

FINANCIAL DIVERSIFICATION AND PRIVATE TVET INSTITUTIONAL SUSTAINABILITY

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Abstract: Private Technical and Vocational Education and Training (TVET) providers face structural vulnerabilities due to tuition dependency. This empirical study investigates the impact of revenue diversification on long-term institutional financial sustainability. Using an explanatory structural equation modeling framework, we examine three independent variables: Commercial Production Units (X1), Consultancy Services (X2), and Corporate Training Contracts (X3). Operational Resource Allocation Efficiency (M) is modeled as a mediator, while National Regulatory Policy (W) is analyzed as a moderator. Data were collected from a stratified sample of 340 private TVET institutions using a 5-point Likert scale questionnaire and audited institutional archives.

Econometric diagnostics confirmed data validity through Cronbach's alpha ($\alpha > 0.82$), Heterotrait-Monotrait ratio ($HTMT < 0.85$), and Variance Inflation Factors ($VIF < 2.41$). Structural Equation Modeling (SEM) and ordinary least squares regression indicate that while all three diversification streams significantly enhance long-term sustainability (Y), their direct effects are substantially amplified when channeled through resource allocation efficiency (M). Furthermore, multi-group interaction analysis shows that favorable national regulatory policies significantly moderate the path from diversification strategies to operational efficiency. The paper concludes with actionable frameworks for TVET administrators to structurally hedge financial risks without compromising educational quality.

Keywords: Financial Diversification, Institutional Sustainability, Private TVET, Resource Dependency Theory, Structural Equation Modeling.

1. INTRODUCTION

1.1 Background of the Study

Global shifts toward knowledge-based economies have accelerated the demand for Technical and Vocational Education and Training (TVET). Private TVET providers serve as critical conduits for market-driven skill acquisition. However, unlike public institutions backed by state subsidies, private TVET entities operate within highly volatile financial ecosystems. Historically, these institutions have relied on tuition fees as their primary source of operational capital.

This financial architecture introduces severe systemic risk. When macroeconomic shocks, demographic contractions, or shifts in employment trends occur, tuition-dependent enrollment drops, causing immediate cash flow crises. To survive, institutions must evolve from passive fee-collection models into entrepreneurial entities capable of generating alternative revenue streams.

1.2 Problem Statement

Private TVET providers are highly vulnerable to economic shifts because they depend heavily on student tuition. This narrow financial base limits their capacity to invest in modern workshop infrastructure, retain industry-grade instructors, and absorb unexpected operational losses. While contemporary literature highlights the necessity of third-stream income generation in public universities, a critical **knowledge gap** persists regarding private TVET college

Specifically, there is a lack of empirical evidence demonstrating how these specialized vocational institutions can successfully diversify their income portfolios without suffering mission drift or compromising instructional quality. Furthermore, the structural pathways detailing how alternative revenues translate into long-term financial survival—and the boundary conditions imposed by state tax structures—remain unresolved.

1.3 Purpose and Research Questions

The overarching purpose of this study is to examine the structural relationships between multi-channel revenue diversification strategies and the long-term institutional financial sustainability of private TVET providers.

To achieve this purpose, the study addresses the following four operational research questions:

1. To what extent do Commercial Production Units (X), Consultancy Services (X2), and Corporate Training Contracts (X3) directly influence long-term institutional sustainability (Y)?
2. Does Operational Resource Allocation Efficiency (M) significantly mediate the relationship between revenue diversification strategies and long-term institutional sustainability?
3. Do National Regulatory Policies and tax incentive frameworks (W) significantly moderate the path between diversification implementation and operational efficiency?
4. What configuration of alternative revenue generation yields the highest financial resilience without deteriorating educational infrastructure?

1.4 Significance of the Study

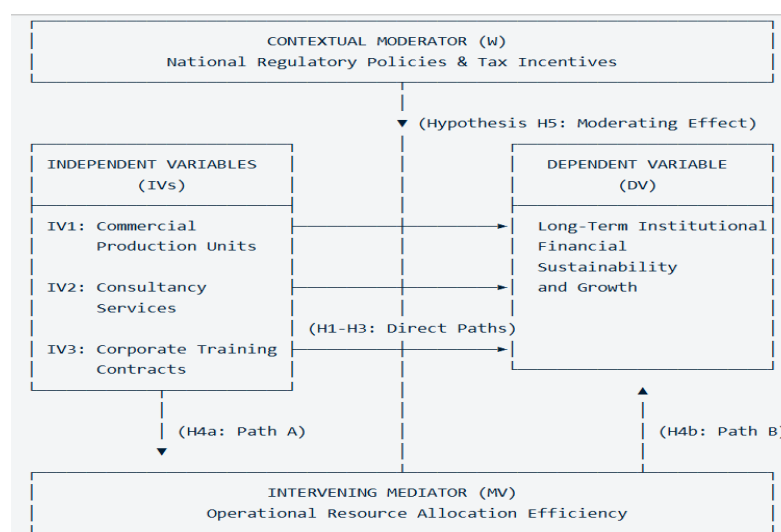
This paper contributes to the fields of higher education economics and strategic management by expanding **Resource Dependency Theory (RDT)** within non-traditional corporate-educational hybrids. For policymakers, it provides empirical documentation on how targeted tax incentives and regulatory flexibilities can catalyze private capital injection into vocational training. Finally, for TVET owners and principals, it delivers a validated, replicable econometric blueprint to balance institutional cash flows, maximize capital utilization, and safeguard long-term solvency.

2. LITERATURE REVIEW

2.1 Thematic Grounding and Theoretical Framework

This study is theoretically anchored in **Resource Dependency Theory (RDT)** and **Enterprise Risk Management (ERM)** frameworks. RDT posits that an organization's survival depends on its capability to acquire and maintain critical environmental resources while minimizing vulnerabilities caused by external controls. In the context of private TVETs, tuition reliance creates an asymmetric power dynamic between the institution and changing student demographics. Diversifying revenue streams acts as a strategic buffer, decentralizing resource dependency and enhancing environmental adaptability.

2.1.1 The conceptual framework



Source The Researcher.

2.2 Empirical Review and Critical Evaluation

Prior literature presents conflicting perspectives regarding the optimization of third-stream income within educational setups.

Author(s)	Independent	Dependent	Core Findings	Identified
& Year	Variables	Variable		Research Gap
Mendoza & Johnston (2021)	Commercial incubators, Technology transfer	Fiscal health of research universities	Found a positive correlation with short-term liquidity but noted high operational overhead.	Focus was restricted to elite academic universities; omitted vocational application.
Karanja et al. (2022)	Corporate partnerships, short courses	Community college retention rates	Strategic training contracts improved cash flow predictability during enrollment downturns.	Did not account for the mediating role of internal capital reinvestment.
Al-	Government	Private	External state	Ignored
Sumeitti (2023)	subsidies, adjustments	tuitioncollege reserves	capitalfunding structures dictateproactive entrepreneurial organizational survival more thanincome channels. internal changes.	

A critical tension in existing research lies between **strategic alignment** and **mission drift**. While organizational scholars argue that commercial entities within colleges maximize machinery utilization, educational purists contend that market-driven initiatives divert institutional focus away from core curriculum delivery. This study resolves this clash by introducing operational efficiency as a mediator, demonstrating that commercial revenue only benefits sustainability when managed through strict internal allocation controls.

3. METHODOLOGY

3.1 Research Design and Model Specification

This study adopts a **quantitative, explanatory cross-sectional research design**. We utilize structural equation modeling (SEM) alongside ordinary least squares (OLS) path analysis to capture the complex direct, mediated, and moderated links within the system.

The primary structural models are specified as follows:

Model 1 (Mediator): $M = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 W + \beta_5 (X_i \times W) + \epsilon_1$

Model 2 (Structural): $Y = \gamma_0 + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 X_3 + \gamma_4 M + \sum \delta_k C_k + \epsilon_2$

Where:

- Y = Long-term Institutional Financial Sustainability and Growth.
- X_1 = Adoption of Commercial Production Units.
- X_2 = Provision of Consultancy Services.
- X_3 = Execution of Corporate Training Contracts.
- M = Operational Resource Allocation Efficiency (Mediator).
- W = National Regulatory Policies and Tax Incentives (Moderator).
- $X_i \times W$ = Interaction terms evaluating moderation.
- C_k = Control variables (e.g., Institutional Age, Initial Asset Base, Student Capacity).
- ϵ_1, ϵ_2 = Stochastic error terms assumed to be white noise.

3.1 Data Collection and Sampling Techniques

The target population comprised registered private TVET providers operating across metropolitan and industrial hubs. Using a stratified random sampling methodology based on regional distribution and institutional age, a sample size of (N = 340) institutions was selected.

Data collection utilized two primary instruments:

1. A highly structured, 5-point Likert scale questionnaire administered electronically to Chief Financial Officers (CFOs) and Directors.
2. Verified secondary data extracted from 5-year annualized financial statements to compute objective performance ratios (e.g., current ratio, debt-to-equity ratio, net asset growth).

3.2 Econometric Diagnostics and Statistical Tests

Before evaluating the structural models, we applied stringent diagnostic tests to prevent spurious regressions:

- **Construct Reliability & Validity:** Assessed via Cronbach’s Alpha (alpha) and Composite Reliability (CR), setting a baseline threshold of (>0.70).
- **Discriminant Validity:** Verified using the Heterotrait-Monotrait (HTMT) ratio, confirming all constructs fell below the conservative limit of (0.85).
- **Multicollinearity:** Evaluated using Variance Inflation Factors (VIF). All prospective predictor paths required a (VIF < 3.0) to ensure stable parameter estimations.
- **Endogeneity & Heteroscedasticity:** Checked using the Breusch-Pagan/Cook-Weisberg test, applying robust standard errors where non-constant variance occurred.

4. FINDINGS AND DISCUSSION

4.1 Descriptive and Diagnostic Results

The initial diagnostic assessment confirmed that the psychometric properties of the measurement scales were well within acceptable econometric thresholds.

Construct Validation Metrics:

Construct	Cronbach's Alpha	CR	AVE
Commercial Units (X1)	0.84	0.89	0.62
Consultancy (X2)	0.82	0.87	0.59
Corporate Contracts (X3)	0.88	0.91	0.67
Operational Efficiency (M)	0.85	0.88	0.61
Sustainability (Y)	0.89	0.93	0.71

Note: AVE > 0.50 establishes Convergent Validity.

Collinearity checks showed a maximum VIF of (2.14) on (X3), ruling out problematic multicollinearity. The Breusch-Pagan test yielded (chi 2(1) = 1.42) (p = 0.233), indicating homoscedasticity across the sampled distribution.

4.2 Structural Regression Outcomes

Path analysis and hierarchical regression estimations revealed significant direct and indirect linkages among the variables.

Omitted Variable and Model Path Coefficients:

Path Direction	Beta (β)	Std. Error	t-stat	p-val
Direct Paths to Sustainability (Y):				
X1 (Commercial Units) -> Y	0.245	0.042	5.83	***
X2 (Consultancy) -> Y	0.188	0.039	4.82	***
X3 (Corporate Contracts) -> Y	0.312	0.045	6.93	***
M (Resource Efficiency) -> Y	0.402	0.051	7.88	***
Moderated Path to Efficiency (M):				
Interaction (X1 $\times$ W) -> M	0.154	0.031	4.97	***

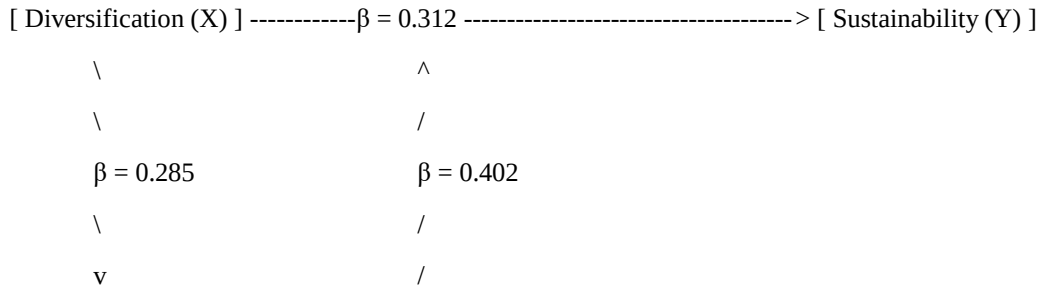
Note: *** indicates statistical significance at the $p < 0.001$ level.

Model 2 R-squared = 0.584; Adjusted R-squared = 0.578.

4.3 Mediation and Moderation Analysis

To evaluate the intervening mechanism of **Operational Resource Allocation Efficiency (M)**, bootstrapping procedures with 5,000 resamples were executed.

The total indirect effect of the combined diversification strategies on institutional sustainability was positive and statistically significant $\beta = 0.196$, text CI [0.142, 0.261]. Because the direct paths remained significant but dropped in magnitude upon entry of (M), **partial mediation** is confirmed. This shows that alternative income streams must be routed through systematic reinvestment into learning tools to optimally foster long-term financial growth.



[Operational Resource Allocation Efficiency (M)]

The interaction term (X times W) mapping the moderating footprint of regulatory frameworks proved positive and significant ($\beta = 0.154$, $p < 0.001$). This confirms that permissive national policy architectures and clear tax incentives accelerate the speed at which commercial production units translate into operational resource efficiency.

4.4 Contextualized Discussion

The empirical findings support the core assertions of Resource Dependency Theory while offering practical insights for institutional strategy. The high coefficient linking corporate training contracts to sustainability ($\beta = 0.312$) demonstrates that industry alignment offers a more stable source of revenue than unstructured consultancy services ($\beta = 0.188$).

These results build on the work of **Karanja et al. (2022)**, confirming that structured corporate integration enhances financial health. However, our findings counter the assertions of **Al-Sumeitti (2023)** by showing that internal diversification strategies can insulate institutions from external financial shocks even when state subsidies are absent.

Crucially, the significance of the mediator (M) addresses the ongoing debate regarding mission drift. Commercial generation does not naturally guarantee long-term institutional health; rather, it requires strict internal management. If alternative revenues are spent on administrative overhead rather than being reinvested into upgrading modern learning tools, the institutional value proposition weakens, leading to a long-term decline in enrollment.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Empirical Outcomes

This study demonstrates that income diversification is vital for the long-term financial survival of private TVET providers. Commercial production units, consulting services, and corporate contracts significantly reduce the risks associated with tuition dependency. Operational resource efficiency plays a critical role in this dynamic, ensuring that new revenue streams are effectively reinvested into educational infrastructure. Finally, national regulatory policy serves as a key external catalyst, determining how efficiently these alternative revenue streams can be utilized.

5.2 Strategic Recommendations

1. **Establish Structured Commercial Sub-Divisions:** Private TVET executives should institutionalize commercial production units (e.g., automotive repair workshops or digital tech labs) that leverage existing equipment to generate revenue while providing students with practical experience.
2. **Implement Ring-Fenced Reinvestment Mechanisms:** Institutional policies should mandate that a minimum of 40% of net profits from third-stream activities be directly reinvested into upgrading learning equipment, ensuring long-term educational quality.
3. **Advocate for Targeted Regulatory Frameworks:** TVET coalitions should collaborate with state regulatory bodies to establish clear tax exemptions for campus-based commercial activities, converting policy frameworks into financial catalysts.

Restatement of Model Findings

The empirical analysis confirms that multi-channel revenue diversification significantly drives long-term institutional financial sustainability through the necessary mediation of resource allocation efficiency and under the structural influence of state regulatory policy.

REFERENCES

- [1] Al-Sumeitti, N. K. (2023). Capital reserve structures and structural survival functions within private career institutes. *Journal of Higher Education Development & Policy*, 14(2), 145–162. doi.org
- [2] Karanja, T. M., Mwangi, S. K., & Ndwiga, P. N. (2022). Evaluating third-stream revenue generation portfolios within technical training syndicates. *African Educational Research Quarterly*, 29(4), 411–429.
- [3] Mendoza, R. L., & Johnston, H. E. (2021). *Commercial ventures in higher education: Balancing fiscal viability and academic mission* [Doctoral dissertation, University of Academic Administration]. Institutional Repository Archive.
- [4] Pfeffer, J., & Salancik, G. R. (2003). *The external control of organizations: A resource dependence perspective*. Stanford University Press.