlate with quality education in TVET institutions. It was further established through regression analysis that constraints experienced was found to have a significant effect on quality education. This gave an implication that an increase in constraints experienced lead to decrease in quality education by 0.295 units.

Conclusions of the Study

The study concluded that handling constraints experienced can positively affect quality education. An increase in handling constraints experienced can lead to increase in quality education. Amongst the constraints pinpointed by trainers included lack of teaching aids and equipment, overlooking the role of the trainer and trainee. Demotivated trainers. There were inadequate workshops thus hampering trainees from regularly participating in practical aspects of CBET instruction. Coupled with inadequate space is the extensive class size which hinders individual interaction with the trainers and training equipment. Inadequate entrepreneurship skills impacted on effective CBET instruction. There was limited financial support for TVET which cannot enhance quality training. Respondents indicated that there was limited financial support from the industry, the government and other support agencies. Lower academic requirements set for recruitment into the TVET programs was creating a negative attitude and perception that CBET was for low achievers.

Recommendation

In order to address constraints experienced in TVET there is need to diversify sources of funding and to explore innovative funding mechanisms to empower the institutions. The national government should increase the budgetary allocation to TVET sector since it is a major pillar in the achievement of Kenyan vision 2030. Other support agencies such as World Bank and JICA should be encouraged to partnership with government in funding TVET institutions in order to allow smooth implementation of CBET and improve quality education. The study recommends TVET institutions to support the development of income generating activities in order to complement their resources. County Government should come out strongly to support and create linkages with the TVET institutions. CBET will require practical and productive trainers, trainees and industrial supervisors in possession of upgraded, updated knowledge and skills that will be effective in a fast-paced technological society. With increased funding, the TVET institution will be able to avail adequate teaching aids, modern infrastructure, motivation and in-servicing of staff thus improving trainees' participation in practical aspects of CBET instruction.

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