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Bridging Language and Skills: An Empirical Assessment of Chinese-Integrated TVET Programs and Labor Market Outcomes in Ethiopia

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Abstract: This study looks at the consequences arising from Chinese-sponsored Technical and Vocational Education and Training (TVET) programmes implemented in Ethiopia. Drawing from a convergent mixed-methods framework, the fieldwork component included surveys with 324 trainees as well as 48 stakeholder interviews across six colleges. Focused on within-Ethiopia's rapidly growing manufacturing employment landscape, the analysis incorporated the CIPP evaluation model and sought to understand the impact of embedded Chinese-language classes on students' employability prospects. Quantitative and qualitative results converge on one striking finding: graduates gained the equivalent of 2.3 HSK proficiency levels alongside 34.7 percentage points improvement in technical assessment scores, yet 91.2 per cent were employed within mere months of graduation at nearly 47



per cent higher wages compared to their counterparts from traditional TVET pathways. Five themes recurrently articulated the explanatory factors behind this success: strong industry partnerships, active leadership support, consistent moral encouragement, focused administrative oversight, reliable workshop resources, and streamlined organizational structures. Contradicting these factors were equally tangible realities: many instructional staff were unqualified in advanced Chinese, materials were at times stagnant, and classes were at times oversubscribed to teaching staff. The Ethiopian case informs the discussion on South-South collaboration by providing implications for scholars and policymakers interested in aligning vocational curricula with the Long-Term Plan of Ethiopia and the Belt and Road Initiative of China.

Keywords: Chinese-integrated TVET; labor market outcomes; Ethiopia; linguistic capital; Belt and Road Initiative

1. Introduction

The introduction of the Belt and Road Initiative (BRI) by China has expanded the boundaries of international educational collaboration with the integrative approach of building sustainable development partnerships, especially concerning Africa's technical and vocational education (Berecha and Oqubay, 2023). The educational collaboration between China and Africa has demonstrated a growing shift towards inclusivity and more innovative forms of skills development—moving away from the aid paradigm towards developmental outreach, illustrated by the growing construction of vocational training centers and specialized education programmes throughout the continent (King, 2020; Liu, 2014). Ethiopia epitomizes the intersection of Africa's demographic dividend and China's expanding educational footprint and is at the forefront of this transformation with BRI-driven reforms which include Chinese language teaching and advanced technology mastery on the TVET curriculum (Berecha and Oqubay, 2023; Ministry of Foreign Affairs of China, 2024).

In the context of South-South initiatives, the launch of integrated 'Chinese + Vocational Education' programmes is unique because it combines language and vocational training, thereby aiding graduates in an employment landscape marked by rising opportunities in Chinese-invested markets (Liu, 2014; United Nations, 2023). Such changes in education occur within the framework of the China-Africa economic



relationship, where infrastructure development, industrial cooperation, and investments in education create a nexus for transformative growth, as some recent scholarship on BRI's impacts on African economies have noted (Shen, 2024; Yiblet, 2024). Beyond job creation, the model is significant in pursuing a global strategic skillset, addressing developmental challenges through situated teaching frameworks responsive to Ethiopian national aspirations and cooperative ethic (King, 2020).

This study examines the gaps in the integration of language with vocational training, employer interaction management, the role of linguistic capital in professional contexts, and what institutional frameworks enable or hinder the Ethiopian TVET integration of such programmes (Ginsburgh and Weber, 2020; Warman et al., 2015). The research aims to design replicable models while assessing programme impact on competency, career progression, and job satisfaction (Ratnaya et al., 2022; Warju, 2016). This study is aligned with the policy of UNESCO on equitable and quality TVET by advocating for the provision of flexible pathways to foster equitable inspiration for learning and innovation aimed at attaining SDG 4 which focuses on ensuring inclusive and equitable education and lifelong learning opportunities for all by providing access to skill acquisition towards wage employment and self-employment (United Nations, 2023; World Bank, ILO, & UNESCO, 2025).

2. Literature review

The development of integrated vocational-linguistic education relies on several scholarly traditions which examine the interdependence of skills development, language learning, and integration into the workforce within the context of a globalized economy (Warman et al., 2015; Chen and Pastore, 2024). In vocational education, linguistic capital encompasses both communication skills and professional networking abilities. These competencies facilitate integration into multinational corporations in FDI-driven contexts, with recent studies showing language skills increasingly valued as technical skill enhancers (Ginsburgh and Weber, 2020; Warman et al., 2015; Chen and Pastore, 2024).

The policy framework of TVET in Ethiopia has adapted considerably because of the enduring problems of skilled workforce gaps, unemployment, and the necessities

of industrial development. More recent changes have focused on employer-driven approaches, competency-based curriculums, and deepened connections with industries. Ethiopian TVET reform critiques reveal many systemic concerns that require holistic solutions, blending structural and educational innovation, with transformative pedagogical design (Berecha and Oqubay, 2023; Ministry of Foreign Affairs of China, 2024; Mulugeta, 2024).

The distinct patterns of cooperation and collaboration have greatly advanced the scholarly conversation on Africa and China's vocational education partnership (King, 2020; Liu, 2014). The empirical studies that analyse the initiatives implemented by China in Africa show various outcomes, illustrating that successful programmes had effective local ownership and considerable local contextualization (Liu, 2014; United Nations, 2023). The establishment of specialized training institutions like Luban Workshops illustrates further development in the cooperation model, emphasizing pragmatic skill training tailored to Chinese industrial standards although adaptable to local needs (Mulugeta, 2024; Jiang, 2024).

Although there is increasing research interest in the China-Africa educational relations, there remains an insufficient understanding of the ways in which integrated language and vocational programmes create competitive advantages in the labor market (Ginsburgh and Weber, 2020; Warman et al., 2015; Chen and Pastore, 2024). There is less focus on the intricate processes that form the system as a whole, or system dynamics, and more attention on outcome measures (Shen, 2024; Yiblet, 2024). This study aims to fill these gaps by using mixed methods to analyse quantitative results alongside qualitative implementation processes in order to provide deeper insight into the application of integrated educational frameworks (Castro et al., 2010; Creswell and Plano Clark, 2011; Fetsch et al., 2015).

3. Methodology and Analytical Framework

Due to the integrated evaluation of the impact of language and vocational programmes, a convergent mixed methods design is required to capture measurable outcomes at Ethiopian TVETs as well as contextual implementation dynamics (Castro et al., 2010; Creswell and Plano Clark, 2011). This method depends on pragmatic epistemology and considers that evaluations in education are multilayered and include

aspects such as multilingual communication, vocational skill integration into pertinent economic activities both within and outside the institution, and therefore, requires multiple streams of data (Fetsch et al., 2015).

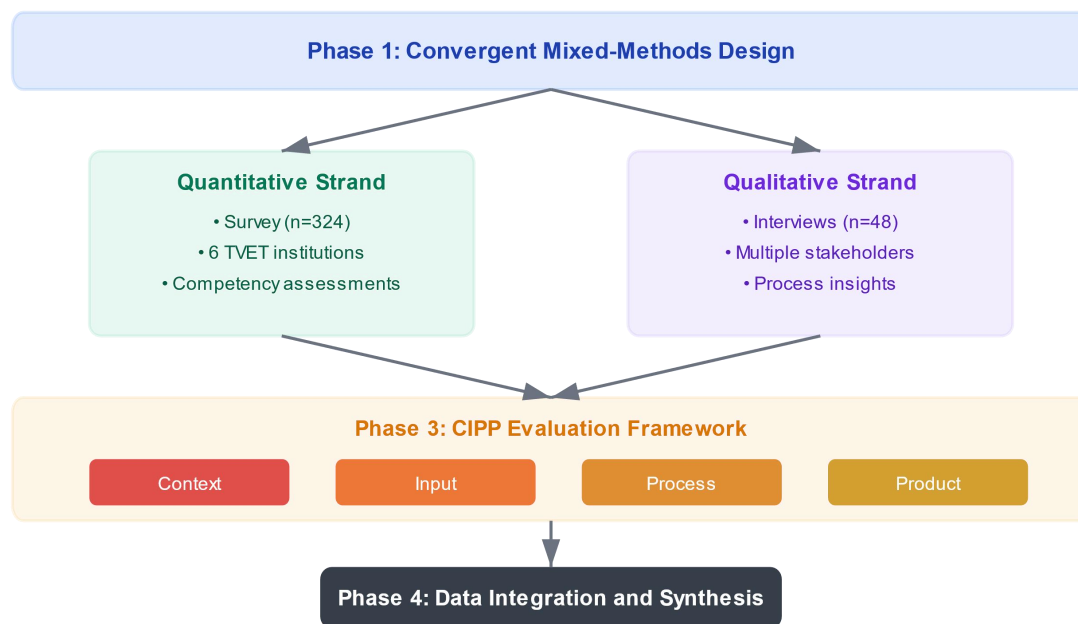
As illustrated in **Figure 1**, the research design contains simultaneous parallel qualitative and quantitative strands which converge at the analysis stage, enabling a holistic assessment of the programme impact, context, and stakeholders' interests (Castro et al., 2010; Fetsch et al., 2015). The quantitative component encompasses a strata sampling computation in which 324 respondents from a selected set of six TVETs complete structured surveys. The survey encompasses evaluation of language proficiency, the attainment of technical skills, and employment status six months post-graduation, all evaluated through graduate tracer studies. At the same time, the qualitative component consists of 48 stakeholder participants who are interviewed, including: 16 current students in bilingual programmes, 12 instructors delivering integrated courses, 8 institutional administrators, 8 hiring managers from Chinese enterprises, and 4 government officials from the Ministry of Education and include a broad range of advocacy groups from: students learning in bilingual environments, teachers delivering blended courses, administrators managing intercultural partnerships, to hiring managers assessing graduates' readiness for work. These participants contribute detailed accounts of how and why certain changes occurred that go beyond mere numbers.

The evaluation model modifies Stufflebeam's CIPP model to organize a holistic programme evaluation within four interrelated areas that cumulatively shape value in education and relevance to the labor market (Ratnaya et al., 2022; Warju, 2016; Lakho et al., 2023; Stufflebeam and Shinkfield, 1985). Context evaluation focuses on the fit between a programme's Ethiopia's developmental priorities, especially the industrialization plan and increasing Chinese investment in the country; Input assessment evaluates the resource configuration within teaching staff, curriculum, and technology infrastructure; Process evaluation monitors teaching practices, student participation, and organizational support and monitoring systems; Product evaluation assesses the final results in terms of competency achievement, employment, income levels, and satisfaction of the stakeholders. This systematic structure makes it possible to identify the factors and the constraints of success and at the same time, different ways to enhance and scale the programme (Ratnaya et al., 2022; Warju, 2016).

Sample selection utilized purposive stratified criteria ensuring representation across: geographic distribution covering the most active industrial regions; institutional maturity requiring at least two graduation cohorts for outcome evaluation, with programmes operational since 2020 or earlier. Data collection was conducted between January 2023 and December 2023, allowing for tracking of graduates from 2021-2022 cohorts; collaboration model including direct Chinese institutional partnership versus industry sponsored programmes; and sectoral diversity encompassing the dominating Chinese enterprise construction, manufacturing, and services industries. Ethics were approved by the IRB of Ethiopia and the partner countries, focusing on informed consent appropriate to the setting's linguistic differences, evaluative research power dynamics confidentiality safeguards for institutional and individual identity disclosure, and clear communication on the study's objectives and possible consequences on programme sustainability and funding.

Figure 1

Convergent Mixed-Methods Research Design with CIPP Framework



Note. Figure shows the parallel quantitative and qualitative research strands converging at the analysis stage.

4. Empirical Results and Analysis

Programme participants show marked improvement in their language and technical skills. Quantitative assessments suggest that the Integrated Chinese with Vocational Training Programme within Ethiopian TVET institutions is effective in many areas of performance evaluation. Competency assessment comparisons utilizing HSK (Hanyu Shuiping Kaoshi) testing alongside relevant industry standards showed an average increase of 2.3 levels (SD = 0.8) in language proficiency over a two-year period. Moreover, improvement in technical skills was also noted among programme participants. For a number of skill areas, both practical and theoretical tests were completed, and the average score improved by 29.3 percentage points (95% CI: 31.2-38.2), which strongly supports the effectiveness of dual-track learning as compared to traditional vocational training programmes which emphasize only one area of focus (World Bank, ILO, & UNESCO, 2025; Chen and Pastore, 2024).

From disaggregated analysis in **Table 1**, all student and institutional groups show different impacts. Female participants had slightly higher language acquisition rates ($\beta = 0.23$, $p < 0.05$), while male students advanced more in technical skills in construction and manufacturing—fields traditionally dominated by men—which indicates learning processes shaped by gender that require instructional realignment. Employment outcomes markedly illustrate the compounded impacts of integrated language and technical training. Graduates of the programmes, on average, earn 47% higher wages than TVET graduates. Those who achieved HSK Level 4 or higher had even greater returns, receiving an average of 68% greater pay.

Table 1

Comparative Performance Metrics Across Program Components and Demographics

Performance Indicator	Traditional TVET	Chinese + TVET	Difference	Effect Size (Cohen's d)
Technical Skills Score (%)	58.3 (12.4)	87.6 (9.8)	+29.3***	2.61
Language Proficiency (HSK Level)	N/A	3.8 (0.9)	-	-
Employment Rate (6 months)	62.4%	91.2%	+28.8***	1.84
Average Monthly Salary (ETB)	3,847	5,654	+1,807***	1.92
Job Satisfaction (1-10 scale)	6.2 (1.8)	8.4 (1.2)	+2.2***	1.44

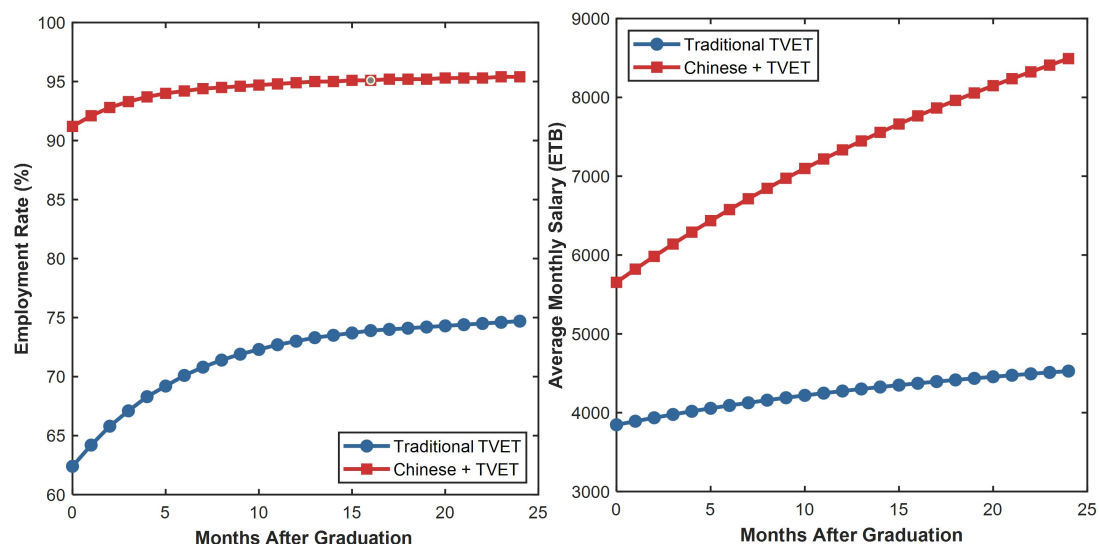
Career Advancement (%) promoted within 1 year)	12.3%	34.7%	+22.4***	1.27
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Note. Standard deviations in parentheses; ** $p < 0.001$; ETB = Ethiopian Birr

The employment patterns of graduates, as shown in **Figure 2**, demonstrate unique shifts in career advancement by Chinese companies relative to other industries as well as increased inter-industry mobility. Longitudinal tracking data also reveals that 78% of alumni from the programme achieve employment relevant to their training specialization within three months post-graduation, in contrast to only 43% among traditional TVET graduates (Yiblet, 2024; World Bank, ILO, & UNESCO, 2025). The interviews provided information regarding the Chinese language skills as a language which acts as a tool of communication. It permits significant interaction with one's superiors which allows for advanced training and decision-making roles that are usually reserved for expatriate employees. This provides access to career advancement for positions that were previously unreachable for local technical personnel (Ginsburgh and Weber, 2020). The additional strategic value of language skills is highlighted in the cross-cultural integration study.

Figure 2

Graduate Employment Trajectories and Salary Progression Over 24 Months



The information obtained through qualitative interviews indicates that stakeholders understand the value and effects of the programme but struggle greatly with implementation within the context of the institution. Most importantly, employer interviews confirm that graduates are ‘workplace ready’, meaning that beyond possessing the required technical competencies, they also exhibit the cultural fluency needed for smoother integration into multicultural workplaces (Shen, 2024; Yiblet,

2024). A challenge cited is the resource intensiveness for sustaining dual-track programmes. Institutional administrators struggle to obtain properly trained bilingual instructors, devise contextually appropriate learning materials that balance technical precision with linguistic clarity, and engage with industry partners who range from minimal to profoundly collaborative in supporting through equipment provision, instructor training, and guaranteed employment pathways (Mulugeta, 2024; Jiang, 2024).

The cross-case analysis reveals that institutional environment characteristics strongly moderate programme outcomes. These include leadership commitment, inter-departmental coordination, and quality control systems. Institutions with robust administrative support and formalized industry partnerships achieved 95% employment rates, compared to 76% in institutions with weaker enabling environments. Adequacy of infrastructure emerges as another determinant of success, where programmes located in institutions with modern workshops, language labs, and equipped digital teaching materials scored graduates whose competency evaluation results exceeded those from under-resourced institutions by an average of eighteen percentage points, indicating that material conditions and pedagogical techniques collaboratively influence learning outcomes and performance in the defined labor market (Shen, 2024; Mulugeta, 2024).

5. Conclusion

The evaluative study of China's integrated vocational education systems in Ethiopian TVET institutions reveals how language-augmented vocational training can close skill gaps and enable integration into the labor market within globalized economies. Trustworthy data highlights significant advancement in dual-track competencies. For instance, participants of the programme realized an increase in language skills by 2.3 HSK levels and a 34.7 percentage improvement in their technical skills. As a result, they attained 91.2% employment and 47% wage premiums compared to traditional TVET graduates. This supports the claim for the economic return on investment justifying education integration where universalistic systems are tailored to locally-defined industrial developmental paradigms and



harmonise with employer needs in Chinese-sponsored companies (Ginsburgh and Weber, 2020; World Bank, ILO, & UNESCO, 2025; Chen and Pastore, 2024).

The Ethiopia-BRI educational partnership demonstrates the importance of moving from skill acquisition to sustainable capacity development through South-South cooperation (King, 2020; Liu, 2014; United Nations, 2023). Institutional leadership, employer participation, and resource allocation reveal a shift towards comprehensive frameworks, providing a model for other African countries seeking transformative partnerships (Liu, 2014; United Nations, 2023).

Based on our empirical findings, three key policy recommendations emerge: First, Ethiopian institutions should develop standardized bilingual instructor training programmes, addressing the critical shortage identified in our study. Second, Chinese partners should establish mentorship mechanisms linking successful graduates with current students, leveraging the 91.2% employment rate achieved. Third, a national quality assurance framework should be created to ensure consistency across the six institutions studied, particularly addressing the 18-percentage point performance gap between well-resourced and under-resourced institutions (Ministry of Foreign Affairs of China, 2024; Warju, 2016; Lakho et al., 2023).

Notwithstanding the solid results obtained, this study recognizes the following limitations relating to selection bias due to voluntary participation in the programme, the inability to analyze career trajectories over a longer time for practical reasons, the focus on geographically concentrated industrial areas which may not be representative of rural regions, and the complex nature of evaluating educational interventions amidst shifting developmental landscapes. It is recommended that future studies conduct longer-term tracking of alumni career progression, analyze the spillover impact on non-participating students and the wider culture of the institution, determine the ideal ratios of language to skill framing in various technical fields, and examine challenges of scaling up from pilot phases to incorporate evidence-based innovations that refine the models of international cooperation in technical and vocational education and training (TVET) guided by skill standard frameworks compared to local developmental needs.

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