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Proposed Framework for Effective Collaboration between TVET Institutions and Industry for Enhancing Employability Skills: Evidence from Selected Institutions in Uganda

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Keywords:
*Collaboration,
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Effective collaborations between TVET institutions and industry play a significant role in the acquisition of technical and soft skills by the learners and in sharing knowledge. This study focused on proposing a framework towards effective collaboration between TVET institutions and the industry to enhance the employability skills of the graduates. The study utilised qualitative responses from 217 trainers, including heads of academic departments, 11 principals of TVET institutions, and 18 industry experts, including operational managers, human resources, and staff. The qualitative data was analysed using thematic analysis supported by Dedoose software. The framework was developed using the Context Input Process Product (CIPP) model. The participants identified key collaborating areas, including: curriculum development, industrial training, training of staff, and sharing training resources. More so, the participants identified facilitating activities that supplement the core mechanisms identified, including seminars, workshops, and cocurricular activities. Nonetheless, the results established that this partnership experiences barriers such as poor communication, varying policies, values, cultures, resource gaps, financial constraints, and limited skills of some trainers. The framework emphasises clear stakeholder involvement, clear collaboration mechanisms and strategies, collaborative resource mobilisation, streamlined communication, reporting and feedback channels, and monitoring and evaluation of collaboration for effectiveness. This framework is a useful resource towards building strong and meaningful partnerships between the TVET institutions and the industry, which facilitates practical training to improve the skills of the trainees, thus meeting the skills requirements of the job market.

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INTRODUCTION**Background of the Study**

Technical and Vocational Education and Training (TVET) plays a critical role in an economy through supporting the creation of skilled and semi-skilled labour utilised across several sectors (Khirotdin et al., 2019). Nugraha et al. (2020) argued that, in addition to technical skills, the labour market places important value on transferable skills such as communication, teamwork, critical thinking, and adaptability, which enhance the employability of TVET graduates. These employability skills are very important to the TVET graduates who are highly expected to possess such skills to meet the job requirements in the industry (Bassah & Noor, 2023; Yorke, 2006; Harvey, 2005). Mante et al. (2025) highlighted that globally, TVET is recognised as a strategic tool for providing training to address the youth unemployment, underemployment, and skills mismatches in the labour market. Nonetheless, this training becomes more practical if the TVET institutions collaborate with the industry players who are potential employers.

Notably, research has shown that building collaborations between the TVET institutions and the industry greatly improves training and learning at the TVET institutions, which enhances the employability of TVET graduates (Singh & Tolessa, 2019). These collaborations refer to partnerships between TVET institutions and industries for equipping TVET trainees with the skills needed upon graduation (Akinola &

Akinwale, 2020). The industry includes individual businesses, groups of firms, chambers of commerce, industry associations, or sector partnerships that provide resources to TVET institutions (Soares, 2010). The collaborations involve the signing of a memorandum of understanding (MOU) to confirm the commitments of both parties and enjoy benefits that include the sharing of resources, matching the skills of TVET trainees with the needs of employers, bridging the technological gap, joint curriculum development, sharing experiences, conducting joint research, and capacity building of staff from industry and TVET institutions (Raihan, 2014). This collaboration has been a global concern over time, even in developed countries.

In European countries such as Germany, Austria, and Spain, vocational institutions collaborate with industries through a dual vocational training system, which is also known as apprenticeships or quality apprenticeships, as referred to by the International Labor Organization (Salas-Velasco, 2024). The dual vocational training system combines firm-based training programs with a vocational training institute component (Young et al., 2019). Kebede et al. (2024) indicated that, in countries such as Germany, Japan, Australia, and South Korea, Vocational and Education Training (VET) institutions have strong frameworks for collaborations with the industry, which is involved in curriculum development, assessment, and quality assurance to ensure both theory and hands-on knowledge and skills required in the industry. Notably, effective collaborations between TVET institutions and industry are

essential for ensuring that TVET trainees acquire both technical skills and soft skills, including communication, critical thinking, teamwork, and adaptability. Maltseva et al. (2025) added that strong collaborations between TVET institutions and the industry facilitate the alignment of curricula with labour market needs and enable trainees to enhance hands-on experience through industrial placements and apprenticeship training opportunities. In Uganda, the TVET policy (2019) and the third National Development Plan (2013) indicate that the collaborations between TVET institutions in Uganda and the industry are informal, fragmented, and weak. The policy also indicates that TVET institutions and the labour market operate independently, leading to reduced interactions in joint activities. This created a need for effective frameworks to guide the partnerships between the TVET institutions and the industry.

Notably, strong frameworks for TVET-industry collaboration have enhanced the relevance of curriculum, facilitated work-based training, promoted skills transfer, and improved the employability of TVET. This confirms the assertions made by Trampusch and Busmeyer (2012) and Grollmann (2008) that countries like Singapore, Japan, South Korea, and Germany have shown how apprenticeship programs and industry-led training frameworks may result in job creation. In Kenya and Rwanda, among other African countries, notable strides towards creating frameworks that connect TVET programs to labour market demands have been taken (World Bank, 2020). The Labour Market Information (2021) and TVET policy (2019) demonstrate that although Uganda, like other developing countries in Sub-Saharan Africa, has tried to promote partnerships, including public-private partnerships and industrial training programs, they are frequently fragmented, inconsistent, and inadequately incorporated into the whole TVET system. As noted by Kintu et al. (2019), the absence of exposure to actual employment situations, a lack of soft skills, and a mismatch between training and industry requirements are among the primary reasons many TVET graduates

still struggle to find employment. The creation of sustainable partnerships is also hampered by obstacles such as a lack of policy consistency, a lack of industry participation, and a lack of institutional capacity (Nikly, 2012).

Despite the numerous studies, there has been limited focus on establishing effective and functional frameworks that enhance collaboration between TVET institutions and the industry. Both TVET laws and policy highlight insufficient and ineffective collaborations between TVET institutions and industry in Uganda, which hinders the development of relevant employability skills among TVET graduates. Furthermore, Uganda lacks a framework that incorporates regional and international best practices (TVET Policy, 2025 & BTVET Act, 2008). Therefore, this paper focused on establishing an effective framework to enhance collaboration between TVET institutions and industry stakeholders to foster practical training and improve employability skills.

LITERATURE REVIEW

The Concept of Collaboration

The term collaboration refers to partnership, strategic alliance, and joint venture (Akinola and Akinwale, 2020; Wollenburg, Mowatt, Ross, & M, 2013). A collaboration is a dynamic arrangement between two or more parties based on satisfying mutually recognised needs (Akinola & Akinwale, 2020). Johnston (1997) describes partnership or collaboration as an untidy business, full of uncharted territories, ambiguities, and institutional complexities. In developed countries like Germany, Austria, Spain, and others, vocational institutions collaborate with industries through a dual vocational training system, which is also known as apprenticeships (Bauer & Gessler, 2016). The dual vocational training system combines firm-based training programs with a vocational training institute component (Solga et al., 2014). This nature of collaboration has been extended to many other countries in Africa and elsewhere, and Uganda has not been left out. However, the adapted apprenticeship

training from Germany and other developed nations has not yet reached institutional maturity in underdeveloped or developing countries like Uganda. This collaboration between VET institutions and industry has led to low unemployment among TVET graduates (Naziz, 2019).

Barriers to Effective Collaborations between TVET Institutions and Industry

Despite the recognised importance of TVET institutions and industry collaboration, these partnerships experience challenges at individual, institutional, systemic, and contextual levels. A descriptive study carried out in Nigeria by Akinola et al. (2020) among the lecturers and industry technical personnel established that TVET-industry collaboration suffers from limited funding, unstable political climate, and the nature of the TVET image portrayed. In South Africa, it was established that conflicting objectives between the TVET institutions and the industry experience, a mismatch between the TVET program curricula and the needs of the industry, and limited opportunities for practical training and non-flexible systems to accommodate all processes, and a lack of capacity, recommending a clear policy framework to combat these challenges (Nthako & Khumalo, 2025; Njengele et al., 2024). More so, other challenges include fast-changing technologies and work demands, which are not reflected in the curricula developed at the TVET institutions, which the industry found to be a very big limitation in their partnerships with the TVET institutions (Dorothy & KHUMALO, 2025).

In Kenya, alliance between industry and TVET institutions, with expectations and poor financial funding (Ayieko et al., 2023). A project report in Cambodia identified that the TVET program was hindered by factors like inadequate funding, limited capacity of the TVET institutions and trainers, quality issues of the TVET program, and unclear processes in the implementation plans of the programs (Naron, 2024). A study in Ethiopia revealed that the partnership between the industry

and the TVET institutions faced a lack of initiative and commitment to start, implement, and facilitate the collaboration (Sawo, 2024).

These barriers are observed at different levels, such as individual, TVET institution level, industry level, and policy-related challenges. At the individual level, trainers' attitudes, fears, and culture affect the formation, process, and implementation of collaborations between TVET institutions and industry (Hargreaves, 1993; Shapiro, 1984). It was also argued that trainers resist collaborations in fear of losing autonomy or exposing their weakness to industry experts, and trainers perceive collaboration activities as additional workload (Harris & Jones, 2018; Mohammad et al., 2015). At the institution level, according to Hargreaves (1994), Obwoye (2013), Wambua, Nyaga and Musyoka (2020), TVET institutions experience multiple internal limitations in facilitating collaborations that include; limited resources both financial and infrastructure to support partners, absence of clear policies and collaboration frameworks, shortage of TVET trainers with relevant industrial exposure, lack of effective communication channels to engage with industry partners which lead to weak institutional engagements with industry and hinder long term collaboration sustainability. On the industry side, collaboration is often undermined by a lack of perceived benefit, whereby employers do not find value in hosting interns or working with institutions when the trainees are insufficiently skilled or outdated in their knowledge (Ashari, 2014). Additionally, fears about trade secrecy and resource constraints (e.g., lack of personnel to mentor interns or serve as part-time instructors) further discourage participation. Purnamawati et al. (2019) noted that some industries lack interest or incentives to participate in collaborative efforts. Where collaboration exists, it is often narrowly focused on student internships rather than broader knowledge exchange or curriculum co-design. Lastly, according to TVET (2023), Obwoye (2013), and Mohammad (2015), at the systemic level, several overarching issues limit collaboration;

The CIPP Model

The CIPP (Context, Input, Process, Product) evaluation model, developed by Stufflebeam, has emerged as a comprehensive framework for assessing the quality and effectiveness of educational programs. Its systematic structure allows evaluators to examine the context (needs and objectives), input (resources and strategy), process (implementation), and product (outcomes), making it highly adaptable across diverse educational settings. Khalif Ashhabul Umam and Iip Saripah (2018) utilised the model to evaluate training programs, revealing its strength in identifying performance gaps and informing practical improvements. Similarly, Suryadi and Erlangga (2021) applied it to internal quality assurance systems, highlighting its capacity to assess institutional effectiveness holistically. In the vocational education context, the model has been applied successfully to guidance and counselling programs, showing both high reliability and measurable impact. Setiawan et al. (2024) and Lianawati et al. (2025) found that its implementation led to improved outcomes.

Rizal et al. (2023) demonstrated that applying the CIPP model to educational-industrial partnerships reveals interrelated strengths and weaknesses, particularly in stakeholder engagement and competency alignment. However, there are limitations; for instance, Ratnaya et al. (2022) noted that the model may not always offer in-depth qualitative insights into underlying issues requiring improvement. Mojibur Rohman and Sutadji (2018) and Xinliang Guo (2025) demonstrated the model's capacity to assess vocational training programs and internships, particularly in aligning educational content with industry standards. Additionally, Fahmi Rizal et al. (2023) emphasised the model's role in uncovering misalignments between institutional outputs and industry expectations, while Huang et al. (2025) highlighted its utility in enhancing

internship design and execution. These studies reinforce the model's relevance in fostering continuous improvement in TVET-industry partnerships. More so, the success of the model depends on careful implementation, stakeholder engagement, and contextual sensitivity. Continuous refinement and active feedback loops are necessary to ensure that collaboration between educational institutions and industries meets dynamic labour market demands (Rizal et al., 2023; Huang et al., 2025). Nonetheless, the CIPP model provides a structured framework for continuous evaluation and improvement, making it a valuable tool for optimising collaborative initiatives in vocational education.

METHODOLOGY

Research Design and Approach

The study utilised a cross-sectional survey using a qualitative approach. The cross-sectional survey research design enhances quick sampling of the population and supports studying different categories for the same attribute at the same point in time to reduce costs (Creswell, 1997). This design helps to understand the prevailing situation in the TVET institutions. The qualitative approach helps obtain the human experiences, which give a deep and clear understanding of the research problem.

Study Population and Sampling Design

The study considered 11 Government-funded and aided vocational training institutions from TVET institutions in the greater districts of Mbarara, Bushenyi, Ntungamo, and Rukungiri, and four industries in Kampala. Due to time and cost constraints. The participants included 217 academic staff, including heads of department who are also academic staff, 11 principals from the selected 11 TVET institutions, and 18 industry experts. Purposive sampling was used to select participants who were perceived to have competent knowledge about the research objective.

Table 1: Sample Size

Category	Target Population size	Sample size	Sampling technique
TVET Trainers and heads of departments,	495	217	Simple random sampling
Principals	11	11	Census
Industry experts	18	18	Census
Total	524	246	

Source: <https://tvet.go.ug/tvet-institutions>

Data Collection and Analysis

Primary qualitative data was obtained using questionnaires with open-ended questions and interview methods to obtain the participants' responses and perceptions about the study constructs. The open-ended questionnaires were given to the respondents, who wrote their opinions and perceptions per question. Qualitative data analysis was conducted using thematic analysis in Dedoose software to obtain themes and codes to explain the study constructs. Data of the same category was assembled, and their similarity was used to create codes, which were combined to form themes explaining research constructs as per the research question.

RESULTS AND INTERPRETATION

Collaboration Mechanisms Identified

The findings established that there are core collaboration mechanisms between the TVET institutions and the industry, as well as engagement activities performed by collaborating parties.

Core Collaboration Mechanism

From the responses of the participants, it was established that the key collaborating areas between TVET institutions and the industry are through curriculum development, industry involvement in practical training, sharing of training resources, and the training of staff for continuous development.

Curriculum Development

The findings show that curriculum development is a critical aspect in the training of learners and equipping them with employable skills that are desired by the industry. A participant noted that TVET institutions and the industry can cooperate through “*curriculum development in relation to industrial needs and developing technology*” (collaboration between TVET institutions and industry.docx, Position: 86-165). Thus, this is an indication that curriculum development is an area that calls for collaboration between the TVET institutions and the industry to ensure the right skills are extended to the learners to match the demands of the employers in the industry.

Practical Training through Internship and Apprenticeship

Practical training in TVET institutions is critical for the development of the employability skills of TVET graduates to fit in the job market. The results show that the industry can significantly influence practical skills training in the TVET institutions regarding the learners, trainers, and the training processes. This is because one participant noted that the industry comes in “*to offer support to the institutes in terms of technical knowledge, support, internship training to their learners, and technical knowledge on new technology and models*” (industry practical training.docx, Position: 249-417). This ensures that the TVET institutions are updated on the new technologies used by the industry to equip the learners with relevant knowledge and skills.

Training Opportunities for Trainers

The results showed that training of trainers at TVET institutions enhances the achievement of proper academic learning at the institutions. A participant from the industry noted that *“modern technology and equipment keep on changing, thus TVET syllabi should be flexible to adapt technology and integration of electronics into mechanical and structural systems”* (industry professional development.docx, Position: 1690-1857). Such changes necessitate trainers to improve their knowledge to match the demands of the industry.

To boost the knowledge and skills of the trainers, participants noted there is a need to participate in skills training and upgrading activities within and outside the TVET institutions. For example, a participant noted that the trainers can improve their skills *“by going to the industries, sending them for refresher courses”* (Principals Continuous professional development.docx, Position: 721-782). For this case, a participant from the industry noted that *“we are ready to receive the instructors to come and work with our technicians, and train them on new technology, we normally invite instructors to come and participate”* (industry professional development.docx, Position: 269-515). This implies that the industry provides the platform for the trainers to learn new knowledge that is prevailing in the industry at the same time. This boosts the practical knowledge of the instructors, which improves their output.

Sharing Training Resources

The training resources at the TVET institutions are obtained from different sources, including the Government through the Ministry of Education and Sports, donors, gifts from the industry, as well as parents' contributions. On this matter, the participants had to say that TVET institutions acquire training resources through *“donors, sometimes trainees also provide,* (principals Training resources.docx, Position: 0-50), and from *“government through capitation grant and*

parents' contribution” (principals Training resources.docx, Position: 518-577). The results show that the TVET institutions receive different training resources from the industry, including human resources, training manuals for different machines, safety protective gears, booklets, machines and equipment, training venues, software and finances. This is evidenced in the responses of the participants, including *“they were given a venue for the training at the resource center with facilities and equipment like a projector and others”* (industry training resources.docx, Position: 443-560).

Other participants noted that TVET institutions are provided with *“finances, booklets”* (industry training resources.docx, Position: 824-969), *“human resource in form of trainers, technical operation of equipment and management of resources, maintenance of equipment and infrastructure”* (industry training resources.docx, Position: 1302-1487). Similarly, other participants noted that the training resources given to the TVET institutions include: *“they provide PPE, they provide play cads”* (principals Training resources.docx, Position: 181-220). These resources are key in the training of learners because they improve the capacity of the TVET institutions to train and equip the trainees with the appropriate skills that match the demand of the job market.

Facilitating Strategies and Mechanisms

Other than the core mechanisms of collaboration, the results noted that TVET institutions and the industry have engagement activities that take place only through existing collaborations, including seminars, workshops, and cocurricular activities.

Seminars and Workshops

The results showed the different ways this collaboration can be improved, stipulating the roles of the different key parties for this collaboration to thrive. For example, one participant noted that *“there is a need to improve*

collaboration between the institution and the industry through organizing workshops/seminars” (collaboration between TVET institutions and industry.docx, Position: 759-879). Similarly, another participant emphasised that *“the TVET institution has to create more time for industries to continue coming here to carry out workshops for better results”* (collaboration between TVET institutions and industry.docx, Position: 620-738). This continuous presence of the industry in the TVET institutions creates new relationships and strengthens already existing collaboration to foster the sharing of knowledge, resources, and skills.

Cocurricular Activities

The results showed that the other mechanism of collaboration between the TVET institutions and the industry is through co-curricular activities such as football and other games deemed appropriate for the parties involved. This is because a participant noted that *“we always collaborate via activities, e.g., playing football with villages”* (collaboration between TVET institutions and industry.docx, Position: 1354-1423). The participant confirmed that the TVET institutions, together with the industry players, organise games and play with the community people. This enhances awareness and provides a platform for sharing knowledge and experiences.

Industry Tours

Through collaborations, it is easy to arrange tours and visits for both TVET learners and staff to the industries. This helps relate theory to the practical engagements in industries. Regarding this, a participant said that, *“industrial tours and training placements expose the trainees to the employers and thereby connectivity between the two parties”* (Document: collaboration between TVET institutions and industry.docx, Position: 1543-1669);

Contracts

Notably, this training has been possible due to the collaborations between TVET institutions and the industry. A participant noted that *“we have a mutual understanding where we serve a percentage of positions for graduates and provide training opportunities, and we are working towards a formal MOU with the specific arrangement with institutions”* (industry practical training.docx, Position: 548-773). This implies that to achieve such a goal, the TVET institutions must create an environment recognizing and allows the industry experts and other key stakeholders to participate in training processes at the TVET institutions.

Barriers to Effective Collaboration for Employability Skills Enhancement

Despite the various achievements and potential of the collaboration between the TVET institutions and the industry, this partnership experiences difficulties, including;

Lack of Proper Communication

The results established that there is a challenge of difficulty in communication and accessibility, as pointed out by one participant who said that they face a hindrance from *“poor network communication, hard to reach areas and places of industries”* (Document: collaboration between TVET institutions and industry.docx, Position: 258-324).

Varying Policies, Values, and Cultures

By nature, the two parties collaborating may have their own cultures and values they uphold and differing policies governing their operations. conflicting values and cultures of the different parties, which result in disruptions and disengagements, as noted by one participant that the collaboration faces a challenge of *“conflicting values and cultures”* (Document: collaboration between TVET institutions and industry.docx, Position: 616-646). More so, one participant noted

that “*some industries have tight policies that would hinder collaborations*” (collaboration between TVET institutions and industry.docx, Position: 2051-2117).

Limited and Unbalanced Resources and Materials

A participant noted that there is a “*resource imbalance during consultative meetings whereby industries send in non-technical staff, yet institutions need those trained in TVET skills*” (collaboration between TVET institutions and industry.docx, Position: 1291-1426). This creates a challenge in balancing the TVET graduate skills and the industry needs into the curriculum, as pointed out by one participant who noted, “*...difficulty in ensuring relevancy, applicability, and balancing academic and industry priorities*” (collaboration between TVET institutions and industry.docx, Position: 196-322).

From the perspective of industrial training, the results from the participants’ responses show that there exists a challenge of inadequate training materials, “*...lack of enough training materials to equip graduates with enough skills*” (collaboration between TVET institutions and industry.docx, Position: 2303-2374). This has made it hard to equip the learners with the required industry skills that meet the desired standards. Additionally, some of the equipment in the industries is old and outdated, as noted by one participant that the tools and machinery are “*obsolete or outdated equipment in most industries*” (collaboration between TVET institutions and industry.docx, Position: 182-231). This reduces the chances of the trainees getting exposed to the new technologies, leading to challenges in using such equipment in places of work during employment.

Financial Constraints

Furthermore, the results identified limited finances as a great challenge in this collaboration between TVET institutions and the industry. This is because a participant noted that there is “*a lack*

of enough funds to assist learners when they are still on training” (collaboration between TVET institutions and industry.docx, Position: 531-601). This makes it hard to cover certain expenses, including transport fares, accommodation, sometimes meals, and other welfare. More so, the results established that some industries expect the trainees to pay them for the industrial training, where a participant noted that “*the industrial stakeholders sometimes need money from the institute....*” (collaboration between TVET institutions and industry.docx, Position: 1551-1617). And because of this, many learners find it hard to get training opportunities in the industries, as a participant noted that “*most industries find it hard to have very many trainees and therefore some end up without getting the on-job training*” (collaboration between TVET institutions and industry.docx, Position: 1823-1939). Therefore, the collaboration should be able to address all these challenges to create a harmonious operating environment to achieve the set objectives for both parties.

Indiscipline from the Trainees

On the unfortunate note, the findings show that the industry stakeholders have noted indiscipline cases related to the interns or trainees whenever they are at their training places. This is because a participant noted that the collaboration between TVET institutions and industry is affected by “*students’ indiscipline cases at their industrial training centers*”. (collaboration between TVET institutions and industry.docx, Position: 1985-2046). This has led the industry stakeholders to develop a negative attitude towards the TVET graduates, as well as refusing to grant the trainees places of internship. This is illustrated in the participant’s responses: “*most industries have a negative attitude towards TVET graduates*” (collaboration between TVET institutions and industry.docx, Position: 1675-1736) and “*lack of willingness by industry managers to give placement*” (collaboration between TVET institutions and industry.docx, Position: 2290-2345).

Limited or Inadequate Skills and Knowledge of the Trainers

When asked about the nature of skills possessed by the trainers at the TVET institutions, the participants had varying opinions about the same. For example, a participant noted that *“their skills meet industrial standards”* (Principals Continuous professional development.docx, Position: 1309-1347). This means that the trainers are qualified enough to facilitate the learners at the TVET institutions. Nonetheless, most of the participants provided negative feedback regarding the skills of the trainers. For instance, one participant noted that *“some trainers still need more skills, hence their skills are not satisfactory”* (Principals Continuous professional development.docx, Position: 35-94). Similarly, another participant argued that the trainers do not have all the required skills and thus they *“require more industrial linkages to meet industry demands and also learn new trends in upcoming technologies”* (Principals Continuous professional development.docx, Position: 311-418). These responses imply that the trainers need to continuously undergo retooling and training to obtain updated knowledge and skills as per the prevailing technology being used in the industry. This builds confidence among the other stakeholders, which improves the employability of the TVET graduates.

The Context-Inputs-Processes-Product evaluation

Context Assessment

This includes scanning the environment, identifying stakeholders, needs, and goals. This helps identify the potential benefits, issues, objectives, etc. participants noted benefits as; *“curriculum development, training trainers and students through industrial training, employing our students.”* (collaboration between TVET institutions and industry.docx, Position: 1448-1539), *“exhibiting the products by industry, especially finished products like windows.”* (collaboration between TVET institutions and

industry.docx, Position: 1509-1590). More so, participants noted challenges as; *“poor network communication, hard to reach areas and places of industries”*, (Document: collaboration between TVET institutions and industry.docx, Position: 258-324), *“conflicting values and cultures”*, (Document: collaboration between TVET institutions and industry.docx, Position: 616-646), *“tight policies that hinder collaborations”*, (collaboration between TVET institutions and industry.docx, Position: 2051-2117), *“resource imbalance, skills mismatch”*, (collaboration between TVET institutions and industry.docx, Position: 1291-1426). *“lack of enough training materials”*, (collaboration between TVET institutions and industry.docx, Position: 2303-2374), *“obsolete or outdated equipment in most industries”*, (collaboration between TVET institutions and industry.docx, Position: 182-231), *“lack of enough funds”*, (collaboration between TVET institutions and industry.docx, Position: 531-601), *“negative attitude towards TVET graduates”*, (collaboration between TVET institutions and industry.docx, Position: 1675-1736” and *“lack of willingness by industry managers to give placement”* (collaboration between TVET institutions and industry.docx, Position: 2290-2345). These benefits and issues provide a basis for understanding the context upon which a functional framework is formed.

Input Evaluation

This phase involves identifying the necessary resources and strategies for the collaboration to exist. To uphold and respect this collaboration, strategies are put in place to implement and guide the collaboration. For example, the results show that some of these collaborations are formulated through *“PPP collaborations, MOUs”* (collaboration between TVET institutions and industry.docx, Position: 272-295). The parties come to an agreement and lay down the duties and rights of the different parties in the collaboration.

Process Evaluation

This phase consists of the implementation of the key areas of collaboration, such as curriculum development, sharing training resources, training opportunities, emphasising communication, and providing feedback. This collaboration is applied to specific areas such as curriculum development, industrial training of the learners, seminars and workshops, industrial study tours, employment after the TVET learners have graduated, and sometimes through coordinated co-curricular activities between the parties. Participants noted these areas as; “*curriculum development, training students through industrial training, employing our students*”, (collaboration between TVET institutions and industry.docx, Position: 1448-1539); “*our institute has MOU with the industries around which helps take up on trainees after their tenure of study*”(collaboration between TVET institutions and industry.docx, Position: 1123-1230); “*industrial tours and training placements expose the trainees to the employers and thereby connectivity between the two parties*” (Document: collaboration between TVET institutions and industry.docx, Position: 1543-1669); “*we always collaborate via activities e.g playing football with villages*”, (Document: collaboration between TVET institutions and industry.docx, Position: 1354-1423).

Product Evaluation

This phase includes the outcomes and impact of the collaboration, including the acquisition of hands-on skills, the development of practical curricula that enhance the employability skills of TVET graduates, leading to improved employment rates. Given this collaboration, numerous paybacks have been realized by either the TVET institutions or the industry as noted by participants, “*the industry plays a great role in providing new technology to instructors and also participate in curriculum development so that new*

technologies can be incorporated in the curriculum so that TVET graduates can be prepared to fit in industry demands,” (collaboration between TVET institutions and industry.docx, Position: 1322-1574), “*guest lectures, industry expert’s talks, case studies and project based learning from the industry*” (collaboration between TVET institutions and industry.docx, Position: 2347-2437), “*industries assist in training students specifically hands-on and improve skilled labour force*”, (collaboration between TVET institutions and industry.docx, Position: 1406-1504), “*they retain them for the jobs, and also be source of referees to other firms for employment*”, (collaboration between TVET institutions and industry.docx, Position: 1825-1898), “*enough skilled labour in the near future*”, (collaboration between TVET institutions and industry.docx, Position: 512-742).

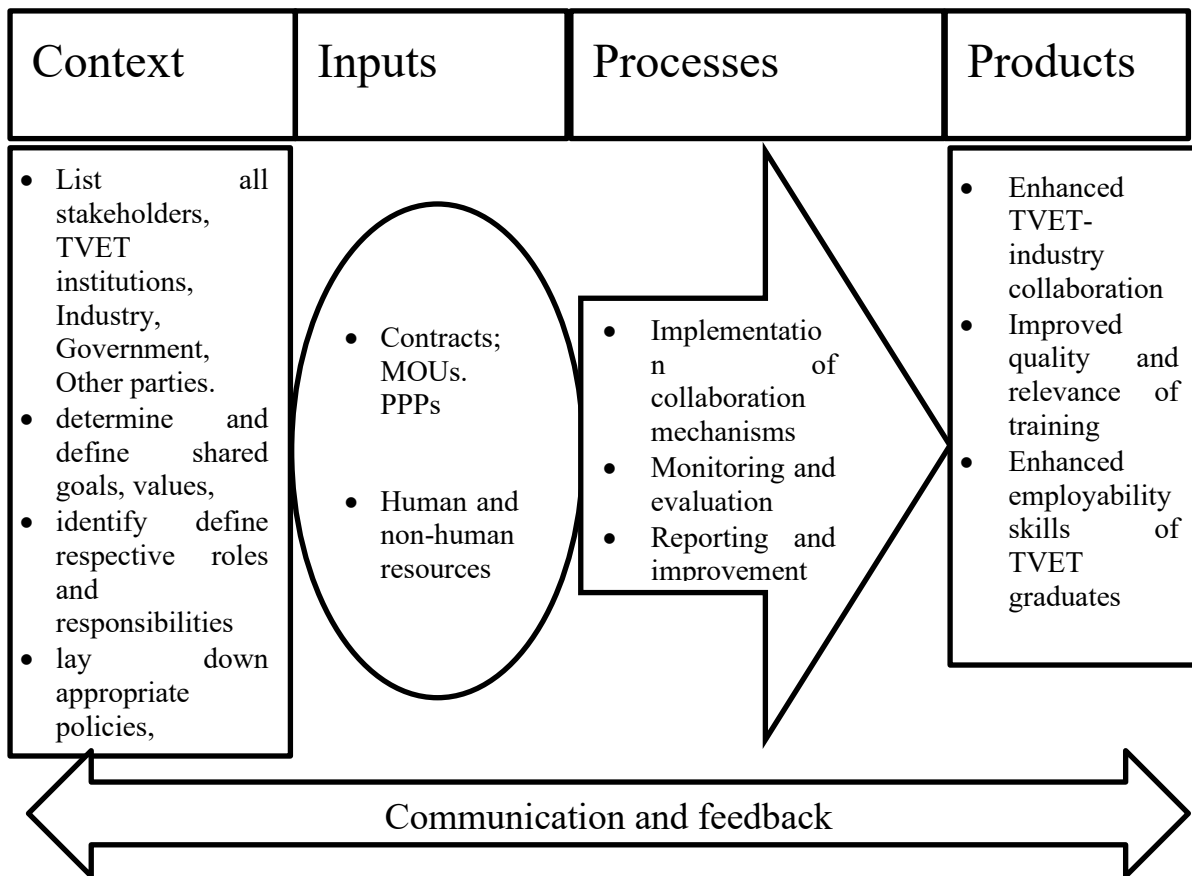
The Proposed Framework for Strengthening TVET-Industry Collaboration

The suggested framework illustrates and presents a result- and system-based strategy to enhance collaboration between TVET institutions and the industry to improve the employability skills of graduates and ensure long-lasting partnerships. The framework is based on a Context-Inputs-Processes-Product (CIPP) logic model to analyse responses from the participants.

Context

The framework begins by emphasising the identification and engagement of all stakeholders, such as the TVET institutions, industry players, government entities, and others. This phase involves: defining the mutual goals, values, and interests among the stakeholders; defining and assigning roles and responsibilities, establishing guiding policies for the collaboration, and then defining the scope of the collaboration to avoid conflicts in implementation.

Figure 1: Activity-Based Framework for Strengthening the TVET Institution-Industry Collaboration.



Inputs

The necessary requirements are identified, mobilised, and coordinated to facilitate the partnership. These include contracts, Memoranda of Understanding (MOUs), and Public-Private Partnerships (PPPs) to formalise the collaboration. More so, both human and non-human resources are mobilised and allocated, including funding, equipment, and materials, among others.

Processes

This phase looks at the implementation activities between the TVET institutions and the industry partners. Some of the processes include: execution of the collaboration mechanisms such as joint curriculum development or review, joint practical training, sharing training resources, and providing professional development for trainers. Additionally, some of the party engaging

activities and initiatives include: seminars, workshops, tours, and extracurricular activities. The framework emphasises monitoring and evaluation of the collaboration processes, initiatives, and outcomes to assess progress and measure effectiveness for collective action. More so, it provides for continuous reporting and improvement based on the monitoring and evaluation information to enhance the formulation of strategies based on the feedback.

Products

Following proper and effective coordination and execution of activities and strategies, the framework presents potential results which include: Enhanced TVET-industry collaboration; Improved quality and relevance of training, and enhanced employability skills of TVET graduates.

Communication and Feedback

The other critical component of the framework is effective communication and feedback. This element ensures that lessons learnt from implementation and evaluation inform policy refinement, reviewing strategies and activities, resource allocation, and improved stakeholder engagement.

Therefore, this proposed framework provides a holistic road map for establishing strong and meaningful partnerships between TVET institutions and industry. It bridges the existing gap between training and employability skills, ensuring that TVET graduates possess the skills, attitudes and competencies required in the labour market.

DISCUSSION OF RESULTS

Collaboration Mechanisms Between the TVET Institutions and the Industry

The results show that collaboration between TVET institutions and the industry is a very important aspect in training and learning in TVET institutions. Effective TVET-industry partnerships enhance curriculum development, training, research, and other activities. For instance, Mulati et al. (2019), Selane & Odeku (2024) and Raihan (2014) established that such collaborations enhance the acquisition of practical skills through the development of practical curricula that are aligned to the market needs and standards to produce employable graduates. Additionally, it was established that there are several activities that take place because of the partnerships between the TVET institutions and the industry, including curriculum development, industrial training, and organised workshops, as well as resource sharing.

More so, results showed that for these collaborations to be sustained, there should be formal partnerships through Memoranda of Understanding (MOUs) and public-private partnerships that clearly stress out roles and

responsibilities of each party. The findings of this study match the findings of Nwoye et al. (2020), Jahonga et al. (2016), and Towip et al. (2021), who established that among several strategies, signing of an MOU to strengthen these partnerships is vital to keep parties committed to their roles and responsibilities and ensure equal efforts towards the collaboration goals and objectives.

Additionally, it should be noted that linking TVET institutions and industry enhances resource sharing between the institutions and the industry, including human resources, equipment, software, and new technologies, as indicated by Mulati et al. (2019) and Jahonga et al. (2016), which enhances practical skills training by balancing training objectives with the industry demands through forming joint curriculum development committees.

Barriers to Effective Collaboration between TVET Institutions and Industry

Despite the numerous advantages, the results established that this collaboration between the TVET institutions and the industry faces different challenges. These include limited funding, inadequate resources, differing priorities of the involved parties, conflicting and contradicting organisational cultures, and poor coordination between the parties. The findings of this study match the results of the study by Mohamad et al. (2023) in Malaysia, who established that collaborations between the TVET institutions and the industry usually face difficulties in coordination and funding as key barriers. Additionally, Arinaitwe et al. (2022) and Garba et al. (2020) identified that the collaboration between the TVET institutions and the industry faces challenges, including differing organisational cultures, a lack of shared understanding of the collaboration objectives, weak industry participation, and a lack of regulatory structures to guide the collaboration. The explanation for such evolving challenges can be the individual party's interests, which may not be fully addressed by the collaboration, where one

party argues that it is the other party benefiting from the collaboration, as opposed to mutual benefits. More so, the results identify communication challenges, a lack of resources, a mismatch of needs, limited practical training, and quality issues. These results match the findings of (Ayieko et al., 2023) in Kenya, (Naron, 2024) in Ethiopia, (Nthako & Khumalo, 2025) in South Africa, and Akinola et al. (2020) in Nigeria.

Proposed Framework

The proposed framework suggested that to build a strong collaboration between the TVET institutions and the industry, certain requirements must be met. These requirements include stakeholder analysis, communication and conflict resolution channels, policies and regulations, clear mechanisms and strategies for implementation, resources, monitoring, and evaluation. These results match the findings of Ayieko et al. (2023) and Njengele et al. (2024), who established that stakeholder support, responsibility, and communication are key elements that facilitate building strong collaborations between the TVET institutions and the industry. Furthermore, policies, regulations, resources, and government support are other important aspects, as supported by studies by Siddiky & Uh (2020), Makgato & Moila (2019), and Subri et al. (2022).

Notably, for this collaboration to be successful, the framework recommends continuous monitoring and evaluation at different levels to measure performance and provide feedback to the concerned parties. These findings agree with the results of Winberg & Nomgauza (2023), who established that it is important to monitor and evaluate performance to ensure that parties are performing as stipulated in the agreements and that expected outcomes are being achieved.

Notably, the framework proposes the signing of agreements between collaborating parties to establish binding roles and responsibilities. These results match the findings of Mustafa et al. (2022) whose study about the importance of the TVET institution – Industry partnership, identified and

suggested some strategies to support enhancement of this partnership such as coming up with a clear Memorandum of Understanding (MOU) which improves shared understanding as well as breaking the cultural barriers harbored in the values and cultures of the different parties involved in the partnership.

CONCLUSIONS

Employability skills of the TVET graduates remain a concern for the industry players who consume their services. One of the strategies to ensure that these graduates acquire the appropriate skills is through the TVET-industry collaboration. This paper is intended to establish a framework to strengthen the partnership between the TVET institutions and the industry. The findings recognised key TVET-Industry collaboration areas, including curriculum development, practical training of learners, sharing of training resources, and training opportunities for staff. More so, the results showed engagement activities through which the TVET institutions can collaborate with industry, including seminars, workshops, and co-curricular activities. These areas are emphasised through Memoranda of Understanding and Public-Private Partnerships as well as short-term contracts.

The suggested framework proposes that to build strong collaboration between the TVET institutions and the industry, all key stakeholders must be identified and engaged to establish roles, responsibilities, and interests, the shared goals and values must be defined, and guiding policies for the collaboration to work. For this to work out clearly, the framework emphasises the signing of binding contracts such as Memoranda of Understanding and Public-Private Partnerships. established key operational aspects that must be considered to build a strong collaboration between TVET institutions and industry. More clearly, the framework recognises the need for effective communication and feedback, and continuous monitoring and evaluation to identify and resolve issues. communication, conflict resolution, monitoring, and evaluation.

This framework contributes towards the implementation of the TVET policy of 2019 and the TVET Act of 2025, which aim at enhancing the employability skills of graduates, the quality of learning, and supporting critical collaborations with the stakeholders. It provides control over issues like poor communication, conflicting cultures and values, limited knowledge of trainers, limited resources, poor coordination, and indiscipline that hinder attaining collaboration goals. Furthermore, the findings contribute to the existing literature regarding collaboration between TVET institutions and the industry and the associated factors and areas.

Policy Recommendations

The results highlight the need for establishing Liaison offices. This is because some participants noted that there is a communication gap between institutions and industry, implying a lack of communication between industry and the TVET institutions. These liaison offices shall offer support in coordinating and communicating with the industry regarding internships, job placements, guest lectures, workshops, and other education-related projects that require industrial input. This ensures a systematic monitoring process and shared feedback mechanisms.

The government should strengthen the TVET policy and programs towards creating, enhancing, and supporting the collaborations between the TVET institutions and the industry players, especially small enterprises that are unable to facilitate trainers during internships. This support can come in the form of materials, equipment, training, and funding.

REFERENCES

- Akinola, A. S. & Akinwale, S. (2020). Challenges facing TVET institution-industry collaboration in skills acquisition for sustainable growth. *Vocational and Technical Journal*.
- Arinaitwe, D., Muwonge, C., & Kintu, D. (2022). Challenges in TVET-industry collaboration in Uganda. *Journal of Vocational Education Studies*, 4(1), 45–58.
- Ashari, Z. H. (2014). They are determining the Issues and concerns in Malaysia's TVET Agency -Industry Engagement. 10th AASVET Conference 2014, 1–7.
- Ayieko, V. O., Okemwa, P., & Muthoka, K. (2023). Enhancing TVET Institutions through Robust Partnerships and Industrial Collaborations in Kakamega County, Kenya.
- Bassah, E. A., & Noor, N. M. (2023). Enhancing employability skills among TVET graduates: Challenges and opportunities. *International Journal of Vocational and Technical Education*, 15(2), 33–47.
- Bauer, W., & Gessler, M. (2016). Dual vocational education and training Systems in Europe: lessons learned from Austria, Germany, and Switzerland. *Vocational education and training in sub-Saharan Africa: Current situation and development*, 48-66.
- BTJET Act Uganda (2008). The Business, Technical, Vocational Education and Training Act, 2008. <https://judiciary.go.ug/files/downloads/ActBusiness,Technical,Vocational%20Education%20andTrainingAct.pdf>.
- BTJET. Strategic Plan (Uganda 2011-2020). Skilling Uganda: <https://www.skillsforemployment.org/knowledge-product-detail/6766>.
- Creswell. (1997). Scholarly writing, research proposals, and reports.
- Fahmi Rizal, S., Hidayat, A., & Suyadi, S. (2023). Using the CIPP model to evaluate TVET-industry collaborations. *Journal of Educational Assessment and Evaluation*, 7(4), 52–68.
- Garba, A., Ismail, M., & Ahmad, A. (2020). Industry collaboration and skills training in TVET: Challenges and policy implications.

- Journal of Technical Education and Training, 12(3), 150–158.
- Guo, X. (2025). Application of the CIPP model in vocational internship program evaluation. *International Journal of Vocational Education Research*, 13(1), 23–39.
- Hargreaves, A. (1994). *Changing teachers, changing times: Teachers' work and culture in the postmodern age*. Teachers College Press.
- Harris, A., & Jones, M. (2018). Why context matters: A comparative perspective on education reform and policy implementation.
- Huang, P., Li, Y., & Zhang, H. (2025). Improving TVET internships through systematic evaluation: The role of the CIPP model. *Asian Journal of Technical Education*, 9(2), 71–85.
- Jahonga, J., Nyongesa, W. J., & Simiyu, J. (2016). Role of industrial attachment in the acquisition of employable skills among technical training institute trainees in Western Kenya. *International Journal of Academic Research in Progressive Education and Development*, 5(3), 222–230. <https://doi.org/10.6007/IJARPED/v5-i3/2176>
- Kebede, A., Asgedom, A., & Asfaw, A. (2024). Is linking technical and vocational training with industry a bridge to employability? Lessons from a literature review for Ethiopia. *Cogent Education*, 11(1), 2406721. <https://doi.org/10.1080/2331186X.2024.2406721>
- Khalif Ashhabul Umam, & Saripah, I. (2018). Evaluating educational training programs using the CIPP model. *Jurnal Evaluasi Pendidikan*, 19(2), 134–145.
- Khurotdin, R. K., Ali, J. M., Nordin, N., & Mustaffa, S. E. S. (2019). Intensifying the employability rate of technical vocational education and training (TVET) graduates: A review of tracer study report. *Journal of Industry, Engineering, and Innovation*, 1(1).
- Kintu, D., Kitainge, K., & Ferej, A. (2019). Employers' perceptions about the employability of technical, vocational education and training graduates in Uganda.
- Lianawati, L., Kusumawati, E., & Prasetyo, W. (2025). Enhancing guidance and counseling outcomes in vocational schools through CIPP evaluation. *Journal of Educational Development Research*, 11(1), 88–101.
- Maltseva, V., Nikitin, M., Mehrotra, S., & Li, J. (2025). Private-Public Partnership in TVET: An Overview of Current Practices in the BRICS Countries. *Вопросы образования*, (3), 92-117.
- Mante, D. A., Okoye, M. C., & Hui, X. (2025). A systematic literature review of technical and vocational education and training (TVET) systems: an insight from China and sub-Saharan Africa. *Pedagogy and Psychology of Sport*, 23, 64486-64486.
- Mohamad, N., Affandi, H. M., Sohimi, N. E., Kamal, M. F. M., Herrera, L. M., Zulkifli, R. M., & Abas, N. H. (2023). Exploring TVET institution directors' barriers in managing Malaysian TVET institutions-industry partnership. *Journal of Technical Education and Training*, 15(1), 277-287.
- Mulati, T. W., Barasa, P. N., & Simiyu, J. (2019). Collaboration between industry and training institutions in enhancing skills acquisition among technical trainees in Kenya. *European Journal of Education Studies*, 6(4), 82–94. <https://doi.org/10.5281/zenodo.2658422>
- Mustapha, A., Ahmad, N., & Rahman, H. A. (2023). Strengthening TVET–industry collaboration for IR4.0 skill development. *International Journal of Vocational Education and Training Research*, 9(3), 45–59.
- Naziz, A. (2019). Collaboration for transition between TVET and university: a proposal.

- International Journal of Sustainability in Higher Education, 20(8), 1428-1443.
- Nikly, T. (2012). Public-private partnership (PPP) in the technical vocational education and training (TVET) sector in Bangladesh: Challenges and prospects.
- Nthako, D., & Khumalo, S. S. (2025). Towards a Strategic Framework for Effective TVET-Industry Partnership: Pathways to Sustainable Development. *HOLISTICA Journal of Business and Public Administration*, 16(1), 73-88.
- Nugraha, H. D., Kencanasari, R. V., Komari, R. N., & Kasda, K. (2020). Employability skills in technical vocational education and training (TVET). *INVOTEC*, 16(1), 1-10.
- Nwoye, E. G., Ndubuisi, B. N., Omale, B. A., & Nengak, I. S. (2020). Strategies for Enhancing TVET-Industrial Linkage for Skill Training and Sustainable National Development. *Journal of the Association of Vocational and Technical Educators of Nigeria*, 26(1).
- Raihan, M. A. (2014). Collaboration between TVET institutions and industries in Bangladesh to enhance employability skills. *International Journal of Engineering and Technical Research*, 2(10), 50-55.
- Ratnaya, M., Lestari, I., & Anwar, R. (2022). Evaluating vocational programs using the CIPP model: Strengths and limitations. *Indonesian Journal of Educational Evaluation*, 10(2), 118-129.
- Rizal, R., Suyadi, S., & Hidayat, A. (2023). Using the CIPP model to evaluate TVET-industry collaborations. *Journal of Educational Assessment and Evaluation*, 7(4), 52-68.
- Rohman, M., & Sutadji, E. (2018). CIPP model implementation in assessing vocational training effectiveness. *Journal of Technical and Vocational Education*, 5(3), 112-121.
- Salas-Velasco, M. (2024). Vocational education and training systems in Europe: A cluster analysis. *European Educational Research Journal*, 23(3), 434-449.
- Selane, C., & Odeku, K. O. (2024). An analysis of how TVET is playing a significant role in fostering students' skills and competencies in South Africa. *Journal of Educational and Social Research*, 14(3), 293-305.
- Setiawan, H., Rachmadtullah, R., & Rahayu, Y. (2024). Reliability of the CIPP model in vocational education program evaluation. *Journal of Education Research*, 11(1), 77-89.
- Siddiky, M. R., & Uh, S. B. (2020). Linking TVET with industries in Bangladesh: Need for supportive policies and an approach to TVET. *Journal of Technical Education and Training*, 12(3), 1-21.
- Singh, B., & Tolessa, M. B. (2019). TVET-industry linkage and collaboration in Ethiopia: A necessity for improving employability skills. *International Research Journal of Engineering and Technology*, 6(11), 3526-3532.
- Solga, H., Protsch, P., Ebner, C., & Brzinsky-Fay, C. (2014). The German vocational education and training system: Its institutional configuration, strengths, and challenges (No. SP I 2014-502). WZB Discussion Paper.
- Suryadi, R., & Erlangga, H. (2021). Evaluating internal quality assurance in higher education using the CIPP model. *Quality Assurance in Education*, 29(4), 456-471.
- Technical Vocational Education Training Website (2025). TVET Operations and Management. <https://tvet.go.ug/>.
- Young, I., Young, I., & Roemer, T. (2019). Apprenticeship: Lessons from the German dual studies model of vocational education and training.