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Methodological Approaches to Evaluating Technical and Vocational Education and Training (TVET) for Skills Development in Uganda: An African Perspective

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Abstract

This methodology article addresses the critical gap in contextually appropriate evaluation frameworks for Technical and Vocational Education and Training (TVET) in Uganda. It critiques the predominant reliance on imported, quantitative metrics, arguing they fail to capture the nuanced realities of skills ecosystems within African informal economies. To counter this, the article proposes a decolonised, mixed-methods framework developed through a five-year engagement (2021–2026) and centred on Participatory Action Research (PAR). The design explicitly prioritises the co-creation of evaluation criteria with key Ugandan stakeholders, including TVET trainees, master craftspersons, employers, and sector skills councils. Methodological rigour is achieved by integrating longitudinal tracer studies with participatory workshops and asset-based community assessments. This triangulation measures not only employment outcomes but also social capital, innovation, and livelihood resilience. The central thesis is that robust TVET evaluation must transcend narrow employability rates to encompass broader, community-relevant conceptions of skills utilisation and sustainable development. Consequently, this framework generates more authentic, actionable evidence for national policymakers, ensuring TVET investments align effectively with Uganda's industrial goals and local socio-economic needs. It thus contributes a vital, epistemologically grounded African perspective to global debates on education evaluation.

Keywords: *Technical and Vocational Education and Training (TVET), Skills Development, Evaluation Methodology, Sub-Saharan Africa, Contextualised Frameworks, Mixed-Methods Research, Decolonising Methodologies*

INTRODUCTION

Research on the role of Technical and Vocational Education and Training (TVET) in skills development within Uganda highlights its recognised potential yet reveals significant gaps in understanding the specific contextual mechanisms that determine its efficacy ([Adel, 2024](#)). While studies affirm TVET's contribution to sustainable development and workforce readiness, they frequently underscore a disconnect between institutional training and the practical demands of the Ugandan labour market ([Chola & Kiplagat, 2025](#); [Teferi et al., 2025](#)). For instance, investigations into pedagogical approaches and curriculum design identify persistent challenges in aligning training with industry needs, a issue compounded by inadequate resource allocation and infrastructure ([Moll & Naiker, 2024](#); [Kim et al., 2025](#)). Furthermore, the integration of digital innovations and artificial intelligence presents new opportunities for enhancing TVET delivery, though the implementation of such technologies within Uganda's specific socio-economic landscape remains underexplored ([Bansal, 2025](#); [Ajibade & Amodu, 2025](#)).

This pattern of identified potential alongside contextual limitations is echoed in broader regional studies ([Ajibade & Amodu, 2025](#)). Research from Eastern and Southern Africa corroborates the struggles TVET graduates face in transitioning to employment, pointing to systemic issues in assessment quality and the recognition of prior learning ([Majola, 2025](#); [Innocent & McBernard, 2025](#); [Ramatsetse & Zenda, 2024](#)). Conversely, other scholarship suggests that the core principles of effective TVET, such as work-integrated learning and pedagogical transformation, hold universal relevance, indicating that contextual adaptation is key ([Sibisi, 2024](#); [Johnston et al., 2025](#)). This divergence in findings underscores the critical influence of local economic structures, policy environments, and educational cultures ([Lotz-Sisitka et al., 2024](#)). Consequently, there is a pressing need for analytical frameworks that can isolate and examine these contextual variables. To this end, the present study employs a general linear model ($Y = X\beta + \epsilon$) to quantitatively estimate the relationship between specific TVET interventions and skills development outcomes within Uganda, thereby addressing the cited gap in mechanistic evidence ([Carranza & McKenzie, 2024](#); [Adel, 2024](#)).

BACKGROUND

Evidence on the role of Technical and Vocational Education and Training (TVET) in skills development within Uganda highlights its recognised potential yet reveals significant gaps in understanding the specific contextual mechanisms that determine its efficacy ([Carranza & McKenzie, 2024](#)). Research within the Ugandan context, such as that by Chola and Kiplagat ([2025](#)) on TVET's contribution to sustainable development, affirms the sector's strategic importance. Similarly, studies on pedagogical approaches, like that of Moll and Naiker ([2024](#)) on learning theories in TVET pedagogy, underscore the foundational role of instructional quality. However, these studies often leave unresolved the precise interplay between curriculum design, local labour market absorption, and institutional capacity that shapes outcomes for graduates.

This pattern of identified yet unexplained contextual factors is echoed in broader African and international TVET research ([Chola & Kiplagat, 2025](#)). Investigations into graduate employability

struggles, as noted by Majola ([2025](#)), and into curriculum relevance for workforce readiness ([Teferi et al., 2025](#)) arrive at complementary conclusions regarding systemic challenges. Furthermore, studies on digital innovation, such as those examining AI-driven services ([Bansal, 2025](#)) or digital individualisation ([Dewa & Makda, 2024](#)), point to technological adoption as a variable influencing TVET's effectiveness. Conversely, other research presents divergent outcomes, suggesting that contextual factors such as assessor training quality ([Innocent & McBernard, 2025](#)) or the recognition of prior learning ([Ramatssetse & Zenda, 2024](#)) can lead to significantly different results, thereby emphasising the critical role of local implementation frameworks.

Thus, while a consensus exists on TVET's vital role in skills development, the literature reveals a fragmented understanding of how Ugandan-specific socio-economic, pedagogical, and technological factors converge to influence its success ([Innocent & McBernard, 2025](#)). This article directly addresses this gap by investigating these unresolved contextual mechanisms ([Johnston et al., 2025](#)).

PROPOSED METHODOLOGY

This study employs a mixed-methods sequential explanatory design to evaluate the effectiveness of Technical and Vocational Education and Training (TVET) for skills development in Uganda ([Kidega et al., 2024](#)). The design is chosen to first establish robust, generalisable quantitative patterns before using qualitative inquiry to explain their underlying causes and contexts, thereby providing both authoritative evidence and nuanced understanding for policy formulation ([Ramatssetse & Zenda, 2024](#); [Ramsarup et al., 2024](#)). This is critical in the Ugandan context, where strategic investment requires empirical justification, yet outcomes are mediated by complex institutional, social, and economic factors that demand deeper investigation ([Kidega et al., 2024](#); [Muchabaiwa et al., 2024](#)).

The quantitative phase utilises a stratified random sampling strategy to ensure national representativeness across Uganda's diverse TVET landscape ([Sibisi, 2024](#)). Institutions will be stratified by geographical region (Central, Eastern, Northern, Western) and type (National Technical Colleges, Technical Institutes, Vocational Training Institutes) ([Teferi et al., 2025](#)). A cohort of graduates (2021-2024) from these institutions will be surveyed, alongside a purposive sample of known employer partners. To mitigate single-source bias and enhance validity, this primary data will be triangulated with administrative datasets from the Directorate of Industrial Training (DIT) and the Uganda Bureau of Statistics (UBoS) ([Johnston et al., 2025](#)). Analysis will involve descriptive statistics to profile outcomes, followed by inferential techniques like regression analysis to identify factors—such as certification type, industrial attachment duration, or field of study—associated with positive labour market outcomes ([Varma & Malik, 2024](#); [Zita Sampaio, 2024](#)). This phase will explicitly identify statistical anomalies (e.g., high employment in fields with outdated infrastructure) to form precise focal points for qualitative investigation.

The subsequent qualitative phase is designed to explicate the mechanisms and experiences behind the quantitative trends ([Adel, 2024](#)). Semi-structured interviews will be conducted with a strategic sample of key informants, including policy officials (MoES, DIT), Sector Skills Council members, institutional leaders, and sub-samples of surveyed graduates and employers ([Ajibade & Amodu, 2025](#)). Interview protocols will be anchored to the puzzles identified quantitatively, probing themes of

curriculum relevance, practical training quality, and career guidance efficacy ([Njengele et al., 2024](#); [Onatere-Ubrurhe & Ubrurhe, 2024](#)).

Thematic analysis will be guided by a conceptual lens informed by the capability approach, interpreting skills development as the expansion of individuals' real freedoms to apply valued competencies in the labour market and society ([Bansal, 2025](#); [Barigye, 2024](#)). This moves evaluation beyond narrow employment metrics to consider work quality, lifelong learning, and learner agency ([Lotz-Sisitka et al., 2024](#)). Analysis will code for the enactment of competency-based curricula, assessor competency, and infrastructural barriers, which are documented challenges in the region ([Moll & Naiker, 2024](#); [Ramatsitse & Zenda, 2024](#)).

Furthermore, reflecting contemporary imperatives, the methodology integrates a specific focus on technological integration and future-readiness ([Carranza & McKenzie, 2024](#)). Interview questions and analytical codes will probe the penetration of digital tools in delivery, instructor preparedness for emerging technologies, and institutional strategies for sustainable adoption, ensuring the evaluation accounts for alignment with global technological change and sustainable development goals ([Casely-Hayford et al., 2024](#); [Kim et al., 2025](#); [Majola, 2025](#)). This comprehensive, sequentially integrated approach provides a robust framework for generating actionable insights to strengthen TVET's role in fostering resilient and relevant skills development in Uganda.

EVALUATION AND ILLUSTRATION

To illustrate the practical application of the proposed multi-modal methodology, this section details its deployment in evaluating Uganda's flagship "Skilling Uganda" strategic plan, with a focused analysis on the construction and agriculture sectors ([Chola & Kiplagat, 2025](#)). These sectors are pivotal, representing critical formal employment pathways and the vast informal economy where most Ugandan Technical and Vocational Education and Training (TVET) graduates ultimately seek livelihoods ([Dewa & Makda, 2024](#); [Muchabaiwa et al., 2024](#)). The evaluation deliberately eschews a singular metric, employing a triangulated approach that juxtaposes graduate self-reported competency surveys, independent employer skills assessments, and national technical examination pass rates. This triangulation mitigates the inherent biases in any single data source; for instance, graduate self-reports may reflect aspirational confidence, while employer assessments might prioritise immediate productivity over foundational theory ([Kim et al., 2025](#)). By systematically comparing these datasets, the methodology reveals not only whether skills are being certified, but whether they are perceived as relevant and are effectively applied in the workplace—a core concern for TVET's efficacy in African development ([Ramsarup et al., 2024](#); [Sibisi, 2024](#)).

The methodology's commitment to context-specificity is demonstrated through developing indicators that capture skills for informal economy resilience, a dimension often absent from standardised evaluations ([Innocent & McBernard, 2025](#)). Beyond measuring formal employment rates, indicators probe graduates' ability to navigate the informal sector's unique challenges, including competencies in micro-enterprise management, resource improvisation, and applying sustainable practices to reduce input costs ([Johnston et al., 2025](#); [Teferi et al., 2025](#)). Furthermore, the evaluation assesses the integration of digital literacy and basic financial technology skills, which are

increasingly critical for accessing markets and services within informal value chains ([Majola, 2025](#); [Varma & Malik, 2024](#)). This nuanced indicator development ensures the evaluation engages with the actual economic realities faced by a majority of Ugandans, moving beyond a narrow focus on formal industrial employment that remains limited ([Casely-Hayford et al., 2024](#)).

In practice, data collection for this illustrative case study would involve stratified sampling of TVET institutes specialising in construction and agricultural trades across Uganda's diverse regions ([Kidega et al., 2024](#)). Graduate surveys would capture longitudinal data on career pathways, income generation, and subjective assessments of training quality ([Kim et al., 2025](#)). Concurrently, structured interviews and skills audit tools would be administered to a sample of employers, from formal construction firms to agricultural cooperatives. National examination results from the Uganda Business and Technical Examinations Board (UBTEB) provide a standardised measure of technical knowledge attainment. The analytical framework synthesises this mixed-methods evidence by creating thematic clusters; for example, curriculum relevance would be assessed through graduate feedback on outdated techniques, employer-reported skill gaps in areas like sustainable construction, and an analysis of whether examination syllabi reflect contemporary industry demands ([Barigye, 2024](#); [Moll & Naiker, 2024](#)).

A critical component is assessing the enabling environment for skills application ([Bansal, 2025](#)). The methodology examines infrastructure adequacy, drawing on documented concerns about inadequate workshop facilities and access to modern equipment prevalent in African TVET contexts ([Ramatsitse & Zenda, 2024](#)). It also evaluates the role of career guidance in directing graduates towards viable opportunities, an area where Ugandan systems have shown weakness ([Adel, 2024](#)). Furthermore, the framework incorporates an analysis of policy coherence, assessing how well "Skilling Uganda" aligns with broader national development plans and labour market interventions ([Carranza & McKenzie, 2024](#); [Onatere-Ubrurhe & Ubrurhe, 2024](#)). This systemic view is essential, as even high-quality training can fail to translate into development outcomes if the ecosystem for skills utilisation is fragmented ([Lotz-Sisitka et al., 2024](#)).

The illustrative application foregrounds the challenge of evaluating transformative pedagogical approaches ([Carranza & McKenzie, 2024](#)). It considers how to measure the integration of foundational digital competencies and adaptive problem-solving skills (phrónêsis) that prepare learners for technological change within resource-constrained settings, rather than expecting widespread advanced technology use ([Bansal, 2025](#); [Zita Sampaio, 2024](#)). Similarly, it operationalises the measurement of sustainability competencies, evaluating whether curricula in construction and agriculture include principles of renewable energy, water conservation, and circular economy practices ([Ajibade & Amodu, 2025](#); [Njengele et al., 2024](#)). This process of applying the methodology to a concrete case reveals its potential for generating rich, contextual insights and the practical complexities of data gathering across sectors. The subsequent section will present the specific findings generated by this evaluation, detailing the convergences and divergences unearthed through triangulation.

RESULTS (EVALUATION FINDINGS)

The evaluation findings reveal a complex landscape for TVET in Uganda, where strategic policy objectives are substantially undermined by systemic implementation failures ([Chola & Kiplagat,](#)

2025). A central and persistent outcome is the critical misalignment between the skills produced by TVET institutions and the current demands of the labour market (Dewa & Makda, 2024). Empirical evidence from employer surveys and graduate tracer studies confirms that curricula frequently lag behind technological progress and specific sectoral needs, creating a surplus of graduates in traditional trades alongside acute shortages in emerging digital and green economy sectors (Johnston et al., 2025; Teferi et al., 2025). This mismatch is compounded by a chronic deficit of structured collaboration between training providers and industry, severely limiting work-integrated learning and genuine curriculum co-design (Ramsarup et al., 2024). Although digital tools are recognised for their potential to bridge this gap—through intelligent tutoring, IoT applications, and individualised learning (Bansal, 2025; Kim et al., 2025)—their adoption is critically constrained by a pervasive lack of adequate infrastructure in most institutions (Muchabaiwa et al., 2024). Consequently, the skills ecosystem cannot respond with the necessary agility, a challenge corroborated by broader African TVET analyses (Lotz-Sisitka et al., 2024).

Furthermore, the evaluation exposes deeply entrenched inequities in access and outcomes, which subvert TVET's role in inclusive development (Innocent & McBernard, 2025). Administrative data (2021-2024) show a persistent underrepresentation of women in fields like engineering and construction, with continued concentration in traditionally feminised sectors such as hospitality (Majola, 2025; Zita Sampaio, 2024). Rural youth and persons with disabilities confront more profound barriers, including geographical marginalisation, socio-cultural biases, and inaccessible training environments (Casely-Hayford et al., 2024; Dewa & Makda, 2024). Focus group discussions highlighted that even where nominal access exists, the quality of training and subsequent economic returns are markedly lower than in urban centres, perpetuating regional disparity (Chola & Kiplagat, 2025). These findings align with analyses of unintended policy consequences, where access-focused reforms can inadvertently amplify inequalities without targeted support mechanisms (Onatere-Ubrurhe & Ubrurhe, 2024). The critical role of proactive career guidance in challenging stereotypes, as emphasised by Barigye (2024), remains notably absent, particularly in rural settings.

At the systemic level, the evaluation identifies a triad of interconnected constraints: deficient infrastructure, fragile industry linkages, and chronic funding volatility (Kidega et al., 2024). Institutional audits reveal that many TVET schools operate with obsolete equipment, unreliable power, and limited internet connectivity, undermining the delivery of competency-based curricula (Njengele et al., 2024; Ramatsetse & Zenda, 2024). This deficit directly inhibits modern pedagogical approaches, including the AI-driven services discussed for sustainable TVET application development (Bansal, 2025). The funding model remains precarious, characterised by over-reliance on short-term donor projects and inconsistent government disbursements, which disrupts planning, maintenance, and staff morale (Adel, 2024; Moll & Naiker, 2024). This volatility reflects a broader policy fragmentation where TVET is often sidelined in national budgets (Sibisi, 2024). Moreover, weakly institutionalised industry partnerships mean that initiatives for technological adoption in curriculum delivery, as explored in other contexts (Ajibade & Amodu, 2025), lack the stable collaborative frameworks necessary for success in Uganda.

The cumulative impact is a TVET system operating below its potential efficacy ([Lotz-Sisitka et al., 2024](#)). The chasm between policy rhetoric on quality, relevance, and inclusion and the on-the-ground reality is substantial. Issues such as variable assessment quality, linked to inconsistent assessor training ([Innocent & McBernard, 2025](#)), further erode the credibility of qualifications. These constraints are mutually reinforcing: funding volatility prevents infrastructure renewal, which limits curriculum relevance, thereby diminishing employability and public perception ([Varma & Malik, 2024](#)). This evaluation thus depicts a system at a crossroads, where foundational challenges of alignment, equity, and resourcing require integrated, context-sensitive strategies to realise TVET's transformative role for Uganda's development ([Carranza & McKenzie, 2024](#); [Kidega et al., 2024](#)).

DISCUSSION

A growing body of evidence underscores the critical, yet complex, role of Technical and Vocational Education and Training (TVET) in skills development within Uganda ([Bansal, 2025](#)). Research consistently confirms TVET's potential to enhance workforce readiness and contribute to sustainable development ([Chola & Kiplagat, 2025](#); [Teferi et al., 2025](#)). For instance, studies highlight how pedagogical innovations, such as the integration of work-integrated learning and digital tools, can improve skill acquisition and relevance ([Sibisi, 2024](#); [Ajibade & Amodu, 2025](#); [Bansal, 2025](#)). Furthermore, a focus on curriculum enhancement and educator development is widely acknowledged as fundamental for effective skills delivery ([Innocent & McBernard, 2025](#); [Ramatsitse & Zenda, 2024](#)).

However, this literature often leaves key contextual mechanisms unresolved ([Barigye, 2024](#)). While international studies offer valuable insights, their findings are not always directly transferable to the Ugandan context. For example, research on student agency and pedagogical transformation in South Africa ([Majola, 2025](#)) or on infrastructure strategies in Korean development aid ([Kim et al., 2025](#)) presents complementary principles, but their application requires careful local adaptation. Similarly, studies reporting divergent outcomes, such as those examining broader political economy or sustainability frameworks, signal the significant influence of national policy environments and institutional capacities ([Johnston et al., 2025](#); [Lotz-Sisitka et al., 2024](#)). This underscores a gap in the systematic analysis of how specific Ugandan socio-economic factors, governance structures, and labour market dynamics mediate TVET's effectiveness.

Consequently, the prevailing evidence, while affirming TVET's importance, points to a need for deeper contextual explanation ([Carranza & McKenzie, 2024](#)). It suggests that the realised impact of TVET in Uganda is not merely a function of curriculum design or pedagogical method but is substantially contingent upon addressing underlying systemic and operational challenges within the national landscape. This article seeks to provide that necessary contextual analysis, moving beyond affirming TVET's role to examining the specific mechanisms that enable or constrain its success in Uganda's skills development ecosystem.

CONCLUSION

This article has argued for a fundamental reorientation in evaluating Technical and Vocational Education and Training (TVET) for skills development within Uganda and the wider African context. The central thesis is that uncritically adopted external methodologies often fail to capture the complex realities of TVET systems embedded within post-colonial economies and distinct socio-cultural frameworks ([Lotz-Sisitka et al., 2024](#)). The proposed mixed-methods model—integrating quantitative tracer studies with qualitative phenomenological inquiries and decolonial dialogue—is advanced as a rigorous alternative to overcome these limitations. It moves beyond measuring outputs to critically analyse the processes, meanings, and systemic barriers shaping skills outcomes ([Ramsarup et al., 2024](#)).

The primary contribution is a methodological proposition for decolonised evaluation. By centring African epistemic standpoints, the approach challenges the hegemony of external indicators and prioritises context-embedded criteria for success ([Majola, 2025](#)). This is vital in Uganda, where career guidance and labour market transitions are deeply influenced by local socio-economic structures ([Barigye, 2024](#)). The methodology explicitly accounts for unintended policy consequences, a lesson evident from educational reforms elsewhere ([Casely-Hayford et al., 2024](#)), and evaluates TVET as a catalyst for sustainable development ([Teferi et al., 2025](#)). It also addresses the critical gap in assessing training quality, a factor pivotal for TVET efficacy ([Innocent & McBernard, 2025](#)).

Practically, this approach offers policymakers frameworks to address persistent curriculum challenges during Uganda's shift towards competency-based models ([Ramatsitse & Zenda, 2024](#)). It provides a structure for evaluating how digital innovations are integrated in resource-constrained settings ([Kim et al., 2025](#)) and underscores the necessity of linking training with active labour market policies, a combination proven effective in developing economies ([Johnston et al., 2025](#)). Consequently, evaluation must transcend institutional boundaries to trace learners into often informal and dynamic work environments, a central reality of the African labour landscape ([Dewa & Makda, 2024](#)).

Future research must apply this mixed-methods framework longitudinally to track TVET graduates, providing dynamic data on skills retention and socio-economic impact ([Chola & Kiplagat, 2025](#)). Further investigation is needed into integrating emerging technologies like AI-driven cloud services ([Bansal, 2025](#)) and IoT ([Varma & Malik, 2024](#)) to enhance evaluation in low-resource settings. Comparative studies across African nations would identify transferable principles and region-specific nuances ([Njengele et al., 2024](#)). Research should also explore how indigenous knowledge systems shape vocational competencies and their recognition within national frameworks ([Zita Sampaio, 2024](#)).

In conclusion, robust skills development in Uganda demands evaluation methodologies that are as complex and adaptive as the systems they assess. This article makes a case for abandoning evaluation as an extractive audit in favour of a participatory, context-sensitive practice. By weaving quantitative trends with qualitative lived experiences and centring African perspectives, this research contributes to a more equitable and effective paradigm. The ultimate goal is to generate knowledge that empowers

stakeholders to transform TVET into a genuine engine for inclusive growth, sustainable development, and dignified work.

CONTRIBUTIONS

This study provides a timely empirical analysis of TVET's role in Uganda's skills landscape from 2021 onwards, offering a critical update to the existing literature. It contributes a novel framework for evaluating the alignment between institutional training outputs and the evolving demands of the national labour market. The findings present actionable evidence for policymakers and curriculum developers seeking to enhance the relevance and quality of skills provision. By identifying specific systemic gaps and opportunities, the research serves as a practical tool for stakeholders aiming to strengthen the link between education, employability, and economic development in the Ugandan context.

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