



Received: 01-08-2026
Accepted: 11-09-2026

Integrated Research and Studies Journal

Exploring the Effects of Entrepreneurship Training on SME Growth: A Case Study of Metal Fabrication Apprenticeships Along Katima Mulilo Road, Lusaka, Zambia

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How to Cite This Article

Kasanka Ng'ona, Robbie Fwambo. Exploring the Effects of Entrepreneurship Training on SME Growth: A Case Study of Metal Fabrication Apprenticeships Along Katima Mulilo Road, Lusaka, Zambia. Int. res. stud. j. 2026; 1(1):7-12.

Abstract

The effective identification and mitigation of factors influencing small and medium enterprise (SME) growth is crucial for enhancing economic development and youth employment in urban informal economies. This study explored the effects of entrepreneurship training on SME growth within informal metal fabrication apprenticeships along Katima Mulilo Road, Lusaka, Zambia. The research aimed to assess the influence of entrepreneurship training on financial literacy; examine its impact on business management practices; identify perceived barriers and enablers to training application; and investigate the moderating role of demographic factors on training effectiveness. A mixed-methods case study design was employed, utilizing a sample of 70 youth-led SME operators selected through purposive sampling. Data were collected using semi-structured questionnaires and interviews, and analyzed through descriptive statistics, chi-square tests, and thematic analysis. The findings revealed a strong positive association between entrepreneurship training and improved financial literacy, with trained respondents significantly

more likely to engage in budgeting, expense tracking, and profit reinvestment. Training also enhanced business management practices, including costing, inventory control, and customer engagement. Key barriers to applying training included limited access to capital, mentorship gaps, and market access issues, while enablers were peer support, relevant training content, and access to workspace. Demographic factors such as age, education level, and business experience significantly moderated training application and outcomes. The study concluded that structured entrepreneurship training, when context-sensitive and paired with enabling resources, can substantially strengthen the operational and financial capabilities of informal metal fabrication SMEs. Sustainable SME growth requires integrated interventions that combine targeted business education, mentorship, improved market access, and demographic-tailored support mechanisms to foster resilient, growth-oriented enterprises in Zambia's informal manufacturing sector.

Keywords: Entrepreneurship Training, SME Growth, Financial Literacy, Business Management, Informal Metal Fabrication, Youth Entrepreneurship, Zambia

1. Introduction

1.1 Background

The effective management of entrepreneurial development within informal sectors is pivotal for fostering sustainable economic growth, particularly in regions grappling with high youth unemployment and underemployment. In Zambia, where over 50% of the population is aged between 15 and 35 years, the informal non-farm sector serves as a critical source of livelihood and

employment [1]. Among these, the Metal Fabrication Informal Apprenticeship (MFIA) system along Katima Mulilo Road in Lusaka represents a significant cluster of youth-led small and medium enterprises (SMEs) engaged in hands-on technical skill acquisition. While these informal apprenticeships provide essential metalworking competencies, they often lack structured exposure to business and financial education, constraining the potential for enterprise scalability, market access, and long-term sustainability. This study explores how targeted entrepreneurship training can bridge this gap, enhancing financial literacy, operational efficiency, and overall SME growth within this localized industrial corridor.

1.2 Statement of the Problem

Youth-led SMEs engaged in informal metal fabrication along Katima Mulilo Road face persistent operational and financial challenges that inhibit sustainable growth. Despite acquiring technical skills through mentor-apprentice systems, many operators struggle with foundational business competencies such as financial planning, strategic costing, inventory management, and customer engagement. While entrepreneurship training is globally recognized as a catalyst for SME development, empirical evidence on its effectiveness within Zambia's informal metal fabrication sector remains sparse. Moreover, existing policy frameworks often overlook the nuanced needs of sector-specific informal enterprises, leading to generic interventions with limited impact. This study addresses this gap by investigating how structured entrepreneurship training influences SME growth outcomes, and how demographic and contextual factors moderate its effectiveness.

1.3 Objectives of the Study

The main objective was to explore the effects of entrepreneurship training on the growth of SMEs engaged in informal metal fabrication apprenticeships along Katima Mulilo Road, Lusaka.

1.4 Specific objectives of the study

1. To assess the influence of entrepreneurship training on financial literacy among youth-led informal metal fabrication SMEs.
2. To examine how entrepreneurship training affects business management practices such as costing, inventory control, and customer engagement.
3. To identify perceived barriers and enablers to applying entrepreneurship training in daily operations.
4. To investigate the moderating role of demographic factors (age, education, experience, gender) on training effectiveness.

1.5 Research Questions

1. To what extent does entrepreneurship training influence financial literacy among youth-led informal metal fabrication SMEs in Lusaka?
2. How does entrepreneurship training affect business management practices among informal metal fabricators?
3. What are the perceived barriers and enablers to applying entrepreneurship training in daily operations?

4. How do demographic factors moderate the effectiveness of entrepreneurship training?

1.6 Theoretical Framework

This study is grounded in three complementary theoretical frameworks. Human Capital Theory posits that investments in education and training enhance individual productivity and economic growth [2]. It provides a lens for understanding how entrepreneurship training builds cognitive and financial capabilities among informal apprentices. Social Learning Theory explains how individuals acquire knowledge through observation, imitation, and modeling [3], relevant in informal apprenticeship settings where learning is often peer- and mentor-driven. Resource-Based View (RBV) emphasizes that internal resources and capabilities determine competitive advantage [4], framing entrepreneurship training as a strategic resource that enhances SME resilience and growth potential.

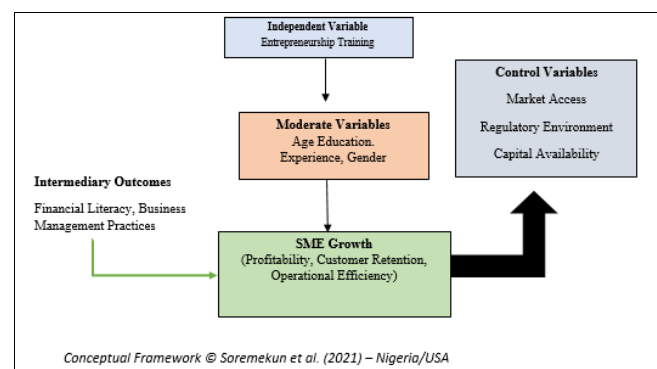


Fig 1: Conceptual Framework

A conceptual framework (Fig 1) was developed to illustrate the relationships between entrepreneurship training (independent variable), intermediary outcomes (financial literacy and business management practices), and SME growth (dependent variable), moderated by demographic factors and influenced by control variables such as market access and capital availability.

2. Literature Review

2.1 Entrepreneurship Training and Business Management Efficiency

Entrepreneurship training is widely recognized as a critical driver of business competency development, particularly within informal and resource-constrained sectors. Globally, experiential and practice-oriented training models have demonstrated superior effectiveness in enhancing financial literacy and strategic decision-making when compared to traditional theoretical pedagogies (Walter & Dohse, 2018). For instance, interventions incorporating “learning by doing” methodologies, such as business simulations and mentorship-based apprenticeships, have been shown to foster deeper cognitive engagement and practical skill retention. In the context of Sub-Saharan Africa, sector-specific training programs—such as those implemented within Ghana’s metal fabrication clusters under the GRATIS Foundation—have yielded tangible improvements in participants’ financial awareness, costing accuracy, and

inventory control (Ariyo & Ekpenyong, 2018). These programs often combine hands-on technical instruction with modular business education, enabling artisans to better forecast costs, manage working capital, and optimize production planning. However, the transferability and scalability of such models are highly contingent upon contextual relevance, the integration of continuous mentorship, and the availability of post-training support structures (Sonnenberg, 2012). Without these enabling conditions, even well-designed training initiatives risk being rendered ineffective, as participants may lack the ongoing guidance or resources necessary to implement learned practices within their dynamic operational environments.

2.2 Financial Literacy and Revenue Growth

Financial literacy stands as a fundamental determinant of SME sustainability, profitability, and growth. Empirical evidence from across Africa indicates that structured entrepreneurship training significantly strengthens core financial management behaviors, including systematic budgeting, disciplined record-keeping, and strategic profit reinvestment (Mano et al., 2012). Studies in Nigeria, for example, highlight that micro-entrepreneurs exposed to financial literacy modules exhibit improved cash flow management and are more likely to separate personal and business finances—a practice strongly correlated with enterprise resilience (Fatoki, 2015). Similarly, research in Kenya's Kariobangi metalworking cluster revealed that training interventions focusing on basic accounting and cost analysis led to measurable gains in profitability and enhanced access to formal microfinance services (Kabbaso & Munene, 2019). In the Zambian context, localized initiatives in districts like Kitwe and Chongwe have introduced modular financial training, resulting in more consistent pricing strategies and improved engagement with financial institutions (Ndhlovu, 2021). Despite these advances, significant barriers persist. The dominance of cash-based transactions, coupled with generally low levels of digital literacy, often limits the adoption of formal financial tools and digital record-keeping systems within informal metal fabrication enterprises. This gap underscores the need for training programs that not only impart knowledge but also introduce simplified, accessible, and context-appropriate financial technologies that align with the operational realities of informal sector operators.

2.3 Market Accessibility as a Moderating Factor

The efficacy of entrepreneurship training is frequently moderated, and at times significantly diluted, by external market conditions and the broader business environment. International research underscores that training outcomes are most robust when complemented by improved market access, reliable supply chains, and opportunities for customer diversification (McKenzie & Woodruff, 2017). For instance, studies in India and Brazil demonstrate that small manufacturers who received business training showed substantially stronger growth trajectories when they also had access to transportation infrastructure, consistent input suppliers, and linkages to formal procurement channels (Bruhn et al., 2018). In contrast, when such market enablers are absent, the practical application of training is severely constrained. Zambia's informal metal fabrication sector

exemplifies this challenge. Operators along corridors like Katima Mulilo Road often grapple with fragmented markets, inadequate infrastructure, limited customer reach, and exclusion from formal tender processes. These structural impediments can negate the potential benefits of even the most well-conceived training programs, as entrepreneurs find themselves unable to source affordable raw materials, reach new clients, or compete effectively. Consequently, training interventions must be embedded within broader, integrated support ecosystems that address not only skill gaps but also critical market failures. This holistic approach is essential for ensuring that enhanced managerial capabilities translate into tangible enterprise growth and improved livelihoods.

2.4 Demographic Influences on Training Effectiveness

Demographic variables—including age, educational attainment, prior business experience, and gender—exert a powerful influence on how entrepreneurs perceive, absorb, and apply entrepreneurship training. Research consistently indicates that younger entrepreneurs often demonstrate greater adaptability to new technologies and innovative business practices, showing higher engagement with digital tools and mobile-based learning platforms (Soomro et al., 2019). Similarly, individuals with higher levels of formal education tend to exhibit stronger uptake of structured business concepts, such as financial forecasting and strategic planning, due to developed cognitive frameworks and greater familiarity with systematic learning (Fatoki & Smit, 2022). Business experience also plays a pivotal moderating role; seasoned operators with several years in trade are more likely to selectively implement training content that aligns with their proven operational realities, whereas novices may require more foundational and generalized instruction. Perhaps the most pronounced demographic factor is gender. Female entrepreneurs in male-dominated sectors like metal fabrication frequently face a compounded set of barriers, including restricted mobility, limited access to mentorship networks, socio-cultural biases, and exclusion from traditional financing avenues (Sanangura & Mutono-Mwanza, 2025). These challenges can significantly hinder their ability to participate in training programs and subsequently apply the acquired knowledge. Therefore, for entrepreneurship training to be genuinely inclusive and effective, it must be deliberately designed to account for these demographic disparities. This necessitates gender-sensitive delivery formats, tailored content for varying educational backgrounds, and flexible learning pathways that resonate with entrepreneurs across different age groups and experience levels.

2.5 Research Gap

While the existing body of literature affirms the intrinsic value of entrepreneurship training for SME development, there remains a notable scarcity of studies that meticulously examine its nuanced application and impact within Zambia's informal metal fabrication sector. Significant gaps persist in understanding how formal business training interacts with deeply embedded informal apprenticeship systems, how it is moderated by localized demographic realities, and how its effectiveness is constrained or enabled by specific market structures and institutional frameworks. Many evaluations also lack longitudinal depth, relying on short-term

assessments that fail to capture the sustained influence of training on enterprise trajectories. This study directly addresses these gaps by providing a context-sensitive, mixed-methods analysis of training effectiveness within the geographically and sectorally bounded setting of Katima Mulilo Road, thereby contributing empirical insights that are both locally relevant and theoretically informed.

3. Methods and Procedures

3.1 Research Design

A mixed-methods case study design was employed, integrating qualitative and quantitative approaches to explore the lived experiences and measurable outcomes of entrepreneurship training within a bounded context [11]. The interpretivist paradigm guided the inquiry, emphasizing subjective meaning and contextual depth.

3.2 Target Population and Sampling

The target population comprised youth-led informal metal fabrication SMEs operating along Katima Mulilo Road, Lusaka. Purposive sampling was used to select 70 SME operators meeting the inclusion criteria: aged 20–40, with at least two years of business experience. Key informants (n=10) from TEVETA and vocational institutions were also included to provide institutional perspectives.

3.3 Data Collection

Primary data were collected through:

- Semi-structured interviews with SME owners and key informants.
- Structured questionnaires administered to 70 participants, covering demographics, training exposure, financial practices, and business performance.
- Document analysis of training curricula and policy reports.

3.4 Data Analysis

Quantitative data were analyzed using descriptive statistics and chi-square tests in SPSS Version 25. Qualitative data were thematically analyzed using NVivo, following Braun and Clarke's six-phase framework [12]. Methodological triangulation enhanced validity.

3.5 Ethical Considerations

Ethical clearance was obtained from the ICU Research Ethics Committee and relevant Zambian authorities. Informed consent was secured from all participants, with assurances of confidentiality and voluntary participation.

4. Presentation of Findings

4.1 Demographic Characteristics

The sample consisted of 70 respondents, predominantly male (68.6%), aged 26–35 years (65.7%), with secondary education (50%) and over three years of business experience (72.8%). A majority (54.3%) had received some form of entrepreneurship training.

Table 1: Background Characteristics of Respondents (N=70)*

Demographic Variable	Category	Frequency	Percentage (%)
Age	20-25 years	15	21.40%
	26-30 years	21	30.00%
	31-35 years	24	34.30%
	36-40 years	10	14.30%
Gender	Male	48	68.60%
	Female	22	31.40%
Highest Education Level	Primary	10	14.30%
	Secondary	35	50.00%
	Tertiary	15	21.40%
	Vocational	10	14.30%
Business Experience	Less than 1 year	6	8.60%
	1-2 years	29	41.40%
	3-5 years	12	17.10%
	More than 5 years	23	32.90%
Received Entrepreneurship Training	Yes	38	54.30%
	No	32	45.70%

4.2 Financial Literacy and Training

Table 2: Financial Literacy Practices by Entrepreneurship Training Exposure

Financial Literacy Practice	Received Training (n=38)	Did Not Receive Training (n=32)	χ^2	p-value
Prepares a monthly budget	82.40%	25.80%	22.15	< .001*
Tracks business expenses formally	89.50%	59.40%	8.41	.004*
Calculates profit margins	76.30%	34.40%	12.58	< .001*
Separates personal & business finances	68.40%	28.10%	11.52	.001*
Reinvests profits into the business	78.90%	46.90%	7.82	.005*
Uses digital tools for financial management	57.90%	21.90%	9.32	.002*

A strong association was found between training and financial literacy practices. Trained respondents were significantly more likely to prepare monthly budgets (82.4% vs. 25.8%), track expenses (89.5% vs. 59.4%), and reinvest profits (78.9% vs. 46.9%) (Table 2). Chi-square tests confirmed a significant relationship between training and budgeting ($\chi^2 = 66.111$, $p < .001$) (Table 2).

4.3 Business Management Practices

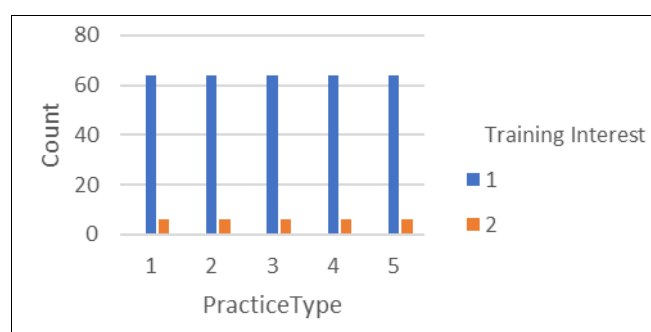


Fig 2: Business Practices by Training Status

Table 3: Education level and record-keeping frequency

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	48.633a	9	0
Likelihood Ratio	50.581	9	0
N of Valid Cases	70		

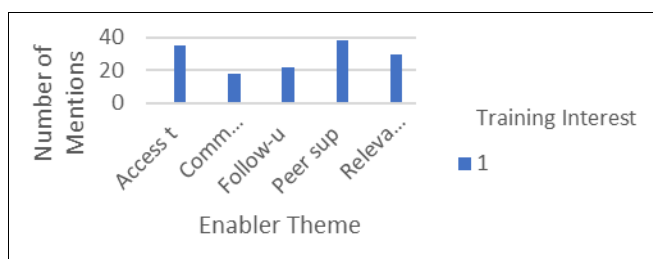
a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is 1.57.

Training positively influenced business management. Respondents with training reported higher engagement in costing, inventory control, customer engagement, and record-keeping (Fig 2). Education level significantly affected record-keeping frequency ($\chi^2 = 48.633$, $p < .001$).

4.4 Barriers and Enablers

Table 4: Frequency Distribution of Reported Barriers and Enablers

Barrier/Enabler Type	Frequency	Percentage
Capital constraints	42	60.00%
Mentorship gaps	18	25.70%
Training support needed	12	17.10%
Market access issues	10	14.30%
Financial literacy gaps	8	11.40%

**Fig 3:** Enablers Supporting Training Application

Key barriers included limited access to capital (60%), mentorship gaps (25.7%), and market access issues (14.3%) (Table 4). Enablers were peer support (54.3%), relevant training content (42.9%), and access to workspace (50%)

4.5 Demographic Moderators

Table 5: Highest education level and training application status

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	30.660a	2	0
Likelihood Ratio	33.204	2	0
N of Valid Cases	70		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.00.

Table 6: Years of business experience and training application status

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.175a	2	0.017
Likelihood Ratio	9.851	2	0.007
N of Valid Cases	70		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.00.

Table 7: Age group and training application status

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	18.667a	1	0	
Continuity Correction	16.406	1	0	
Likelihood Ratio	25.629	1	0	
Fisher's Exact Test				0
N of Valid Cases	70			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.00.

Demographic factors significantly moderated training application. Age ($\chi^2 = 18.667$, $p < .001$), education level ($\chi^2 = 30.660$, $p < .001$), and business experience ($\chi^2 = 8.175$, $p = .017$) were all significant predictors (Tables 5, 6, 7). Gender differences were noted but not statistically testable due to perfect separation in responses.

4.6 Financial Literacy and Entrepreneurship Training

The findings confirm that entrepreneurship training substantially enhances financial literacy among informal metal fabricators, supporting Human Capital Theory [2]. Trained operators demonstrated improved budgeting, expense tracking, and profit reinvestment—practices critical for SME sustainability. However, low financial literacy among untrained respondents highlights the persistent gap in informal apprenticeship systems.

4.7 Business Management Practices

Training exposure led to more systematic approaches to costing, inventory control, and customer engagement, aligning with the Resource-Based View [4]. The influence of education on record-keeping underscores the role of formal schooling in reinforcing training outcomes. Social Learning Theory [3] further explains the observational learning dynamics within mentor-apprentice setups.

4.8 Barriers and Enablers

Structural barriers such as capital constraints and market fragmentation limit the application of training, echoing findings from broader African contexts [9]. Enablers like peer support and relevant content suggest that community-embedded and practical training models are more effective.

4.9 Demographic Moderators

Demographic factors significantly shape training effectiveness. Younger, more educated, and experienced entrepreneurs were more likely to apply training, indicating the need for tailored interventions. Gender-sensitive approaches are essential to address the unique constraints faced by female entrepreneurs.

5. Conclusions and Recommendations

5.1 Conclusions

This study concludes that structured entrepreneurship training positively influences financial literacy and business management practices among informal metal fabrication

SMEs in Lusaka. However, its effectiveness is moderated by demographic factors and constrained by systemic barriers such as limited capital and market access. Training alone is insufficient; integrated support mechanisms are required to translate knowledge into sustainable growth.

5.2 Recommendations

For Policymakers: Integrate entrepreneurship modules into informal apprenticeship curricula through TEVETA and MSMED. Improve market infrastructure and facilitate access to microfinance.

For Training Institutions: Develop hybrid, experiential training models that are gender-sensitive and context-relevant. Strengthen mentorship and peer-learning components.

For SME Operators: Adopt basic financial tools, engage in cooperative networks, and participate in continuous skill development.

5.3 Acknowledgments

The author acknowledges the guidance of Dr. K. Chibomba, the support of ICU faculty, and the participation of SME operators along Katima Mulilo Road.

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