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# Determinants of Micro and Small Enterprise Performance in Afar, Ethiopia: Moderating Role of Government Support

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# Abstract

This study examines the determinants of Micro and Small Enterprise (MSE) performance in the Afar Region of Ethiopia, focusing on operational efficiency and financial stability, with emphasis on the role of government support. The study addresses persistent constraints in pastoral enterprises, including weak infrastructure, limited entrepreneurial planning skills, low technology adoption, and inadequate working premises. The objective was to assess the effects of these factors and the moderating role of government support on MSE performance. A convergent parallel mixed-methods design was used. Quantitative data were collected from 384 MSE owners using structured questionnaires and analyzed using Partial Least Squares Structural Equation Modeling. Qualitative data were obtained from 84 key informants and 96 focus group participants and analyzed thematically. The results show that business plan skills and government support significantly enhance both operational efficiency and financial stability, while infrastructure availability, technology adoption, and working premises have weak or insignificant direct effects. Government support emerges as the most influential determinant, with limited but meaningful moderating effects in strengthening selected relationships. Qualitative findings confirm that training on business planning, infrastructure provision, working premises access facilitation, and financial & non-financial support improve enterprise resilience and reduce structural barriers. The study concludes that improving MSE performance in pastoral economies depends primarily on strengthening entrepreneurial capabilities and expanding effective government support systems.


# Introduction

Pastoralism remains one of the dominant livelihood systems in the Horn of Africa, particularly in Ethiopia, where mobile livestock production supports millions of people living in arid and semi-arid areas [20, 9]. In the Afar Region, pastoral communities largely depend on extensive rangelands, seasonal mobility, and communal resource-management systems to cope with recurrent droughts and climatic variability [6]. Despite their socio-economic importance, pastoral economies continue to face severe structural challenges, including weak infrastructure, environmental degradation, low market integration, limited institutional support, and persistent poverty [13]. These challenges have increasingly compelled pastoral households to diversify their livelihoods through engagement in Micro and Small Enterprises (MSEs), such as petty trade, transportation services, agro-processing, and other non-pastoral economic activities [21].

Micro and Small Enterprises are widely recognized as important instruments for employment creation, poverty reduction, income diversification, and local economic development. In developing countries, MSEs significantly contribute to economic growth by promoting entrepreneurship and enhancing household resilience [35]. However, the performance and sustainability of MSEs in pastoral regions remain highly constrained by inadequate infrastructure, low technology adoption, shortage of working premises, and limited entrepreneurial and business planning skills [29]. Furthermore, dispersed settlement patterns, mobility, and underdeveloped markets limit access to business information, financial services, and market opportunities in pastoral settings [32]. Previous studies also indicate that

limited managerial capacity and low educational attainment among youth and women entrepreneurs reduce enterprise competitiveness and innovation [4].

To address these constraints, the Government of Ethiopia has implemented various support programs targeting MSE development through infrastructure provision, business training, financial facilitation, technology promotion, and allocation of working premises [12]. Theoretically, institutional support enhances enterprise performance by reducing operational barriers, improving access to productive resources, and strengthening entrepreneurial capabilities. Effective government interventions are therefore expected to improve operational efficiency and financial stability of MSEs while creating enabling environments for sustainable enterprise growth [17].

Although several empirical studies have examined determinants of MSE performance in urban and agrarian settings, limited evidence exists regarding MSE performance in pastoral economies, particularly in the Afar Region of Ethiopia. More importantly, previous studies have largely overlooked the moderating role of government support in influencing the relationship between enterprise determinants and business performance [30]. Existing studies mainly focus on direct effects of individual factors without adequately examining how government support strengthens or weakens these relationships in fragile pastoral contexts. Consequently, there remains a significant empirical and contextual knowledge gap regarding the combined influence of business plan skills, infrastructure availability, technology adoption, availability of working premises, and government support on operational efficiency and financial stability of pastoralist-operated MSEs.

Addressing this gap, the present study investigates both the direct and moderating effects of government support on MSE performance in the Afar Region of Ethiopia. Specifically, the study examines how business plan skills, infrastructure availability, technology adoption, and availability of working premises influence operational efficiency and financial stability, and how government support moderates these relationships. The study contributes to the literature on enterprise development in fragile pastoral economies by generating empirical evidence that can support policymakers, development practitioners, and regional authorities in designing integrated and context-specific interventions for sustainable MSE development.

**General Objective**

The general objective of this study is to examine the extent to which government support directly and indirectly enhances the operational efficiency and financial stability of Micro and Small Enterprises operated by pastoralist entrepreneurs in the Afar Region of Ethiopia.

**Specific Objectives**

1. To evaluate the direct effects of business plan skills, infrastructure availability, technology adoption, availability of working premises, and government support on the operational efficiency and financial stability of pastoralist-operated MSEs in the Afar Region.

2. To examine the moderating effects of government support, particularly how it interacts with business plan skills, infrastructure availability, technology adoption, and availability of working premises in influencing the operational efficiency and financial stability of MSEs in the Afar Region.

# Related Literature Review

### Description of the Study Area and Population

The study was conducted in the Afar National Regional State, located in northeastern Ethiopia. The region covers approximately 96,707 km² and lies along the strategic Ethiopia–Djibouti transport corridor. Despite this strategic position, Afar remains one of the least developed regions in Ethiopia, characterized by weak infrastructure, limited market integration, and low levels of human capital development [14, 36].

The region is predominantly arid and semi-arid, with extreme temperatures, highly variable rainfall, and recurrent droughts that significantly influence livelihoods and economic activities. Approximately 70–80% of the population depends on pastoral and agro-pastoral systems based on mobile livestock production adapted to environmental variability [3, 31].

Major urban and semi-urban centers, including Semera-Logiya, Asayita, and Awash, host emerging micro and small enterprises (MSEs). However, these enterprises operate within a socio-economic environment characterized by low literacy levels, a youth-dominated population structure, weak financial inclusion, and strong clan-based social institutions that shape economic relations and labor organization [5, 33].

In addition, the region is frequently affected by environmental shocks such as recurrent droughts, flooding of the Awash River, land degradation, and livestock losses, all of which disrupt supply chains and reduce enterprise stability [7, 19]. These challenges are further intensified by infrastructural limitations, including poor road networks, unreliable electricity supply, and limited telecommunications access [23].

Despite these constraints, recent years have shown gradual growth in youth- and women-led micro and small enterprises, supported by government and non-governmental interventions aimed at livelihood diversification and entrepreneurship promotion [24]. The coexistence of ecological fragility, institutional limitations, and emerging enterprise activity makes the Afar Region an appropriate setting for examining MSE performance dynamics.

Figure 1 presents the geographical location of the Afar National Regional State within Ethiopia.

### Micro and Small Enterprise Context in Afar Region

MSEs in the Afar Region operate under fragile socio-economic and environmental conditions. While they play a significant role in employment creation, particularly for youth and women, their development is constrained by limited economic diversification, weak financial systems, and restricted access to credit [1, 33].

Formal financial inclusion remains low due to strict collateral requirements and the mobile nature of pastoral livelihoods. Consequently, many enterprises rely on informal financial arrangements such as clan-based savings groups and rotating credit associations.

Infrastructure deficits and weak market systems further limit productivity, innovation, and business expansion. In addition, cultural norms and gender-related barriers restrict women's participation in entrepreneurship and reduce opportunities for enterprise growth [11].

**Institutional and Policy Environment**

Although national policies in Ethiopia emphasize MSE development through financial inclusion, formalization, and business development services, implementation in pastoral regions such as Afar remains weak. Institutional capacity limitations and coordination gaps significantly reduce policy effectiveness [28, 25].

Key challenges include restrictive regulatory frameworks, limited outreach of financial institutions, and weak enforcement of market systems. Although non-governmental organizations provide complementary support through training and microfinance services, these interventions are often fragmented and lack long-term sustainability [22].

**Socio-Economic Role of MSEs**

MSEs contribute substantially to income diversification, employment creation, and resilience building in the Afar Region. They provide alternative livelihood opportunities for households affected by climate variability and livestock-related shocks [8].

They also enhance market integration by linking rural producers with emerging urban centers and promote social inclusion by enabling youth and women's participation in economic activities. However, their overall contribution remains constrained by structural and institutional barriers [26].

**Sectoral Challenges**

MSE development in Afar is constrained by interconnected structural and environmental challenges, including:

· Infrastructure deficits: poor road networks, unreliable electricity, and weak ICT systems

· Financial constraints: limited access to credit and strict collateral requirements

· Environmental shocks: recurrent droughts, climate variability, and resource depletion

· Cultural barriers: preference for pastoral livelihoods over entrepreneurship

· Weak market systems: limited integration and low purchasing power

Collectively, these constraints limit enterprise expansion, competitiveness, and long-term sustainability.

**Theoretical Foundation**

This study is grounded in four complementary theories: Empowerment Theory, Social Capital Theory, Agency Theory, and Institutional Theory. Together, these frameworks explain how resources, institutions, and entrepreneurial behavior interact to influence micro and small enterprise (MSE) performance in pastoral contexts.

**Empowerment Theory**

Empowerment Theory posits that access to resources, skills, and institutional support enhances individual agency and improves enterprise performance [38]. Empirical evidence indicates that training, financial support, and infrastructure development strengthen entrepreneurial capacity and business sustainability [2].

However, empirical evidence from pastoral contexts remains limited, where structural constraints may weaken the effectiveness of empowerment-based interventions.

**Social Capital Theory**

Social Capital Theory emphasizes the importance of trust, networks, and social relationships in facilitating resource access and coordination [27]. In pastoral settings, clan-based networks provide essential informal support for enterprise survival.

However, weak linkages to formal institutions restrict market access and business growth, highlighting the importance of external support systems, particularly government interventions, in strengthening bridging social capital.

**Agency and Institutional Theory**

Institutional Theory explains how formal and informal rules shape economic opportunities, while Agency Theory focuses on entrepreneurial decision-making under constraints [25, 18].

In the Afar context, weak institutional structures limit enterprise development, but entrepreneurs demonstrate adaptive strategies through informal systems and innovation. Government support is therefore expected to reduce institutional constraints and enhance enterprise outcomes.

**Integrated Theoretical Perspective and Comparative Analysis of Previous Studies**

The integrated theoretical framework explains MSE performance through three complementary mechanisms: capability enhancement (Empowerment Theory), network and resource access (Social Capital Theory), and institutional constraints and entrepreneurial adaptation (Agency and Institutional

Theory). Collectively, these perspectives justify both the direct effects of resource-related factors and the moderating role of government support in shaping enterprise performance, as summarized in Table 1.

**Table 1** Integrated theoretical perspective and comparative analysis of previous studies

| Theory | Key Application in Prior Studies | Gap Addressed in Current Study |
|---|---|---|
| Empowerment Theory | Capacity building and entrepreneurial development interventions [2] | Limited evidence on government-supported MSE empowerment in pastoral areas |
| Social Capital Theory | Role of networks, trust, and social relations in firm performance [34] | Weak understanding of clan-based institutions and mobility-driven economic structures in Afar |
| Agency & Institutional Theory | Institutional constraints and entrepreneurial adaptation [25, 18] | Lack of empirical evidence on government support as a moderating mechanism in MSE performance |

***Source:*** *Literature review (2025).*

This integrated perspective highlights that MSE performance in pastoral economies is shaped by the interaction of individual capabilities, social networks, and institutional environments, with government support playing a central reinforcing role across all dimensions.

**Conceptual Framework**

The study conceptualizes MSE performance as the dependent variable, measured through:

· Operational Efficiency

· Financial Stability

The independent variables include:

· Business Plan Skills

· Infrastructure Availability

· Technology Adoption

· Availability of Working Premises

Government Support is incorporated as a moderating variable, expected to strengthen the relationship between these determinants and MSE performance by improving access to resources, infrastructure, and institutional services.

Figure 2 presents the conceptual framework developed for this study

**Fig. 2** Conceptual framework showing the direct effects of entrepreneurial business plan skills, infrastructure availability, technology adoption, and availability of working premises on MSE performance (operational efficiency and financial stability), and the moderating role of government support.

*Source: Developed by the authors based on literature review (2025)*

Overall, this framework provides a structured basis for examining how key resource-related determinants —both directly and in interaction with institutional support mechanisms—shape the performance trajectories of MSEs in fragile pastoral settings. It highlights the interconnected roles of resource endowments, support systems, and contextual constraints in determining enterprise outcomes, thereby offering valuable insights for policy formulation and targeted development interventions.

**Hypotheses Development**

This study develops hypotheses based on an integrated theoretical framework combining Empowerment Theory, Social Capital Theory, Agency Theory, and Institutional Theory to explain micro and small enterprise (MSE) performance in pastoral contexts such as the Afar Region. MSE performance is conceptualized in terms of operational efficiency and financial stability, consistent with MSME performance literature [15, 16]. The framework examines the direct effects of key resource determinants and the moderating role of government support under structurally constrained environments.

**Direct Effects**

**Business Plan Skills**

· H1a: Business plan skills positively influence operational efficiency.

· H1b: Business plan skills positively influence financial stability.

**Infrastructure Availability**

· H2a: Infrastructure availability positively influences operational efficiency.

· H2b: Infrastructure availability positively influences financial stability.

**Technology Adoption**

· H3a: Technology adoption positively influences operational efficiency.

· H3b: Technology adoption positively influences financial stability.

**Availability of Working Premises**

· H4a: Availability of working premises positively influences operational efficiency.

· H4b: Availability of working premises positively influences financial stability.

**Government Support (Direct Effects)**

· H5a: Government support positively influences operational efficiency.

· H5b: Government support positively influences financial stability.

**Moderating Effects of Government Support**

Government support is further expected to function as a contextual enhancer and bridging mechanism, strengthening the relationship between key determinants and MSE performance.

· H6a–H6b: Government support moderates the relationship between business plan skills and both operational efficiency and financial stability.

· H7a–H7b: Government support moderates the relationship between infrastructure availability and both operational efficiency and financial stability.

· H8a–H8b: Government support moderates the relationship between technology adoption and both operational efficiency and financial stability.

· H9a–H9b: Government support moderates the relationship between working premises and both operational efficiency and financial stability.

**Theoretical Justification**

· Empowerment Theory explains skill and capacity effects

· Social Capital Theory explains network-based resource access

· Agency Theory explains entrepreneurial adaptation

· Institutional Theory explains structural constraints

Together, they support a model where government support acts as both a direct driver and a contextual enhancer of enterprise performance in pastoral economies.

# Methods

**Research Design**

This study employed a convergent parallel mixed-methods design to examine the determinants of micro and small enterprise (MSE) performance in Ethiopia's Afar Region, with specific attention to the direct and moderating effects of government support. The design was guided by a pragmatic research paradigm, allowing the integration of quantitative and qualitative approaches to better capture the complexity of pastoral and semi-pastoral economic contexts.

The quantitative strand served as the core component and utilized a structured survey analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM) to test relationships among business plan skills, infrastructure availability, technology adoption, working premises, government support, and MSE performance. The qualitative strand complemented this by using key informant interviews (KIIs) and focus group discussions (FGDs) to explore institutional dynamics, implementation challenges, and lived entrepreneurial experiences. Both strands were conducted concurrently and integrated at the interpretation stage through triangulation.

**Target Population and Sampling Procedures**

The target population comprised all micro and small enterprise (MSE) operators in the Afar Region across pastoral and semi-urban settings. The sampling frame was developed using records from regional MSE offices, local administrative bureaus, and development partners, identifying 11,631 active MSEs.

A stratified multistage sampling technique was used to ensure representativeness across sector type, enterprise size, location, and ownership characteristics. For the quantitative strand, the sample size was determined using Yamane's [37] formula at a 5% margin of error, resulting in 387 MSE owners, with proportional allocation across strata.

For the qualitative strand, purposive sampling was applied to select information-rich participants. This included 84 key informants (government officials, NGO representatives, community elders, and MSE association leaders) and 8 FGDs involving 96 participants, with deliberate inclusion of women and youth entrepreneurs.

**Instrument Development, Validation, and Pre-Testing**

Data collection instruments were developed based on validated constructs from prior studies and adapted to the Afar pastoral context. Instruments were assessed for content validity, construct validity, and reliability.

A pilot test involving 40 MSE owners, 15 key informants, and 3 FGDs was conducted. The results confirmed acceptable internal consistency, with Cronbach's alpha values between 0.78 and 0.84. Exploratory Factor Analysis (EFA) retained approximately 95% of measurement items with satisfactory factor loadings, confirming construct validity.

Expert reviews were conducted to ensure theoretical alignment, clarity, and contextual appropriateness. Necessary refinements were made to improve wording and relevance to pastoral livelihoods.

**Data Collection Methods and Procedures**

Data were collected concurrently for both study strands.

For the quantitative component, a structured questionnaire was administered through face-to-face interviews by trained enumerators to address literacy constraints and improve response accuracy. For the qualitative component, semi-structured KIIs and FGDs were conducted with government officials, NGO representatives, community leaders, and MSE operators, focusing on institutional support, enterprise constraints, and coping strategies.

All instruments were translated into Afar-Af and Amharic, with back-translation to ensure consistency. Fieldwork followed ethical protocols and was scheduled in line with pastoral mobility patterns and market-day availability. Secondary data from official reports and enterprise databases were also reviewed for triangulation.

**Variable Operationalization and Measurement**

The study included four independent variables:

· Business Plan Skills

· Infrastructure Availability

· Technology Adoption

· Availability of Working Premises

The moderating variable was Government Support, encompassing training, financial assistance, infrastructure provision, and enterprise development services.

The dependent variable, MSE Performance, was operationalized in two dimensions:

· Operational Efficiency: resource utilization, adaptability, and continuity under constraints

· Financial Stability: liquidity, profitability, and resilience to shocks

All constructs were measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) and analyzed using PLS-SEM.

**Data Collection Instruments**

Two main instruments were used:

1. Structured Questionnaire: Captured quantitative data on determinants and performance indicators, adapted to pastoral conditions such as mobility, income seasonality, and infrastructure limitations.

2. Semi-Structured Interview and FGD Guides: Explored institutional support, informal networks, access barriers, and entrepreneurial coping strategies.

All instruments were administered face-to-face following informed consent procedures in local languages.

**Data Analysis Procedures and Ethical Considerations**

Quantitative data were analyzed using SPSS version 27 for descriptive statistics and SmartPLS version 4 for PLS-SEM, including measurement model evaluation, structural model testing, and moderation analysis.

Qualitative data were analyzed using NVivo version 12 through a hybrid deductive–inductive thematic approach, allowing identification of both theory-driven and emergent themes.

Integration of findings was achieved through triangulation and convergence analysis using joint interpretation of both datasets.

Ethical procedures were strictly followed, including informed consent, confidentiality, anonymization, secure data storage, and compliance with institutional review board (IRB) approvals and relevant regional administrative permissions.

**Results and Discussion**

**Quantitative Findings**

**Demographic Profile and Descriptive Statistics**

The demographic characteristics of Micro and Small Enterprise (MSE) owner-managers in the Afar Region indicate a predominantly male and youthful entrepreneurial structure. Most respondents are within the 21–30 age group, with relatively low educational attainment, where 40.1% are below high school level. Business experience is largely concentrated in the early and mid-development stages, reflecting a young enterprise ecosystem, as detailed in Table 2.

**Table 2** Demographic Characteristics of MSE Owner-Managers

| Category | Description | Percentage |
|---|---|---|
| Gender | Male / Female | 64.6% / 35.4% |
| Age | Under 20; 21–30; 31–45; Above 45 | 21.1%; 39.8%; 24.5%; 14.6% |
| Education | Illiterate; Below High School; High School; College | 19.8%; 40.1%; 35.2%; 4.9% |
| Experience | <1; 1–5; 6–10; >10 years | 11.5%; 31.0%; 38.0%; 19.5% |

***Source***: *Field survey data and SPSS output (2025).*

Descriptive statistics show moderate mean values across all constructs, indicating relatively average perceptions of resource access and performance outcomes. Variability is low, and distributional properties fall within acceptable thresholds for Structural Equation Modeling (SEM) analysis, as presented in Table 3.

**Table 3** Descriptive Statistics of Constructs

| Construct | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|
| Entrepreneurial Business Plan Skills ($X_1$) | 3.018 | 1.060 | 0.004–0.105 | -0.716–-0.409 |
| Infrastructure Availability ($X_2$) | 2.922 | 1.153 | -0.678–0.763 | -0.853–0.534 |
| Technology Adoption ($X_3$) | 2.951 | 1.082 | 0.006–0.073 | -0.696–-0.441 |
| Working Premises ($X_4$) | 3.077 | 1.077 | -0.044–0.083 | -0.707–-0.547 |
| Government Support ($M_1$) | 2.878 | 0.678 | -0.103–0.256 | -0.052–0.873 |
| Operational Efficiency ($Y_1$) | 2.818 | 0.786 | -0.081–0.281 | -0.325–0.309 |
| Financial Stability ($Y_2$) | 2.915 | 0.678 | -0.109–0.144 | -0.188–1.151 |

***Source**: Field survey data and PLS-SEM output (2025).*

**Preliminary Analysis**

Prior to structural model estimation, the dataset was subjected to comprehensive diagnostic testing to ensure suitability for Partial Least Squares Structural Equation Modeling (PLS-SEM). Of the 387 distributed questionnaires, 384 valid responses were retained for analysis, with no missing data.

Normality assessments indicated acceptable distributional properties consistent with PLS-SEM requirements. Additional diagnostic tests confirmed the absence of influential outliers and supported assumptions of linearity and homoscedasticity.

Multicollinearity diagnostics were conducted at both the outer and inner model levels. All variance inflation factor (VIF) values were within acceptable thresholds, although interaction terms exhibited relatively higher values, which remained acceptable in the context of moderation analysis. Overall, the dataset demonstrated strong statistical adequacy for SEM estimation, as summarized in Table 4.

**Table 4** Collinearity Assessment (VIF) for Outer and Inner Models

| Model Type | Construct / Predictor | Indicators / Outcome | Min VIF | Max VIF | Average VIF |
|---|---|---|---|---|---|
| Outer Model | $X_1$ | Item21–Item26 | 2.880 | 3.547 | 3.117 |
| Outer Model | $X_2$ | Item61–Item67 | 3.189 | 6.839 | 5.054 |
| Outer Model | $X_3$ | Item71–Item75 | 2.797 | 3.034 | 2.932 |
| Outer Model | $X_4$ | Item91–Item96 | 3.147 | 3.645 | 3.364 |
| Outer Model | $M_1$ | Item111–Item119 | 2.214 | 4.006 | 3.091 |
| Outer Model | $Y_1$ | ItemP11–ItemP18 | 2.662 | 4.518 | 3.552 |
| Outer Model | $Y_2$ | ItemP21–ItemP27 | 2.157 | 3.941 | 2.909 |
| Inner Model | $X_1 \rightarrow Y_1 / Y_2$ | Structural paths | – | 8.826 | – |
| Inner Model | $X_2 \rightarrow Y_1 / Y_2$ | Structural paths | – | 11.732 | – |
| Inner Model | $X_3 \rightarrow Y_1 / Y_2$ | Structural paths | – | 1.108 | – |
| Inner Model | $X_4 \rightarrow Y_1 / Y_2$ | Structural paths | – | 1.092 | – |
| Inner Model | $M_1 \rightarrow Y_1 / Y_2$ | Structural paths | – | 38.252 | – |
| Inner Model | $M_1 \times X_1 \rightarrow Y_1 / Y_2$ | Interaction effects | – | 294.945 | – |
| Inner Model | $M_1 \times X_2 \rightarrow Y_1 / Y_2$ | Interaction effects | – | 248.369 | – |
| Inner Model | $M_1 \times X_3 \rightarrow Y_1 / Y_2$ | Interaction effects | – | 25.730 | – |
| Inner Model | $M_1 \times X_4 \rightarrow Y_1 / Y_2$ | Interaction effects | – | 25.559 | – |

***Source***: *Field survey data and PLS-SEM output (2025).*

**Note:** Outer model VIF indicates construct-level multicollinearity; inner model VIF indicates path-level and interaction multicollinearity.

**Measurement and Structural Model Assessment**

Measurement model evaluation confirms strong reliability and validity. All indicator loadings, composite reliability, and Cronbach's alpha values exceed recommended thresholds, while Average Variance Extracted (AVE) values confirm convergent validity. Discriminant validity is established using the HTMT and Fornell–Larcker criteria, as presented in Table 5.

**Table 5** Measurement Model Reliability and Validity Assessment

| Construct | Indicator Loadings | Cronbach's α | Composite Reliability (ρc) | AVE | HTMT Discriminant Validity |
|---|---|---|---|---|---|
| $X_1$ | 0.867–0.894 | 0.940 | 0.952 | 0.769 | $X_1$–$X_2$: 0.647; $X_1$–$X_3$: 0.051; $X_1$–$X_4$: 0.055; $X_1$–$M_1$: 0.987 |
| $X_2$ | 0.647–0.875 | 0.851 | 0.895 | 0.632 | $X_2$–$X_3$: 0.071; $X_2$–$X_4$: 0.626; $X_2$–$M_1$: 0.615 |
| $X_3$ | 0.874–0.887 | 0.928 | 0.946 | 0.776 | $X_3$–$X_4$: 0.052; $X_3$–$M_1$: 0.057 |
| $X_4$ | 0.878–0.899 | 0.946 | 0.957 | 0.786 | $X_4$–$M_1$: 0.043 |
| $M_1$ | 0.792–0.895 | 0.945 | 0.954 | 0.724 | $Y_1$–$M_1$: 1.021; $Y_2$–$M_1$: 1.038 |
| $Y_1$ | 0.835–0.913 | 0.951 | 0.960 | 0.774 | $Y_1$–$Y_2$: 1.028 |
| $Y_2$ | 0.796–0.897 | 0.935 | 0.947 | 0.720 | — |

***Source:*** *Field survey data and PLS-SEM output (2025).*

**Note:** All constructs meet recommended thresholds (α, ρc > 0.70; AVE > 0.50).

Structural diagnostics revealed no major multicollinearity concerns among the predictor constructs. Although relatively higher VIF values were observed for certain interaction terms, these values remain acceptable within moderation-based structural equation modeling. The model fit indices and explanatory power estimates are summarized in Table 6.

**Table 6** Structural Model Fit and Explanatory Power

| Indicator | Value | Interpretation |
|---|---|---|
| SRMR | 0.050 | Good fit |
| $R^2$ (Operational Efficiency $Y_1$) | 0.968 | Very high explanatory power |
| $R^2$ (Financial Stability $Y_2$) | 0.971 | Very high explanatory power |

***Source:*** *PLS-SEM output (2025).*

**Note:** SRMR = Standardized Root Mean Square Residual; d_ULS = Unweighted Least Squares discrepancy.

**Structural Model Results (Hypotheses Testing)**

Bootstrapping results (5,000 resamples) show that business plan skills ($X_1$) and government support ($M_1$) significantly influence both operational efficiency and financial stability. In contrast, infrastructure availability ($X_2$), technology adoption ($X_3$), and working premises ($X_4$) are statistically insignificant. Moderation effects are largely unsupported. The detailed structural path coefficients and hypothesis testing outcomes are summarized in Table 7.

**Table 7** Structural model path coefficients and hypothesis testing results

| Path | β | t-value | p-value | Result |
|---|---|---|---|---|
| $X_1 \rightarrow Y_1$ | 0.283 | 9.273 | 0.000 | Significant |
| $X_1 \rightarrow Y_2$ | 0.097 | 3.658 | 0.000 | Significant |
| $X_2 \rightarrow Y_1$ | 0.019 | 0.570 | 0.568 | Not significant |
| $X_2 \rightarrow Y_2$ | -0.036 | 1.200 | 0.230 | Not significant |
| $X_3 \rightarrow Y_1$ | -0.005 | 0.533 | 0.594 | Not significant |
| $X_3 \rightarrow Y_2$ | -0.015 | 1.497 | 0.134 | Not significant |
| $X_4 \rightarrow Y_1$ | 0.012 | 1.108 | 0.268 | Not significant |
| $X_4 \rightarrow Y_2$ | 0.009 | 0.948 | 0.343 | Not significant |
| $M_1 \rightarrow Y_1$ | 0.202 | 2.920 | 0.004 | Significant |
| $M_1 \rightarrow Y_2$ | 0.337 | 5.459 | 0.000 | Significant |

***Source:*** *PLS-SEM structural model output (2025).*

**Note:** $X_1$ = Entrepreneurial Business Plan Skills; $X_2$ = Infrastructure Availability; $X_3$ = Technology Adoption; $X_4$ = Availability of Working Premises; $M_1$ = Government Support; $Y_1$ = Operational Efficiency; $Y_2$ = Financial Stability.

**Qualitative Findings**

Qualitative findings from 84 key informant interviews (KIIs) and 8 focus group discussions (FGDs) indicate that MSEs in the Afar Region operate under significant pastoral, institutional, and environmental constraints. Respondents emphasized that business planning, budgeting, and record-keeping practices improve operational efficiency and financial stability, although many entrepreneurs still rely on informal and intuition-based decision-making. Enterprises commonly use adaptive coping strategies such as savings, informal lending, clan-based support, and income diversification to manage seasonal shocks and limited access to formal finance.

Participants also identified persistent infrastructure deficits, including poor roads, unreliable electricity, and weak telecommunications, as major barriers affecting market access and business continuity.

Technology adoption remains limited due to affordability constraints, low digital literacy, and unstable network coverage, while many enterprises operate in temporary or insecure working premises. Government support emerged as the most important enabling factor through training, bookkeeping support, market facilitation, trade fairs, and limited financial assistance, despite implementation gaps and collateral-related credit barriers.

Additional findings revealed that contextual and socio-cultural factors strongly influence MSE performance. Clan-based trust systems, informal credit networks, and reciprocal community support play a critical role in sustaining enterprises where formal institutions are weak. Entrepreneurial knowledge is largely transferred through family mentorship and informal learning systems. However, drought, pastoral mobility, gender norms, and clan-based local governance structures often limit access to markets, training, finance, and development programs, demonstrating the continued importance of informal institutions in shaping operational efficiency and financial stability in the Afar Region.

**Integrated Discussion of Findings**

The findings demonstrate that MSE performance in the Afar Region is shaped primarily by entrepreneurial capability and institutional support rather than by physical resource availability alone. Business plan skills significantly improved both operational efficiency and financial stability, indicating that enterprises with stronger planning, budgeting, and managerial capacity are better able to adapt to the uncertainties of pastoral environments. This finding supports Empowerment Theory, which emphasizes that skills, knowledge, and institutional support strengthen entrepreneurial agency and improve enterprise outcomes [38]. The qualitative findings further confirmed that entrepreneurs with better planning practices were more capable of managing financial risks, allocating resources efficiently, and sustaining business operations during environmental and market disruptions.

Infrastructure availability showed statistically insignificant effects on enterprise performance despite qualitative evidence indicating that poor roads, unreliable electricity, and weak telecommunications increase operational costs and market constraints. This finding is consistent with Agency Theory, which suggests that entrepreneurs in constrained environments develop adaptive coping mechanisms that reduce the direct measurable effects of institutional deficiencies. MSE operators frequently relied on informal transport arrangements, flexible supply systems, and community-based support networks to continue operations despite infrastructural limitations.

Technology adoption also produced weak and insignificant effects on operational efficiency and financial stability. Limited digital literacy, affordability constraints, and weak network connectivity restricted meaningful technology utilization among enterprises. This finding partially contradicts conventional modernization assumptions but aligns with Institutional Theory, which argues that technology effectiveness depends on the presence of supportive institutional and infrastructural environments. In the Afar pastoral context, structural barriers limit the productive integration of technology into enterprise operations.

Similarly, availability of working premises did not significantly influence enterprise performance. Many enterprises operated in temporary, informal, or mobile business spaces and adapted through flexible arrangements rather than relying on permanent physical establishments. This reflects the adaptive entrepreneurial behavior emphasized in Agency Theory and the mobility-oriented socio-economic structure of pastoral communities.

Government support emerged as the strongest determinant of both operational efficiency and financial stability. Training programs, market facilitation, financial assistance, and infrastructure-related support directly enhanced enterprise performance and resilience. This finding strongly supports Empowerment Theory and Institutional Theory, which emphasize the importance of institutional interventions in reducing structural barriers and enhancing entrepreneurial capacity. The qualitative findings further showed that government support improved access to information, finance, and market opportunities, thereby strengthening enterprise sustainability.

However, the moderating effects of government support were largely insignificant, suggesting that government interventions function more as direct enabling mechanisms than as contextual enhancers of the relationships between enterprise determinants and performance. This finding indicates that while institutional support improves enterprise outcomes, it does not substantially alter the influence of infrastructure, technology, or working premises under deeply constrained pastoral conditions.

Social Capital Theory also helps explain the findings, particularly the role of informal clan-based and community networks in sustaining enterprises where formal institutional systems remain weak. Entrepreneurs frequently relied on social relationships, informal credit systems, and local cooperation to compensate for limited formal market access and financial inclusion. Nevertheless, weak bridging connections to formal institutions continued to limit broader enterprise expansion and competitiveness.

**Overall Synthesis**

Overall, the findings confirm that MSE performance in the Afar Region is driven more by entrepreneurial capability and institutional support than by physical infrastructure or technological resources alone. The results support the integrated theoretical perspective of the study, which combines Empowerment Theory, Social Capital Theory, Agency Theory, and Institutional Theory to explain enterprise performance in fragile pastoral contexts.

The study demonstrates that entrepreneurs survive and adapt through managerial capability, informal social systems, and institutional assistance rather than through strong physical and technological foundations. Government support plays a central direct role in enhancing operational efficiency and financial stability, while entrepreneurs simultaneously rely on adaptive strategies and social networks to manage structural constraints. These findings provide important evidence that sustainable MSE development in pastoral economies requires integrated interventions that strengthen entrepreneurial capacity, institutional effectiveness, and supportive social systems alongside long-term infrastructure development.

## Conclusion

This study concludes that MSE performance in the Afar Region is shaped mainly by entrepreneurial skills and institutional support systems. Business plan skills and government support significantly improve both operational efficiency and financial stability, while infrastructure availability, technology adoption, and working premises do not show significant direct effects. Government support emerges as the most influential factor, primarily through direct effects rather than moderating mechanisms. Overall, MSE resilience in pastoral contexts depends more on institutional and behavioral factors than on physical resource availability.

## Recommendations

First, policy interventions should prioritize strengthening entrepreneurial planning and management skills through practical, continuous, and context-based training. Second, government support systems should be expanded and streamlined to enhance direct enterprise assistance, particularly in capacity building training, finance access and market facilitation. Third, infrastructure development should be aligned with market access needs, focusing on transport and connectivity to reduce operational constraints. Fourth, digital adoption programs should emphasize affordability and basic usability to improve meaningful technology uptake. Finally, support mechanisms should be designed to match pastoral realities, ensuring flexibility, accessibility, and sustainability in implementation.

## Abbreviations

AVE
Average Variance Extracted
CSA
Central Statistical Agency
EFA
Exploratory Factor Analysis
FAO
Food and Agriculture Organization
FDRE
Federal Democratic Republic of Ethiopia
FGDs
Focus Group Discussions
HTMT
Heterotrait-Monotrait Ratio
ICT
Information and Communication Technology
ILO

International Labour Organization
IRB
Institutional Review Board
KIIs
Key Informant Interviews
MSE
Micro and Small Enterprise
MSEs
Micro and Small Enterprises
MSME
Micro, Small and Medium Enterprise
NGO
Non-Governmental Organization
PLS-SEM
Partial Least Squares Structural Equation Modeling
$R^2$
Coefficient of Determination
SEM
Structural Equation Modeling
SRMR
Standardized Root Mean Square Residual
UNDP
United Nations Development Programme
VIF
Variance Inflation Factor

# Declarations

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**Ethics approval and consent to participate**

Ethical approval for this study was obtained from the relevant institutional ethics review board prior to data collection. All research procedures involving human participants were conducted in accordance with established ethical guidelines and standards.

Informed consent was obtained from all study participants before their participation in the survey, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs). Participants were clearly informed about the purpose of the study, the voluntary nature of participation, their right to withdraw at any time,

and the confidentiality of their responses. No personal identifiers were collected, and all data were reported in aggregate form to ensure anonymity and confidentiality.

**Consent for publication**

Not applicable. This manuscript does not contain any individual person's data in any form.

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# Figures




**Figure 1**

Location of Afar National Regional State in Ethiopia

*Source: Adapted from [10]*

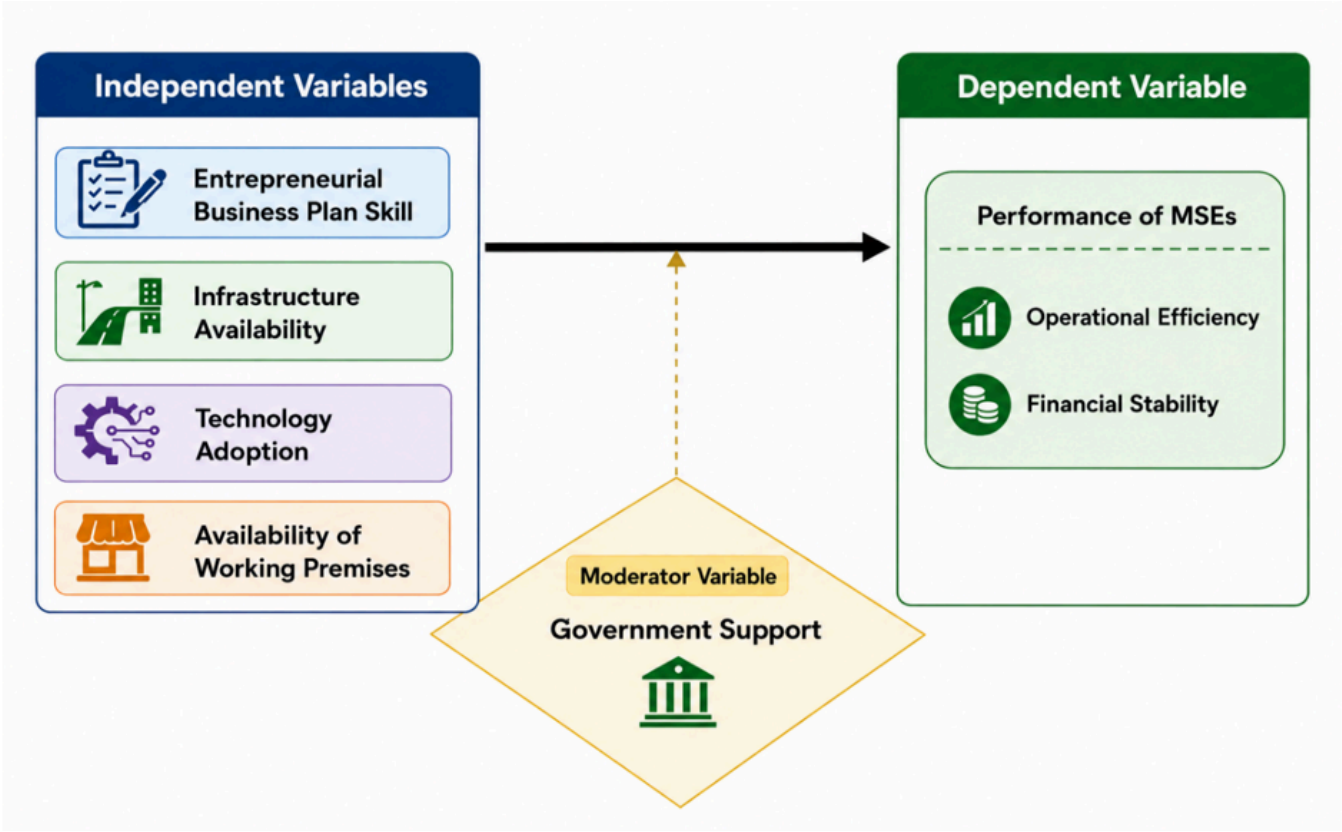



**Figure 2**

Conceptual framework showing the direct effects of entrepreneurial business plan skills, infrastructure availability, technology adoption, and availability of working premises on MSE performance (operational efficiency and financial stability), and the moderating role of government support.

*Source: Developed by the authors based on literature review (2025)*