



Assessing Industry Employer Involvement in Enhancing Quality of Training in Ugandan TVET Colleges

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study assessed the role of industry employer involvement in enhancing the quality of Technical and Vocational Education and Training outcomes in public colleges in Uganda. Grounded in Human Capital Theory, the study adopted a mixed methods design and stratified random sampling with a lottery and purposive approaches. A closed-ended questionnaire was used to collect data from 102 trainers, and was analysed using SPSS version 25 to generate both zero-order correlations and regression results. Interviews and focus group discussions facilitated data collection from 13 college managers, 8 industry managers, and 68 trainers respectively. The findings from quantitative data show that industry employers enhanced quality of TVET through curriculum development (mean = 3.8056, SD = 0.98780) and review (mean = 3.7222, SD = 1.06443) to align training with labour market needs. The correlation analysis revealed a significant positive association between industry employer involvement and TVET outcomes ($r=0.623$; $P<0.01$) and a significant positive influence on

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TVET outcomes (Beta=0.623; P<0.01). Qualitative findings analyzed in NVivo 15 revealed five themes of employer participation; industrial attachments, curriculum development and review, partnerships with practitioners and professional bodies, collaborative community-based training projects, and awareness creation. The study concludes that employer involvement in TVET activities substantially enhances quality outcomes in Ugandan TVET colleges. However, involvement remains uneven, with limited employer contributions to infrastructure, scholarships, and governance structures. The study recommends clear policy frameworks and guidelines that encourage the establishment of formal partnership agreements, addressing systemic and policy challenges and improving communication and collaboration between TVET institutions and industry.

Keywords: Employability; industry employer involvement; public TVET colleges; quality of TVET.

1. INTRODUCTION

The major objective of Technical Vocational Education and Training (TVET) is to offer skills and knowledge, support and promote creativity and entrepreneurship to create employment opportunities (Akunda et al., 2024). Akunda et al. asserts that TVET encompasses studying various aspects such as technologies and science, providing youth the chance to acquire practical skills, knowledge and attitude (competencies) for several jobs in the productive fields. The integration of Quality Assurance (QA) systems in TVET institutions has been widely recognized for its role in improving the quality of education and training, and ensuring alignment with industry demands (Odjo et al., 2024; Asiyai, 2022). According to International Labour Organisation (ILO, 2020), industry partnerships ensure that training is relevant, up-to-date, and aligned with real-world job requirements. Organisation for Economic Corporation and Development (OECD, 2019) reinforces this view, highlighting that, countries with strong employer engagement in vocational education - such as Germany, Switzerland, and Australia-consistently report high employment rates among graduates and stronger labour market alignment. The main assertion in this paper, is not about the critical role TVET plays in equipping individuals with skills and creating opportunities for employment, but the emphasis is how effectively employers are involved in enhancing the quality of training in public TVET colleges to make them responsive to the labour market needs. Mohamed (2023) argues that employer involvement in TVET, is crucial for curriculum relevance and soliciting their support. The East African Community (EAC) Vision 2050 guides partner states on strategies to increase human capital, reduce unemployment, ensure high levels of industrialization, and competitiveness (EAC., 2016). The low levels of these drivers of development are attributed to the mismatch

between training and labour market demands particularly for skills development (Kobugabe, 2024; Akunda et al, 2024).

In Uganda, TVET is delivered through Skills Development Centers, Technical Vocational Institutes, and Technical Colleges, to develop a pool of artisans, craftsmen and technicians respectively. To align these institutions with the needs of employers, the Ugandan government developed an employer-led TVET policy (GOU, 2019), that ensures quality and relevance of education and training. The policy was to facilitate legal reforms to allow employer participation, and it stresses a sixty six percent (66%) portion of council and board members of all TVET institutions to be drawn from employers. However, most employer collaborations and involvement in Uganda, remain informal, short-term, and not integrated into the strategic planning of institutions (Kintu et al., 2019). The Ugandan TVET policy also provides for a TVET system that ensures well-coordinated delivery, assessment and regulation of TVET, and advocates for a quality assurance body and framework. Nonetheless, the regulations to facilitate establishment of an employer led regulatory body, and a quality assurance framework were not made (Mutebi & Ferej, 2023). Afeti and Adubra (2020) observe that while policy frameworks advocate for employer engagement, implementation is frequently ad hoc, and industry contributions to curriculum or assessment remain minimal. The TVET sector, therefore, continue to face systemic challenges, including obsolete curricula, limited access to modern equipment, insufficient practical training, and weak involvement of employers in the education and training process (ILO, 2020; Namatovu et al., 2023). These deficiencies highlighted by scholars, contribute to a persistent skills mismatch between TVET outcomes and the needs of industry. Therefore, this study was carried out to assess the industry-employer

involvement in enhancing the quality of TVET outcomes in Uganda. By assessing the industry-employer involvement in enhancing the quality of TVET outcomes in selected public TVET colleges, existing strengths, weaknesses, and areas for improvement were identified. The study contributes to national efforts aimed at strengthening collaborative and partnerships between TVET institutions and employers, that can make TVET more responsive to Uganda's socio-economic development goals.

This study is grounded in Human Capital Theory (HCT), a foundational concept in education economics (Becker, 1964). The theory posits that individuals and societies derive economic value from investing in education, training, health, and experience - collectively referred to as "human capital." Human Capital Theory views education not merely as a social good, but as an economic investment with measurable returns. These returns include higher wages, increased employment prospects, and enhanced national productivity (Ziderman, 2018). From this perspective, the alignment of TVET with labor market needs, through industry, employer involvement, is critical in ensuring that the investment in education yields meaningful outcomes. Compared to other learning and development theories such as Experiential Learning Theory (Kolb, 1984), or Social Learning Theory (Bandura, 1977), Human Capital Theory offers a more direct economic justification for aligning education with industry demands. HCT provides a robust policy and planning framework that connects training outputs to workforce productivity and national development (OECD, 2019). Because of its usefulness for policymakers, planners, and institutional managers concerned with the economic efficiency and labor market responsiveness, the theory supports strategic workforce development and links education investment to national economic growth. This is in line with Uganda's Vision 2040 (GoU, 2013), and National Development Plan IV (GoU, 2025).

Research underscores the mutual dependency between TVET institutions and industry. For instance, Kintu et al. (2019) found that work place learning and industrial attachment facilitated smooth transition of Uganda's TVET graduates to the world of work. Similarly, research by Moses and Liu (2022) in Kampala,

Uganda, highlights collaborative practices where industry supported workshop practices, provided training materials, and covered subsistence allowances for student attachments. As asserted by Mohamed (2023), this kind of employer participation in TVET is very crucial, and yields better outcomes.

In Uganda, Namatovu et al. (2023), found that institutions that involved employers in reviewing training content observed higher student performance in internships and improved employment outcomes. This example reflects the tangible benefits of structured industry engagement in improving training quality and educational outcomes. Despite the benefits of involving employers in TVET, several barriers hinder the effectiveness of industry-TVET institutions partnerships. Moses and Liu (2022), cite the reluctance of small and medium enterprises (SMEs) to host interns due to limited resources, insurance challenges, and time constraints. In addition, a report by Ministry of Education and Sports, Uganda (MoES, 2022), highlights bureaucratic hurdles and funding limitations that restrict external engagements as some of the challenges faced by institutional leaders. To address some of these challenges, researchers suggest establishing formal frameworks for engagement, including Memoranda of Understanding (MoUs), industry advisory boards, and co-managed training centers (Ziderman, 2018; UNESCO-UNEVOC, 2022).

The reviewed literature affirmed the significant role industry employers play in enhancing the quality of TVET outcomes, particularly in terms of curriculum relevance, quality, and graduate employability. While literature reviewed offered valuable insights, there is limited empirical evidence assessing the industry employer involvement in Uganda's public TVET colleges for quality outcomes. Specifically, few studies have explored the scope, quality, and impact of such employer involvement and collaboration from a multi-stakeholder perspective.

The main objective of this study was to assess the extent and effectiveness of industry employer involvement in enhancing the quality of TVET outcomes in public colleges in Uganda. Specifically, the study sought to:

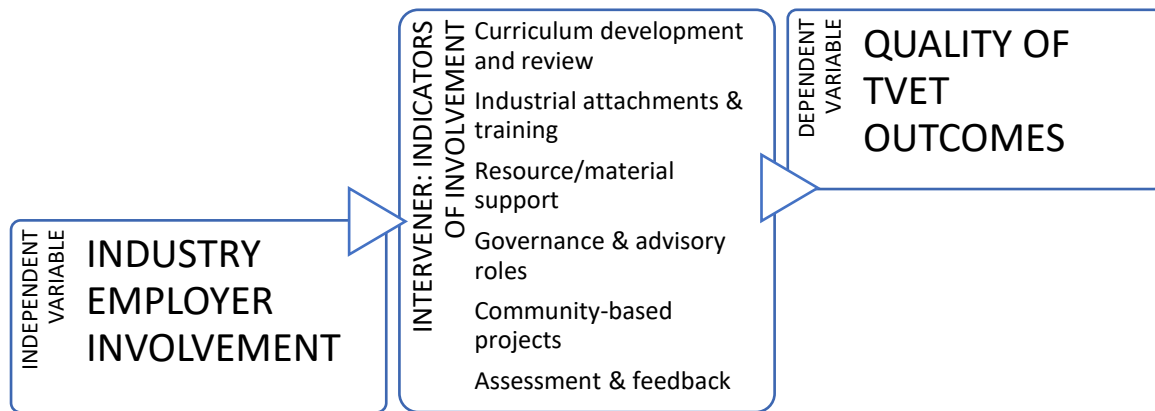


Fig. 1. Conceptual framework

1. Examine the forms of employer involvement in curriculum development, review, and delivery in public TVET colleges.
2. Assess the influence of industry employer participation in industrial attachments, workplace training, and partnerships on the employability of TVET graduates.
3. Analyze the relationship between employer involvement and quality TVET outcomes using both quantitative and qualitative evidence.
4. Identify the challenges and barriers that limit sustainable collaboration between industry employers and public TVET colleges.
5. Recommend policy and institutional measures to strengthen employer–TVET linkages in line with national development priorities, including Uganda Vision 2040 and the Fourth National Development Plan (NDP IV).

To measure how effectively employers are involved in TVET, this study considered the indicators in Fig. 1 the extent to which employers participate in curriculum development; the provision of workplace-based training opportunities for students; employers' contribution of material support such as training equipment; involvement in institutional governance through advisory boards; participation in community-based awareness and training projects; and employers' role in assessing trainee performance and providing feedback to institutions. Together, these indicators provided a comprehensive framework for evaluating both the depth and sustainability of

industry–institution linkages in Ugandan TVET colleges.

2. METHODOLOGY

This current study is grounded in the pragmatic philosophical research paradigm, which supports a practical and outcome-oriented approach to understanding complex real-world problems (Sohail & Salter, 2022). Pragmatism allowed for methodological flexibility, making it appropriate for a study that aimed at assessing the industry employer involvement in enhancing the quality of TVET outcomes in Ugandan colleges. By adopting a mixed-methods design, specifically a convergent parallel design, the study collected both qualitative and quantitative data concurrently. Quantitative data was used to assess the extent of industry employer involvement and its effectiveness on TVET outcomes, while qualitative data helped to uncover the contextual realities, challenges, and perceptions surrounding these engagements.

The study was conducted in five public TVET colleges purposively selected. Given the study area, “assessing the industry employer involvement in enhancing quality of TVET outcomes” the study identified the key study variables of interest as attributes of quality TVET outcomes. This study defines a variable as the characteristic or attribute of an individual, group, educational system, or the environment that is of interest in the research study. The independent variable was identified as ‘industry employer involvement’, and the resultant measure that depends on the effectiveness of industry employer involvement was ‘TVET outcomes’ defined by employability skills.

Primary quantitative data was collected using a closed-ended questionnaire anchored on a 5-point Likert scale ranging from 1-strongly disagree to 5-strongly agree, from a sample of 102 trainers. Qualitative data was collected by use of interviews and focus group discussions from 13 college managers, 8 industry managers, and 34 trainers respectively. Proportionate stratified random sampling method was employed to ensure equal representation of all the five TVET colleges considered in the study, but individual trainers to participate were selected using lottery sampling technique. All participants for interviews and focus group discussions were purposively selected due to their role in ensuring quality TVET outcomes. Purposive sampling ensured inclusion of regionally diverse institutions while random lottery eliminated selection bias. Data collection instruments were all in English due to high level industry-institutional stakeholders targeted, with items on the extent to which employers are involved in enhancing the quality of TVET outcomes.

Quantitative data was then analyzed using SPSS version 25, to generate both correlations and regression results. Qualitative data were analyzed using NVivo 15 software. To ensure validity, inter-coder reliability checks were conducted, achieving an agreement score above 0.80, which confirms consistency in coding and theme generation.

3. RESULTS AND DISCUSSION

This section presents the study results on descriptive statistics of industry employer involvement in enhancing the quality of TVET outcomes, correlation and linear regression results, qualitative results as well as the discussion of the findings.

3.1 Descriptive Statistics

The analysis of the trainers' descriptive responses offered a clearer picture of existing linkages, areas of employer contribution, and potential gaps in industry employer involvement that could impact the quality, relevance and effectiveness of TVET in public colleges. The findings in Table 1 above revealed a mean range of 3.8056 - 3.0563, and a standard deviation range of 1.19859 - 0.84649 across the items presented. According to the rating scale used in this study, this indicates that, on average, trainers agreed with the items related to industry employer involvement in TVET, though there were variations in their level of agreement. A moderate-to-high level of perceived involvement of employers in supporting and enhancing the quality of TVET outcomes in public TVET colleges is suggested by these findings. Analysing individual items, trainers reported strong agreement with several key areas of industry involvement. These include the active participation of employers in the development (mean = 3.8056, SD = 0.98780), and review (mean = 3.7222, SD = 1.06443) of curriculum to align training with labour market needs. Industry-employers were also seen to be actively involved in delivering workplace-based training (mean = 3.6806, SD = 0.85294), and colleges were perceived to maintain linkages with enterprises and companies (mean = 3.6250, SD = 0.84649). Trainers also agreed that they regularly gather information on industry trends and future workforce needs (mean = 3.5833, SD = 0.91544), and that employers participate in assessing curriculum implementation (mean = 3.5278, SD = 1.08734) and providing occupational profiles and standards (mean = 3.4722, SD = 0.91885).

Table 1. Descriptive statistics of employer involvement - Trainers' Responses (N=102)

Employer Involvement	Mean	SD
Curriculum development to meet the labour market demand	3.8056	.98780
Periodic curriculum review	3.7222	1.064434
Training delivery in the workplace (Industrial training, internships)	3.6806	.85294
College linkages with enterprises and companies	3.6250	.84649
Information gathering on future skills needs	3.5833	.91544
Assessing curricular implementation and giving feedback	3.5278	1.08734
Occupational profiles and standards	3.4722	.91885
Governance and advisory committees	3.4225	.98813
Training delivery in the colleges	3.4028	1.05697
Exchange programs for trainees	3.3194	1.01851
Financial and material support (equipment, labs and scholarships)	3.1667	1.19859
Exchange programs for trainers	3.0563	1.03308
Grand Mean and SD	3.4727	1.00756

Source: Primary data, 2024

However, the data also revealed areas where respondents were less certain or less aware of employer involvement. These included participation in advisory committees for sector-specific training (mean = 3.4225, SD = 0.98813), direct involvement in training delivery within the colleges (mean = 3.4028, SD = 1.05697), and provision of workplaces and equipment for practice (mean = 3.3611, SD = 1.12970). Trainers also expressed uncertainty about whether there is effort to seek exchange programs for trainees (mean = 3.3194, SD = 1.01851), and whether employers contribute financial resources, such as scholarships and bursaries (mean = 3.1667, SD = 1.19859), or support trainer exchange programs (mean = 3.0563, SD = 1.03308). These particular findings could imply that there may be lack of information flow within colleges or indeed the employers are less involved in these areas. Overall, findings highlighted a recognizable level of industry engagement in some key aspects of TVET, especially those related to curriculum design and work-based training. Nonetheless, the lower awareness or agreement on other items suggested gaps in deeper, more sustainable involvement and partnerships, such as infrastructure sharing, financial support, and long-term collaborative planning. This further points to a need for enhanced coordination mechanisms between TVET institutions and industry to broaden the scope of employer participation, ensuring that TVET is holistically supported and better aligned with evolving labour market demands.

Correlation results were generated to examine the association Industry-Employer Involvement in TVET (independent variable) and TVET Outcomes (dependent variable). The correlation results are indicated in Table 2 below. The findings in the Table, show that there is a significant positive association between Industry Employer Involvement and TVET Outcomes ($r=0.623$; $P<0.01$). This implies that Industry Employer Involvement and TVET outcomes move in one direction. In other words, changes in Industry Employer Involvement are associated with changes in the quality of TVET outcomes.

To establish the effectiveness of Industry Employer Involvement on TVET outcomes, regression analysis was conducted and the results are presented in Table 3. The findings indicate that effective industry employer involvement has a significant positive influence on TVET outcomes ($Beta=0.623$; $P<0.01$). This implies that every unit change in Industry Employer Involvement, results into an improvement in the TVET outcomes. The findings further indicate that the predictor variable (Employer Involvement) account for 37.9% ($Adjusted R^2=.379$) in TVET outcomes and the remaining percentage of 62.1% could be explained by other factors that were not considered in this study.

TVET outcome improves if employers are fully involved in; the curriculum development and review as this helps in specifying key skill sets (hard and soft) necessary for trainees, and updated technology so as to meet the market standards. The study also confirms that involving employers in the training delivery in the college and at the work place contributes significantly in improving TVET outcomes. In the same way, the practice of linking colleges to industries/enterprises, gathering information on future needs of the industry regularly, seeking for exchange programs for trainees between the college and the industry, providing upskilling programs for trainers, employers offering their workplaces and equipment for learners to practice while at college, employers contributing funding resources to TVET training delivery such as scholarships and bursaries, greatly improve the quality of employability skills trainees acquire from TVET institutions.

3.2 Qualitative Findings

Analysis of interview and focus group discussion responses revealed five major themes that reflected how industry employers were effectively involved in enhancing TVET outcomes. These included: Industrial attachments; Curriculum development, review and delivery; Partnerships with practitioners and professional bodies; Collaborative community-based training projects; and Awareness creation and outreach engagement.

Table 2. Correlation results

Variable	Mean	SD	1	2
Industry Employer Involvement (1)	3.4727	.68715	1	.623**
TVET Outcomes (2)	3.7514	.54999	.623**	1

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

Source: Primary data, 2024

Table 3. Linear regression results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	2.020	.265		7.626	.000					
	Industry Employer Involvement	.499	.075	.623	6.662	.000	.623	.623	.623	1.000	1.000
	R		.623								
	R ²		.388								
	Adjusted R ²		.379								
	Std. Error of the Estimate		.433								
	F		44.385								
	Sig		.000								
a. Dependent Variable: Educational outcomes											

Trainers emphasized that industrial training and placement experiences, offered students direct exposure to workplace practices. They also noted that the partnerships with industry fostered collaboration with practitioners who often assumed partial supervisory roles during internships.

A trainer noted: *“In most cases, what was on the ground was through industrial placement. We always reached out to companies for placement spaces for our learners.”*

Another added: *“Every end of the year, we normally encouraged our students to go for industrial training... lecturers would go there and supervise them”.*

Another trainer said: *“One way to ensure that industrial practitioners came in, was by inviting them to give special lectures to provide our students with an overview.”*he continued. *“During curriculum review, we always invited the employers or associations to participate or come and talk to the students.”*

These responses affirmed the findings from the descriptive statistics that employers were effectively involved in curriculum development, review and implementation.

The interview responses by college managers revealed a growing reliance on institutional structures such as Industrial Liaison Officers, Industrial Training Coordinators, and Industry-Awareness Committees.

“We moved to a stage of having a committee called the Industrial Training and Awareness Committee... so that the industrial training was effectively conducted... At that time, we had like only five partnerships, but we believed that we could do more.”

College managers also described industry employers being involving in curriculum development and inviting them to deliver guest lectures.

“We also involve the industrial people in the curriculum development because at the end of it all... the skills that we were providing should meet the demand which was in the world of work.”

Another respondent added: *“The more we engage with the industry—right from designing*

the curriculum to organizing industrial placements—the more our graduates become competitive. They gain confidence and job-ready skills.” These responses correspond well with responses by trainers during the focus group discussions.

Industry managers agreed on established links with colleges, and acknowledged involvement in curriculum development and review processes.

“When there is a curriculum review... we take part. If there’s any improvement needed, we contribute because the college is ours.” An industry manager revealed.

Industry practitioners also reported being involved in post-industrial attachment assessment to ascertain whether trainees have achieved their expectations, and developed employability skills that meet the labour market needs.

Another industry manager explained: *“We evaluate trainees after the industrial training period to ascertain... whether they have acquired relevant skills.”*

These reports were said to contribute to final assessment of trainees at TVET colleges. Industry respondents revealed that trainees who were committed to their industrial training, had their employability skills enhanced.

“They learn more during their two-month internship than what they did in the whole year of class. It helps them understand how the machines work and what employers expect.” An industry manager explained.

These testimonies illustrate that involvement of industry employers do not only bridge the gap between theory and practice but also offer opportunities to develop job-specific skills, interact with modern technology, and understand professional expectations.

Qualitative findings also provided deeper insight into stakeholder experiences and recommendations. One TVET manager expressed a strong preference for a more comprehensive form of collaboration.

“What we need is not just internships but real collaboration—like working together on curriculum development, setting training goals, and even co-hosting innovation events. That would make the partnership meaningful.” He asserted.

The findings revealed that industry employers were involved in curriculum development and review which enhances TVET outcomes, although most engagements are informal, event-based, lacking sustainability and clear structured long-term collaboration. These findings confirm global concerns regarding the limited institutionalization of industry–TVET institutions collaboration (Kebede et al., 2024; Omar & Kamaruzaman, 2024). They assert that successful vocational education hinges on long-term and mutually beneficial industry links. This implies that Uganda’s TVET colleges must formalize partnership agreements and introduce policy frameworks to guide consistent industry engagement. The moderate industry involvement in curriculum development and review, is consistent with Maclean and Wilson (2019), who argue that without regular curriculum audits involving employers, training programs quickly become outdated. Findings also indicate that work-based training and industrial attachment enhanced job ready skills, and helped trainees to gain confidence and understanding of workplace expectations. These results support Pilz et al. (2020), who argued that embedded industrial experience, such as internships and apprenticeships, significantly enhances students’ employability skills, and ability to transition from school to work. Additional East African evidence supports these findings. Kintu et al. (2019) observed that Ugandan employers positively influence graduate employability through curriculum feedback. Similarly, Moses and Liu (2022) showed that the Skilling Uganda Program has strengthened informal sector transformation through employer-linked TVET interventions.

Respondents further identified challenges hindering industry employer involvement in enhancing TVET outcomes related to structural and systemic barriers such as lack of funding, poor communication, misaligned priorities, and unclear government guidelines. These are consistent with OECD (2021), that attributes failure in TVET-industry cooperation to fragmented policy environments and competing institutional priorities. Similarly, Tripney et al. (2013) note that successful employer involvement requires a regulatory framework that balances academic freedom with labor market needs. The study also gathered good recommendations from respondents which may be useful to improve industry employer involvement in enhancing the quality of TVET outcomes. Participants proposed several measures such as co-teaching arrangements,

shared innovation labs, and tax incentives for industries that support TVET initiatives.

The findings of this study have several implications for policymakers and institutional leaders:

1. Establishment of Memoranda of Understanding (MoUs) between TVET institutions and employers to formalize collaboration.
2. Creation of Industry Advisory Boards within TVET colleges to provide ongoing guidance on curricula and training priorities.
3. Allocation of dedicated funding in national and institutional budgets to support industry-linked training programs.
4. Alignment of employer-involvement initiatives with Uganda’s Fourth National Development Plan (NDP IV) to ensure coherence between skills development and labor market needs.

4. CONCLUSION AND RECOMMENDATIONS

This study set out to assess the industry employer involvement in enhancing the quality of TVET in Uganda, focusing on their impact on curriculum relevance, graduate employability, and institutional development. The study confirms that there is effective industry involvement in curriculum development, review and implementation as well as providing information on industry trends and future workforce needs. The study also confirms that although partnerships between TVET colleges and industry employers exist, most of them are informal, inconsistent, and lack sustainability. Formal agreements such as Memorandum of Understandings are limited, resulting in irregular engagement that undermines the potential benefits of collaboration. This reflects a general lack of institutionalized frameworks to support long-term partnerships. Experiential learning components like internships significantly enhanced student confidence and workplace readiness, an area that industry employers have enhanced substantively. It can be concluded from the study findings that there is effective industry employer involvement that significantly and positively influence TVET outcomes in public TVET colleges in Uganda. Employer involvement has the potential to improve the quality and relevancy of TVET outcomes, especially the employability and job-ready skills through the

work-based training. Future studies could explore the long-term impact of industry employer involvement on employment rates and career progression of TVET graduates. Comparative studies between public and private TVET institutions may also reveal differential approaches and best practices in partnership development if undertaken.

The study recommends the following;

- i. Public TVET colleges should develop and implement clear policy frameworks and guidelines that encourage the establishment of formal partnership agreements such as MOUs to coordinate industry engagement efforts systematically.
- ii. There is need to address systemic and policy challenges by increasing funding specifically dedicated to support industry partnerships and collaborative TVET projects
- iii. There is need to improve communication channels between TVET colleges and industry players through regular stakeholder forums and digital platforms, and align national TVET policies with industry needs, promoting a coherent strategy for workforce development.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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