Journal of Investment and Management
2025, Vol. 14, No. 4, pp. 120–141
https://doi.org/10.11648/j.jim.20251404.11

Research Article

Determinants of MSE Performance in Afar, Ethiopia: The Moderating Role of NGO Support

Abubeker Ali Abubeker*, Gedif Tessema Sinshaw, Assefa Tsegay Tensay

Department of Management, University of Gondar, Gondar, Ethiopia

Abstract

This study examines the direct and moderating effects of Non-Governmental Organization (NGO) support on the operational efficiency and financial stability of micro and small enterprises (MSEs) operated by pastoralist entrepreneurs in Ethiopia's Afar Region. Employing a convergent parallel mixed-methods design, data were collected from 384 MSE owners through structured surveys and from 84 key informants and 96 focus group participants via interviews and discussions. Partial Least Squares Structural Equation Modeling (PLS-SEM) assessed the direct effects of access to finance, market linkages, raw material availability, capacity-building training, and NGO support on performance outcomes, along with the moderating influence of NGO interventions. Findings reveal that NGO support exerts the strongest direct effects on both operational efficiency and financial stability, while market linkages and access to finance also positively influence outcomes. Raw material availability showed limited direct effects but was significantly strengthened by NGO support, highlighting the value of targeted interventions. Capacity-building training had minimal direct impact, indicating a need for context-adapted programs. Qualitative evidence confirms that NGO initiatives—through financial assistance, training, market facilitation, and youth-and women-focused programs—mitigate structural barriers and enhance enterprise resilience. The study underscores the pivotal role of NGOs in fostering sustainable MSE performance in fragile pastoral economies.

Keywords

NGO Support, Pastoralist Entrepreneurship, Micro and Small Enterprises, Afar Region, Operational Efficiency, Financial Stability, Ethiopia

1. Introduction

Pastoralism remains central to rural livelihoods in the Horn of Africa, including Ethiopia, where mobile livestock systems support millions of people and are finely adapted to arid and semi-arid conditions [11]. ″In the Afar Region, pastoral livelihoods depend on extensive rangelands, seasonal mobility, and communal resource-use institutions that foster resilience amid climatic variability and water scarcity″ [54]. Despite their socio-cultural importance, these pastoral economies operate in fragile ecological and institutional settings, confronting recurrent droughts, land degradation, market volatility, and persistent policy marginalization [21]. ″Such structural constraints curtail productivity, prompting households to supplement herding with small-scale trade, transport services, and other income sources—a diversified but often precarious livelihood base″ [14].

Efforts to expand entrepreneurship in pastoral regions en-

*Corresponding author: abubekerali92@gmail.com (Abubeker Ali Abubeker)

Received: 24 November 2025; **Accepted:** 6 December 2025; **Published:** 30 December 2025

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counter significant barriers [38]. ″Low population density and mobility limit market development, while inadequate infrastructure constrains the flow of goods, information, and financial services″ [4]. Informal institutions—such as ″clan-based governance and customary land tenure—shape access to assets and credit in distinct ways that complicate enterprise growth″ [26]. Limited formal education and managerial skills further constrain innovation and business competitiveness among pastoral youth and women [42]. Consequently, transitioning to market-oriented micro and small enterprises (MSEs) requires locally tailored development approaches.

Within this landscape, Non-Governmental Organizations (NGOs) play an increasingly important role by providing training, facilitating access to microfinance, strengthening cooperatives, and promoting market linkages [36]. ″Effective NGO programs build entrepreneurial capacity while reinforcing local institutions and social capital″ [16]. However, outcomes remain mixed: ″short project cycles, weak coordination, donor dependency, and limited contextual adaptation frequently undermine sustainability″ [5].

Despite extensive NGO engagement, sustainable entrepreneurial development in pastoral areas such as Afar remains limited. Empirical evidence indicates that NGO interventions have not consistently translated into durable improvements in business performance, operational efficiency, or financial stability of MSEs. ″A clear research gap persists regarding how specific NGO support mechanisms—such as finance access, market linkage facilitation, and capacity-building—shape measurable enterprise outcomes in pastoral settings″ [23, 23].

Addressing this gap, the present study examines the direct and moderating effects of NGO support on the operational efficiency and financial stability of pastoralist MSEs in the Afar Region, thereby contributing to evidence-based strategies for inclusive and resilient enterprise development.

General Objective

The general objective of this study is to examine the extent to which NGO support interventions directly and indirectly enhance the operational efficiency and financial stability of micro and small enterprises (MSEs) operated by pastoralist entrepreneurs in Ethiopia, with particular emphasis on the Afar Region.

Specific Objectives

1) To evaluate the direct effects of access to finance, market linkages, raw material availability, capacity-building training and NGO support on the operational efficiency and financial stability of pastoralist-operated MSEs in the Afar Region.
2) To examine the moderating effects of NGO support, particularly how it interacts with key determinants such as access to finance, market linkages, raw material availability, and capacity-building training to influence the operational efficiency and financial stability of MSEs in the Afar Region.

2. Related Literature Review

2.1. Characteristics of Study Area

The study was conducted in the Afar National Regional State in northeastern Ethiopia, an arid and semi-arid lowland region where extreme temperatures, highly variable rainfall, and recurrent droughts shape both pastoral livelihoods and emerging enterprise systems. Afar covers approximately 96,707 km² and occupies a strategic position along the Ethiopia-Djibouti transport corridor, yet remains among the least developed regions in terms of infrastructure, human capital, and market integration [27].

Livelihoods in Afar are predominantly pastoral, with an estimated 70-80% of households dependent on mobile or semi-mobile livestock production systems adapted to rangeland variability [4]. Major urban centers—such as Semera-Logiya, Asayita, and Awash—host a growing but structurally constrained micro and small enterprise (MSE) sector. Low literacy rates, a youth-dominated demographic profile, limited access to formal finance, and strong clan-based social institutions create a distinctive socio-economic environment in which informal norms heavily influence business operations, contract enforcement, and labor relations [12].

Source: Adapted from Central Statistical Agency (CSA), (2025).

Figure 1. *Map of Ethiopia Highlighting the Afar National Regional State.*

Environmental shocks, including multi-year droughts, Awash River flooding, land degradation, and periodic livestock die-offs, intensify vulnerabilities for MSEs that rely on predictable supply chains, energy availability, and stable market locations [13]. Infrastructure gaps—particularly unreliable electricity, insufficient all-weather roads, and weak telecommunications connectivity—further hinder enterprise productivity, innovation, and expansion [44]. Despite these

persistent constraints, Afar has witnessed gradual growth in youth- and women-led enterprises, supported by government initiatives and NGO programs aimed at livelihood diversification, small-scale service sector development, and agro-pastoral value-chain participation [46]. This unique combination of ecological fragility, pastoral mobility, institutional informality, and emerging urban enterprise activity positions Afar as a highly relevant context for examining MSE performance and assessing how institutional and NGO support mechanisms moderate enterprise outcomes in fragile pastoral economies. Figure 1 presents Afar's geographical location and administrative boundaries within Ethiopia.

2.1.1. Micro-Small Enterprises (MSEs) in the Afar Region

Micro and Small Enterprises (MSEs) in the Afar Region operate in a challenging socio-ecological environment defined by pastoral livelihoods, climatic variability, and limited market infrastructure. ″Although MSEs are widely promoted in Ethiopia as engines of employment and resilience, in pastoral zones like Afar their growth remains curtailed by limited diversification, constrained access to finance, and weak institutional support″ [54]. Research on MSEs in Ethiopia underscores that formal financial access is particularly weak in remote areas, with youth-owned firms often excluded from traditional credit sources due to collateral demands and mobility constraints [55]. As a result, many enterprises in pastoral settings remain small-scale, informal, and highly dependent on seasonal trade and service activities that align with pastoral mobility.

Infrastructure shortfalls—such as ″unreliable power, sparse road networks, and limited connectivity—further undermine MSE efficiency and innovation″ [54]. Social and gender dynamics also play a role: ″women entrepreneurs in pastoral contexts face cultural barriers, limited mobility, and lower access to formal business training and credit, complicating their ability to scale″ [23]. While NGOs and development agencies have introduced pilot programs delivering business training, livelihood support, and climate-oriented interventions, these tend to be fragmented and not yet scaled for systemic impact. Thus, despite their potential, MSEs in Afar remain under-supported and require tailored, resilience-focused institutional strategies to fulfill their role as drivers of inclusive economic development.

2.1.2. Institutional and Policy Environment

Institutional and policy frameworks in Ethiopia strongly influence MSE development in pastoral regions, but they often fall short in contexts like Afar. ″National strategies call for formalization, business support services, and improved access to finance, but gaps in local implementation are profound due to logistical constraints, weak decentralization, and under-resourced local agencies″ [42]. ″Licensing, tax compliance, and regulatory clarity remain major obstacles for enterprises in remote pastoral districts″ [54].

Access to credit is particularly challenging: ″microfinance institutions penetrate poorly into pastoral zones, and formal banking remains out of reach for many MSE owners because of collateral requirements and risk aversion″ [40]. Informal financial mechanisms partially fill this gap but lack sustainability and scale. Market governance is also weak: ″value chain linkages are limited, marketplaces are often underdeveloped, and regulatory enforcement is inconsistent″ [54].

NGOs play an important but uneven role, delivering training, seed capital, business advice, and resilience-building initiatives. ″However, the donor-driven nature of these interventions often limits their sustainability and reach″ [36]. Weak coordination between government agencies, NGOs, and pastoral communities further reduces effectiveness. In sum, institutional obstacles—″particularly in finance, regulation, coordination, and capacity—continue to constrain the development potential of MSEs in Afar″ [16].

2.1.3. Socio-Economic Role of MSEs in Afar

MSEs are increasingly vital to the socio-economic resilience of pastoral households in Afar, offering alternatives to purely livestock-based livelihoods. ″As climate variability intensifies, many households diversify into small trade, services, and microbusinesses to stabilize income and reduce vulnerability″ [14]. These enterprises also contribute to local employment, particularly for youth and women, who often cannot rely solely on pastoral income [23].

MSEs support local market systems by fostering trade corridors and service hubs around towns such as Semera and Logia, connecting pastoral communities to wider economic networks. They also encourage social inclusion by enabling marginalized groups to participate in value chains and transformation processes [54]. Nevertheless, their impact is constrained by institutional, financial, and infrastructural challenges, such as weak access to credit, unreliable infrastructure, and limited business training.

Community-based organizations and NGOs offering capacity building and resilience programs have shown promise in enhancing MSE performance when consistently deployed [20]. Strength strengthening of these support systems—alongside context-sensitive policies—could significantly multiply the socio-economic benefits of MSEs in Afar, transforming them into effective vehicles for inclusion, adaptation, and growth.

2.1.4. Sectoral Challenges of MSEs in the Afar Region

Micro- and small enterprises (MSEs) in Afar face a distinctive and overlapping set of constraints that undermine their growth, resilience, and ability to drive regional transformation. Unlike urban or agrarian enterprises, those in pastoral settings must navigate fragile socio-ecological systems—characterized by climate variability, seasonal mobility, and deep-rooted cultural traditions. ″These dynamics intersect with structural, institutional, environmental, cultural, and market barriers, creating a complex terrain for entrepreneurship″ [42].

Structurally, inadequate infrastructure is a major impediment: ″poor roads raise transportation costs and limit market reach, while erratic electricity and limited telecommunications undermine productivity, innovation, and access to digital financial services″ [7]. Institutionally, access to finance remains severely constrained; formal institutions often view pastoral businesses as high-risk, demanding collateral and stable income—conditions many MSEs cannot meet [28]. Weak cooperative structures further limit collective action and financial pooling.

Environmental stress is another core challenge. ″Recurring droughts, land degradation, and pastoral mobility disrupt both labor supply and demand, reducing enterprise stability and limiting sustained investment″ [57]. Cultural factors also play a critical role: ″pastoral identity often privileges livestock over formal business, limiting enthusiasm for entrepreneurship, especially among women and youth″ [54]. Finally, market linkages are underdeveloped—″MSEs are often confined to narrow local markets with limited purchasing power, and cross-border trade opportunities remain underutilized due to regulatory, infrastructure, and institutional gaps″ [52].

These intersecting challenges highlight the urgent need for context-sensitive policies and interventions—such as flexible financing tailored to pastoral rhythms, infrastructure investments, institutional coordination, and culturally grounded enterprise support—to unlock the full potential of MSEs in Afar.

2.2. Related Empirical Evidence

This section provides related empirical evidence review of the key variables examined in the study.

2.2.1. MSE Performance Indicators

The performance of Micro and Small Enterprises (MSEs) is widely recognized as a multidimensional construct encompassing an enterprise's capacity to achieve sustainable operations, adapt to environmental uncertainties, and maintain financial viability. In pastoral regions such as Afar, ″performance extends beyond conventional indicators of profit or growth, reflecting resilience, adaptability, and the enterprise's embeddedness within socio-cultural and ecological systems″ [1, 58].

In this study, MSE performance is operationalized through two complementary dimensions—Operational Efficiency and Financial Stability—measured using Likert-scale items aligned with global performance models and pastoral-context realities.

Operational Efficiency refers to the effective and innovative use of labor, materials, technology, and infrastructure to maintain productivity under resource-constrained conditions. In pastoral economies, efficiency also involves strategies that enable continuity amidst unreliable utilities, mobility, and seasonal fluctuations [3, 39].

Financial Stability reflects an enterprise's ability to sustain healthy financial performance over time, manage liquidity, diversify income sources, control costs, and withstand shocks such as drought, conflict, or fluctuating demand [19]. This construct is assessed through indicators of liquidity management, debt servicing, cost control, income diversification, and financial planning/forecasting.

2.2.2. Determinants of MSE Performance

Key determinants examined in this study include access to finance, market access, raw material availability, training opportunities, and NGO support.

1) Access to Finance

Access to finance refers to an MSE's capacity to obtain and efficiently deploy external funding from both formal institutions—such as banks, microfinance institutions (MFIs), and cooperatives—and informal sources like savings groups and social networks. In Ethiopia, ″formal credit remains constrained: many small enterprises are deterred by collateral demands and high perceived risk, leading them to rely on informal or semi-formal channels″ [40, 55]. Empirical evidence demonstrates that ″limited financial access weakens growth, reduces resilience to external shocks, and undermines long-term financial stability″ [48]. At the institutional level, supply-side factors, including high ″borrowing costs, weak market regulation, and inadequate lending products, further restrict credit accessibility″ [48]. These financial frictions are especially pronounced in remote or marginalized areas, where MSEs struggle to ″scale or invest in productivity-enhancing technologies″ [25]. Therefore, expanding affordable and appropriate financial services is foundational for improving both operational efficiency and financial resilience among small enterprises.

2) Market Linkages

Market linkage refers to an MSE's ability to reach customers, penetrate local or broader markets, and sustain steady sales through mechanisms such as transportation networks, distribution channels, pricing strategies, and value-chain integration. ″In under-developed or remote regions, geographic isolation, weak infrastructure, and reliance on informal market systems significantly constrain MSEs' connectivity and bargaining power, imposing higher transaction costs and limiting growth potential″ [29]. Empirical evidence from Ethiopia underscores that strong market linkages—facilitated through ″collaborative networks, formal value-chain partnerships, and institutional support—are positively associated with enterprise growth, revenue stability, and improved resilience″ [2]. These findings highlight market access as a critical structural determinant of MSE performance, especially in regions where structural and institutional barriers to formal market participation remain high.

3) Raw Materials Availability

Raw materials availability refers to the reliability, affordability, and continuity of critical inputs, all of which strongly influence an MSE's operational efficiency and financial stability. In remote or marginalized contexts, such as pastoral

regions, supply chain vulnerabilities are intensified by geographic isolation, limited infrastructure, and environmental shocks such as ″drought, floods, and disease that disrupt access to essential inputs″ [54]. These disruptions elevate costs, interrupt production, and erode profitability. Recent empirical research highlights that supply chain risk—particularly input shortages—is a major stress factor for SMEs: ″firms with more resilient supply chain strategies (e.g., supplier diversification, risk-mapping) tend to maintain steadier production and financial performance during shocks″ [10]. Open-access bibliometric analysis of MSMEs across Africa also underscores recurring themes of raw material access and input instability as barriers to value-chain integration and growth [59]. Furthermore, risk-assessment frameworks developed for SMEs emphasize raw material shortages and transportation link breakdowns as significant risk drivers in post-crisis environments [10]. ″Although non-governmental and development organization initiatives aim to strengthen supply chains and improve input accessibility, infrastructural fragilities and localized volatility often limit their impact in pastoral or remote settings″ [59].

4) Capacity Building Training Opportunities

Capacity-building training—especially practical, context-sensitive programs aimed at building both managerial and technical competencies—is a critical determinant of MSE performance, particularly in contexts with low formal education or mobile livelihoods. These interventions support operational efficiency, financial stability, innovation, and digital adoption by strengthening entrepreneurs' capacity in business planning, financial management, marketing, and resilience. Studies across different countries emphasize this impact: training in business resilience, for example, bolsters key skills such as planning, risk-assessment, and financial management that enable SMEs to survive external shocks [37]. ″In Nigeria, structured capacity-building programs have been shown to significantly improve managerial competence and innovation adoption among micro and small enterprise owners″ [43]. Moreover, certification of SME facilitators through targeted training enhances their ability to support SMEs in internationalizing and scaling their operations [31]. Altogether, these findings underscore that well-designed, adaptive training initiatives are vital for strengthening MSEs' performance and long-term resilience in diverse economic and institutional settings.

5) NGO Support

NGO support—including financial assistance, training, infrastructure facilitation, market linkage, and post-shock recovery — plays a pivotal role in enhancing the performance of micro- and small enterprises (MSEs), particularly in underserved pastoral regions such as Afar, Ethiopia. In such contexts, NGOs help fill institutional voids by providing flexible, community-based interventions tailored to local needs, thereby improving operational efficiency, financial stability, and resilience [8]. According to [5], ″microfinance provided by NGOs and microfinance institutions (MFIs) contributes positively to the survival and growth of MSEs in Ethiopia: a survival-analysis study found that access to microcredit, grace periods, and access to new markets were significant predictors of MSE survival″. Empirical studies also document that microfinance, combined with non-financial services: ″training, supervision, strengthens managerial and technical capacity, supports record-keeping, and promotes adoption of adaptive business practices″ [41]. In the Ethiopian context, microfinance interventions have been shown to raise incomes, encourage savings, and improve living standards and women's empowerment, particularly for women-owned MSEs in Addis Ababa [50]. Furthermore, research on women's entrepreneurship in Ethiopia indicates that ″while financial and non-financial microfinance services are important, current offerings may not fully empower the poorest or most marginalized women, suggesting a need for more tailored NGO-supported services″ [5].

In addition to direct financial support, ″NGOs often facilitate social capital formation through networks, cooperatives, and collective marketing″ [59]. These mechanisms are especially critical in pastoral economies characterized by environmental volatility and fragmented markets. By promoting risk-sharing and collaborative enterprise structures, NGOs help pastoral MSEs to buffer shocks and integrate into broader markets. ″Although specific studies on NGO-driven cooperatives in Afar remain scarce, parallels can be drawn from microfinance studies in other Ethiopian regions that document the positive effect of collective mechanisms on MSE resilience″ [9].

Moreover, according to [62], ″NGO support often acts as a moderating mechanism: by bridging resource gaps and institutional fragility, NGOs enable MSEs to better leverage their opportunities (e.g., market access), fostering sustainable growth and resilience″. This resonates with findings from broader SME literature in Ethiopia, where microfinance, ″entrepreneur training, and infrastructure access (often supported or mediated by NGOs or public institutions) have strong, statistically significant effects on enterprise performance″ [62].

In summary, NGO support in pastoral and rural Ethiopian settings functions not merely as a source of funds, but as a catalyst for capacity building, social capital formation, and institutional bridging. This multi-dimensional support enhances MSE survival, growth, and resilience, particularly in fragile contexts such as the Afar region.

2.3. Theoretical Concepts for Understanding MSE Performance and NGO Support in Pastoral Contexts

2.3.1. Empowerment Theory

Empowerment Theory offers a foundational perspective for examining how NGO interventions may influence the performance of MSEs operating in fragile pastoral economies

such as the Afar Region. The theory asserts that individuals and communities achieve more favorable outcomes when they gain access to resources, capabilities, and decision-making power [6, 61]. Prior empirical studies show that ″empowerment-oriented interventions—such as entrepreneurial training, financial support, and market facilitation—can enhance skills, strengthen self-efficacy, and expand agency among marginalized groups″ [18]. However, according to [8], ″much of this evidence is derived from urban or semi-urban MSE contexts, with relatively little attention given to pastoral regions where mobility, weak market integration, and structural constraints present fundamentally different conditions″. By reviewing Empowerment Theory in relation to existing empirical work and situating it within a pastoral setting, this study identifies both areas of alignment and gaps in current knowledge. This comparison underscores the novelty of the present research: while prior studies suggest that empowerment mechanisms may improve enterprise outcomes, it remains unclear whether—and to what extent—NGO support enhances or moderates the relationship between key determinants and MSE performance in pastoral economies. Exploring this theoretical uncertainty highlights the relevance and originality of applying Empowerment Theory to the unique socio-economic context of Afar.

2.3.2. Social Capital Theory

Social Capital Theory offers a robust analytical lens for understanding how social relationships, trust, and network structures may shape the performance of MSEs in pastoral contexts. Originating from [15] conceptualization of capital and later expanded by [49], the theory posits that networks and shared norms facilitate information exchange, reduce transaction costs, and enable cooperative action. Previous empirical studies demonstrate that ″bonding and bridging forms of social capital can influence enterprise outcomes—bonding networks providing internal support and trust, and bridging networks enabling access to markets, resources, and institutional actors″ [56]. However, [54] ″emphasizes much of this literature focuses on agrarian, urban, or semi-urban MSE environments, offering limited insight into pastoral regions where mobility, clan structures, and institutional voids shape unique network dynamics″.

By situating Social Capital Theory within a pastoral economy and comparing its propositions with existing empirical findings, this study identifies both theoretical alignment and critical gaps. While prior research suggests that social capital enhances market access and resource flows, it remains unclear how NGO interventions may strengthen or alter these mechanisms in pastoral settings where formal networks are weak. This theoretical gap highlights the novelty of the present study: it examines whether—and to what extent—NGO support functions as a bridging institution that links marginalized pastoral MSEs to broader markets and resource systems. Addressing this underexplored intersection advances the state of the art by extending Social Capital Theory into a context where its mechanisms have been theorized but not rigorously examined.

2.3.3. Agency Theory and Institutional Theory

Agency Theory and Institutional Theory together offer a robust macro-micro framework for examining how entrepreneurs operate within the structurally constrained environments characteristic of pastoral economies. Institutional Theory ″emphasizes the role of formal rules, informal norms, and governance arrangements in shaping access to markets, finance, and productive resources″ [47, 51]. Complementing this, ″Agency Theory focuses on how individual entrepreneurs make strategic choices under conditions of uncertainty, information asymmetry, and limited control over external structures″ [34, 24]. Prior studies grounded in these theories demonstrate that ″institutional weaknesses—such as limited financial infrastructure or inadequate market systems—can suppress entrepreneurial performance, while strong agency enables entrepreneurs to adapt, negotiate risk, and capitalize on emerging opportunities″ [8].

However, ″most empirical applications of these theories have been conducted in urban, industrial, or formal-sector contexts, offering limited insight into pastoral regions where institutional voids are pervasive and entrepreneurial agency is shaped by mobility, clan systems, and ecological variability″ [54]. Existing research also suggests that ″NGOs may partly address these gaps by providing training, improving information flows, or facilitating access to markets, yet the mechanisms remain understudied in pastoral settings″ [42]. By comparing these theoretical propositions with evidence from previous studies, this research identifies a clear gap: ″little is known about whether—and to what extent—NGO support moderates the interaction between institutional constraints and entrepreneurial agency in pastoral MSEs″ [42].

Addressing this gap underscores the novelty of the present study. By integrating Agency Theory and Institutional Theory within a pastoral context, the research extends their explanatory relevance to a setting where their combined mechanisms have been theorized but not empirically examined. This positioning advances the state of the art by providing a refined conceptual foundation for understanding how institutional environments and entrepreneurial decision-making may interact with NGO interventions in shaping MSE performance.

2.3.4. Comparative Analysis of Previous Studies

Table 1 summarizes how these theories have been applied in similar contexts, highlighting gaps and informing the current research:

Table 1. Application of Theoretical Concepts in MSE-NGO Research and Gaps Addressed in the Current Study.

Theory	Key Application in Prior Studies	Gap Addressed in Current Study
Empowerment Theory	MSE training, capacity building, and access to financial/technical resources to enhance entrepreneurial autonomy and decision-making.	Limited focus on MSE-NGO collaboration in pastoral areas of Ethiopia
Social Capital Theory	Influence of social networks, trust, and shared norms on firm performance and knowledge exchange among MSEs.	Context-specific mechanisms for MSEs in Afar pastoral region
Agency & Institutional Theory	Organizational alignment, compliance with formal and informal rules, and mitigating principal-agent conflicts to improve firm efficiency.	Combined effect on MSEs in developing regional contexts

Source: From literature review (2025)

Therefore, this study adopts three complementary theoretical lenses to examine how access to finance, market linkages, raw material availability, and capacity-building training influence the performance and resilience of MSEs, as well as the moderating effects of NGO support in interacting with these key determinants. Empowerment Theory, informed by [35, 45], ″explains how training, capacity building, and access to financial or technical resources enhance entrepreneurial autonomy, decision-making, and adaptive capacity″. Despite its relevance, this theory has rarely been applied to MSE–NGO collaborations in pastoral contexts. Social Capital Theory, drawing on [17, 53], ″highlights the critical role of networks, trust, and shared norms in improving firm performance″. However, prior research seldom addresses how these mechanisms function within the distinctive social structures of the Afar pastoral region. Likewise, Agency and Institutional Theory, grounded in [34, 22], ″emphasizes institutional alignment and the mitigation of principal–agent challenges″, yet few studies have explored their combined effects in developing or resource-constrained regional contexts. By integrating these perspectives, this study fills existing theoretical gaps and offers a nuanced framework for understanding MSE performance and the moderating role of NGOs support in the pastoral, institutionally complex, and resource-limited environment of Afar.

2.4. Hypotheses Development

This study examines how key resource-related determinants influence the performance of micro and small enterprises (MSEs), particularly within pastoral contexts such as the Afar Region. Drawing from related empirical evidence and the integrative insights of Empowerment Theory, Social Capital Theory, Agency Theory, and Institutional Theory, the hypotheses are formulated to explain the expected relationships between these determinants and MSE performance, as well as the moderating role of NGO support in shaping these outcomes.

Access to Finance

1) Hypothesis 1a: Access to finance positively influences the operational efficiency of MSEs.
2) Hypothesis 1b: Access to finance positively influences the financial stability of MSEs.

Market Linkages

1) Hypothesis 2a: Market linkages positively influence the operational efficiency of MSEs.
2) Hypothesis 2b: Market linkages positively influence the financial stability of MSEs.

Raw Material Availability

1) Hypothesis 3a: Raw material availability positively influences the operational efficiency of MSEs.
2) Hypothesis 3b: Raw material availability positively influences the financial stability of MSEs.

Capacity-Building Training

1) Hypothesis 4a: Capacity-building training positively influences the operational efficiency of MSEs.
2) Hypothesis 4b: Capacity-building training positively influences the financial stability of MSEs.

NGO Support (Direct Effects)

1) Hypothesis 5a: NGO support positively influences the operational efficiency of MSEs.
2) Hypothesis 5b: NGO support positively influences the financial stability of MSEs.

NGO Support as a Moderator

1) Hypothesis 6a: NGO support positively moderates the relationship between access to finance and operational efficiency.
2) Hypothesis 6b: NGO support positively moderates the relationship between access to finance and financial stability.
3) Hypothesis 7a: NGO support positively moderates the relationship between market linkages and operational efficiency.
4) Hypothesis 7b: NGO support positively moderates the relationship between market linkages and financial stability.
5) Hypothesis 8a: NGO support positively moderates the relationship between raw material availability and operational efficiency.
6) Hypothesis 8b: NGO support positively moderates the

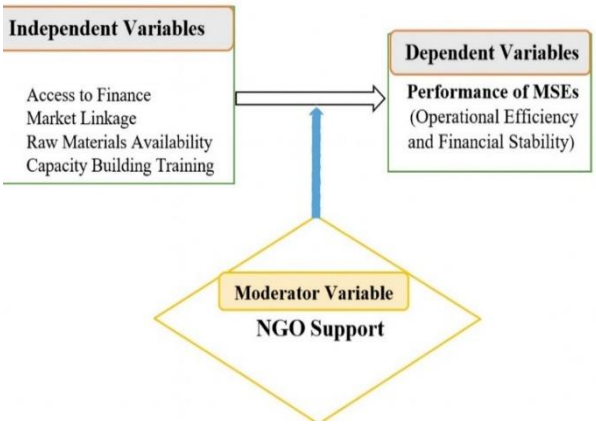
relationship between raw material availability and financial stability.

7) Hypothesis 9a: NGO support positively moderates the relationship between capacity-building training and operational efficiency.
8) Hypothesis 9b: NGO support positively moderates the relationship between capacity-building training and financial stability.

2.5. Conceptual Framework

The conceptual framework positions MSE performance as the outcome of four critical determinants—access to finance, market linkages, raw material availability, and capacity-building training—each representing essential resource inputs required for enterprise competitiveness and sustainability. MSE performance is operationalized through two key dimensions: *operational efficiency* and *financial stability*, in line with contemporary MSME performance literature [30, 32].

Recognizing the unique structural challenges in pastoral economies—such as mobility, infrastructural deficits, environmental shocks, and institutional informality—the model incorporates NGO support as a moderating variable. Empirical evidence suggests that ″NGOs play a vital role in enhancing enterprise resilience by expanding access to credit, strengthening managerial capacity, fostering market integration, and supporting crisis mitigation″ [1, 5]. Through financial assistance, technical training, market facilitation, and risk-management interventions, NGO support is expected to amplify the positive effects of resource access on MSE performance. Figure 2 illustrates the conceptual framework developed for this study.



Source: From literature review (2025)

Figure 2. *Conceptual Framework of the Study.*

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

3. Materials and Methods

3.1. Research Design

This study adopted a convergent parallel mixed-methods design to examine the direct and moderating effects of NGO support on the operational efficiency and financial stability of pastoralist-operated MSEs in Ethiopia's Afar Region. Guided by a pragmatic paradigm, quantitative and qualitative strands were conducted concurrently to generate complementary insights within a complex pastoral context. The quantitative strand—serving as the core component—used a structured survey and Partial Least Squares Structural Equation Modeling (PLS-SEM) to test relationships between key determinants (access to finance, market linkages, raw material availability, and capacity-building training), NGO support, and MSE performance outcomes. In parallel, qualitative data from key informant interviews and focus group discussions provided contextual explanations of institutional dynamics, implementation challenges, and entrepreneurs' lived experiences. Integration occurred during interpretation through triangulation and convergence analysis, producing findings that are both empirically robust and contextually grounded.

3.2. Target Population and Sampling Frames

A stratified, A mixed sampling frame was developed to reflect the diversity of the MSE landscape in Afar, shaped by

pastoral mobility, dispersed settlements, and gendered economic roles. For the quantitative strand, triangulated records from regional SME offices, NGO partners, and local bureaus identified 11,631 operational MSEs. A sample of 387 owners was drawn using [60] formula at a 5% margin of error, with proportional stratification by sector, size, location, and ownership. The qualitative strand employed purposive sampling to select 84 key informants—government officials, NGO staff, community elders, and MSE association leaders—and eight focus groups comprising 96 entrepreneurs, ensuring inclusion of women and youth. This integrated strategy balanced statistical representativeness with depth of contextual understanding.

3.3. Instrument Validation and Pre-Testing

All instruments underwent rigorous validation to ensure reliability, linguistic clarity, and cultural relevance. A pilot test involving 40 MSE owners, 15 KIIs, and 3 FGDs yielded. Cronbach's alpha values of 0.78-0.84, confirming internal consistency. Exploratory Factor Analysis retained 95% of survey items, while expert reviews ensured gender sensitivity, cultural appropriateness, and alignment with pastoral norms. Abstract constructs were translated into locally understandable terms, resulting in tools that were statistically sound and contextually meaningful.

3.4. Data Collection Methods

Quantitative and qualitative data were gathered concurrently but independently. A structured, multi-language survey was administered face-to-face by trained enumerators to accommodate low literacy and ensure accurate interpretation. Qualitative data were collected through semi-structured KIIs and FGDs involving government officials, NGO representatives, community leaders, and MSE actors. All tools were prepared in English, translated into Afar-Af and Amharic, and refined through pilot testing. Fieldwork followed ethical protocols, official regional permissions, and flexible scheduling aligned with pastoral mobility and market-day patterns. Secondary documents—including administrative reports and national enterprise statistics—supported triangulation.

3.5. Variable Operationalization and Measurement

The study operationalized four independent variables: Access to Finance, Market Access, Raw Material Availability, and Capacity-Building Training. NGO Support served as the moderating variable and encompassed financial assistance, technical training, market facilitation, and targeted programs for vulnerable groups. The dependent construct, MSE Performance, comprised Operational Efficiency—resource utilization, adaptability, and continuity under infrastructural constraints—and Financial Stability, including liquidity, profitability, and resilience to shocks. All constructs were measured using five-point Likert scales and analyzed via PLS-SEM to model direct, indirect, and moderated effects [30].

3.6. Data Collection Tools

Data were collected using a structured questionnaire and qualitative interview guides. Survey items captured the five dimensions of NGO support and the two performance outcomes, incorporating indicators tailored to pastoral realities such as seasonal finance needs, mobility-related market constraints, and training relevance. KIIs and FGDs explored institutional roles, support mechanisms, informal finance systems, implementation barriers, and entrepreneurs' coping strategies. All instruments were administered face-to-face, translated into Afar-Af and Amharic, and implemented in line with informed consent procedures, IRB approval, and formal regional permissions.

3.7. Data Analysis Procedures, Analytical Tools, and Ethical Considerations

Quantitative data were screened, coded, and analyzed using SPSS v27 and SmartPLS v4, enabling assessment of measurement reliability, structural relationships, and moderating effects of NGO support. Descriptive statistics and diagnostics contextualized sample characteristics. Qualitative data were transcribed, translated, and coded in NVivo v12 using a hybrid deductive-inductive approach, capturing both predefined constructs and emergent themes such as clan-based credit systems, seasonal trading adaptations, and gender-based constraints. Findings were integrated through triangulation, convergence coding, and joint displays to link statistical patterns with narrative evidence. Ethical integrity was ensured through informed consent in local languages, IRB approval, institutional permissions, participant anonymization, and secure data management.

4. Results

4.1. Quantitative Results

4.1.1 Descriptive Results

The demographic profile of MSE owner-managers in Afar reflects a predominantly young and male entrepreneurial population. Nearly 40% of respondents were between 21 and 30 years old, and educational attainment was generally low, with most participants reporting less than a high-school education. Business experience ranged widely, though the majority had operated their enterprises for between one and ten years, indicating early-stage or mid-growth ventures. A summary of the demographic characteristics is presented in Table 2.

Table 2. Demographic Profile.

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

Note: Percentages are based on survey responses of 384 valid MSE owner-managers in Afar Region, Ethiopia.
Source: Based on Survey data and SPSS analysis output (2025).

Descriptive statistics for the major constructs—including Access to Finance, Market Linkages, Raw Material Availability, Capacity-Building Training, NGO Support (moderator), and the two performance outcomes (Operational Efficiency and Financial Stability)—showed moderate mean values, low dispersion, and near-normal distribution patterns. These results indicate stable response tendencies and reinforce the reliability of the measurement structure. A consolidated summary is provided in Table 3.

Table 3. Descriptive Statistics of Study Constructs.

Construct	Mean	SD	Item-Level Range	Skewness Range	Kurtosis Range
X_1: Access to Finance	3.021	1.091	2.938 - 3.164	−0.018 - 0.102	−0.418 - 0.765
X_2: Market Access	2.909	0.660	2.628 - 3.237	−0.091 - 0.415	−0.716 - −0.409
X_3: Raw Materials Availability	2.957	1.087	2.919 - 2.987	−0.036 - 0.116	−1.076 - 0.140
X_4: Capacity Building Training	3.058	1.101	3.023 - 3.063	−0.102 - 0.034	−0.724 - −0.026
M_1: NGO Support	2.876	0.657	2.622 - 3.234	−0.090 - 0.368	−0.084 - 1.379
Y_1: Operational Efficiency	2.818	0.786	2.362 - 3.292	−0.081 - 0.281	−0.325 - 0.309
Y_2: Financial Stability	2.915	0.678	2.617 - 3.359	−0.109 - 0.144	−0.188 - 1.151

Note: Constructs measured using a five-point Likert scale.
Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

4.2.2. Structural Equation Modeling (SEM) Analysis

Preliminary Analysis

Before estimating the structural model, the dataset was subjected to a comprehensive diagnostic process. Of 387 distributed questionnaires, 384 were complete and retained for analysis, with no missing values detected. Normality checks confirmed reasonably symmetric indicator distributions consistent with PLS-SEM assumptions. Diagnostics also confirmed the absence of influential outliers and supported linearity and homoscedasticity.

Multicollinearity tests at both outer and inner model levels showed acceptable VIF values. Although interaction terms produced higher VIF values, these remained within acceptable interpretive thresholds for moderation models. Overall, the data were analytically robust and suitable for SEM, as presented in Table 4.

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

Model Type	Construct / Predictor	Indicators / Outcome	Min VIF	Max VIF	Average VIF
Outer Model	X_1	Item11-Item18	3.153	3.562	3.371
Outer Model	X_2	Item21-Item26	2.176	3.314	2.641
Outer Model	X_3	Item31-Item36	3.152	3.721	3.421
Outer Model	X_4	Item41-Item46	3.102	3.409	3.228
Outer Model	M_1	ItemM11-ItemM19	2.301	3.561	2.798
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	Y_1	-	-	1.198
Inner Model	X_1	Y_2	-	-	1.198
Inner Model	X_2	Y_1	-	-	35.310
Inner Model	X_2	Y_2	-	-	35.310
Inner Model	X_3	Y_1	-	-	1.106
Inner Model	X_3	Y_2	-	-	1.106
Inner Model	X_4	Y_1	-	-	1.098
Inner Model	X_4	Y_2	-	-	1.098
Inner Model	M_1	Y_1	-	-	46.170
Inner Model	M_1	Y_2	-	-	46.170
Inner Model	$M_1 \times X_1$	Y_1	-	-	34.578
Inner Model	$M_1 \times X_1$	Y_2	-	-	34.578
Inner Model	$M_1 \times X_2$	Y_1	-	-	494.959
Inner Model	$M_1 \times X_2$	Y_2	-	-	494.959
Inner Model	$M_1 \times X_3$	Y_1	-	-	27.520
Inner Model	$M_1 \times X_3$	Y_2	-	-	27.520
Inner Model	$M_1 \times X_4$	Y_1	-	-	24.529
Inner Model	$M_1 \times X_4$	Y_2	-	-	24.529

Note: Outer Model VIFs refer to construct-level collinearity; Inner Model VIFs indicate path-level collinearity for direct, main, and interaction effects.

Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

Measurement Model Evaluation

The measurement model demonstrated strong reliability and validity. All retained indicators exceeded recommended loading thresholds, while Cronbach's alpha and composite reliability values confirmed internal consistency. Convergent validity was verified through AVE values above 0.50. Discriminant validity was established using the Fornell-Larcker criterion, HTMT ratios, and inspection of cross-loadings, a consolidated summary is provided in Table 5.

Table 5. *Construct Reliability, Convergent Validity, and Discriminant Validity of Study Variables.*

Construct	Indicator Reliability (Factor Loadings)	Cronbach's α	Composite Reliability (ρc)	AVE	Discriminant Validity (HTMT)
X_1	0.877-0.895 (Items1-6)	0.946	0.957	0.789	X1-X2: 0.060, X1-X3: 0.077, X1-X4: 0.043, X1-M1: 0.077
X_2	0.824-0.895 (Items1-5)	0.912	0.934	0.740	X2-X3: 0.070, X2-X4: 0.052, X2-M1: 0.981
X_3	0.879-0.901 (Items1-6)	0.948	0.958	0.792	X3-X4: 0.041, X3-M1: 0.058
X_4	0.876-0.890 (Items1-6)	0.944	0.955	0.780	X4-M1: 0.049
M_1	0.807-0.880 (ItemsM1-M7)	0.935	0.948	0.721	Y1-M1: 1.031, Y2-M1: 1.046
Y_1	0.835-0.913 (ItemsP11-P15, P17, P18)	0.951	0.960	0.774	Y1-Y2: 1.028
Y_2	0.796-0.897 (ItemsP21-P27)	0.935	0.947	0.720	—

Note: Factor loadings indicate indicator reliability, with Cronbach's α and composite reliability (ρc) reflecting internal consistency. Average Variance Extracted (AVE) values confirm convergent validity, while HTMT values indicate discriminant validity among constructs. All constructs exceed recommended thresholds for reliability (α, ρc > 0.70) and convergent validity (AVE > 0.50).
Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

Structural Model Assessment

The explanatory power of the structural model was evaluated using R^2 and adjusted R^2 values. As summarized in Table 6, both operational efficiency (Y_1) and financial stability (Y_2) demonstrate very high levels of explained variance, with R^2 values exceeding 0.96. The close correspondence between R^2 and adjusted R^2 values indicates that the explanatory power is not artificially inflated. Model fit indices further support model adequacy, with a Standardized Root Mean Square Residual (SRMR) of 0.050 for both the saturated and estimated models (Table 6). Overall, these findings suggest that the measurement model is robust and theoretically sound, providing a strong empirical foundation for subsequent structural model testing and confirming the conceptual model's validity.

Table 6. *PLS-SEM Model Fit and Strength Indicators.*

Indicator / Construct	Saturated Model	Estimated Model	R^2	Adjusted R^2	Recommended Threshold / Notes
SRMR	0.050	0.050	-	-	< 0.08 indicates ″good fit″ [33]
d_ULS	9.828	9.826	-	-	Lower values indicate better fit; no strict cut-off
d_G	n/a	n/a	-	-	Not available in current output
NFI	n/a	n/a	-	-	Not available in current output
Chi-square	∞	∞	-	-	Typical in PLS-SEM; not relied upon for fit evaluation
Y1	-	-	0.968	0.965	Indicates high explanatory power
Y2	-	-	0.971	0.968	Indicates high explanatory power

Notes: SRMR reflects standardized difference between observed and model-implied correlations; d_ULS measures geodesic distance; R^2 indicates variance explained in endogenous constructs.
Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

Structural Model Results

Direct Effects

The structural model's direct effects were tested using bootstrapping with 5,000 resamples. Access to finance and market linkages showed significant positive effects on operational efficiency, while market linkages and raw material availability significantly influenced financial stability. Capacity-building training had no significant direct effects. NGO support emerged as the strongest predictor of both performance dimensions. These findings are summarized in Table 7.

Table 7. *PLS-SEM Direct Effect Path Coefficients.*

Path	β	t-Value	p-Value	f^2	Power
Direct Effects					
X1 → Y1	0.043	4.133	0.000	0.049	0.212
X1 → Y2	-0.001	0.136	0.892	0.000	0.053
X2 → Y1	0.126	2.113	0.035	0.014	0.794
X2 → Y2	0.118	2.058	0.040	0.013	0.745
X3 → Y1	0.000	0.037	0.970	0.000	0.051
X3 → Y2	0.019	2.125	0.034	0.011	0.102
X4 → Y1	0.003	0.271	0.786	0.000	0.056
X4 → Y2	0.000	0.036	0.971	0.000	0.051
M1 → Y1	0.377	5.139	0.000	0.097	1.000
M1 → Y2	0.449	6.662	0.000	0.150	1.000

Notes: β = path coefficient; f^2 = effect size; Power = statistical power for the respective path.
Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

Moderating Effects

Moderation analysis assessed whether NGO support strengthened or weakened the relationships between determinants and performance outcomes. Results indicate that NGO support significantly moderated only the relationship between raw material availability and operational efficiency. Other moderating paths were statistically insignificant, highlighting a selective rather than uniform moderating role. These results are summarized in summarized in Table 8. Overall, the quantitative results indicate that resources and institutional conditions jointly shape MSE performance, but NGO support plays a particularly strong direct role and enhances specific constraints when aligned to the contextual needs of pastoral enterprises.

Table 8. *PLS-SEM Moderation Effects Path Coefficients.*

Path Moderation Effects (M1 × X → Y)	B	t-Value	p-Value	f^2	Power
M1 × X1 → Y1	0.066	1.053	0.292	0.004	0.365
M1 × X1 → Y2	0.008	0.145	0.885	0.000	0.068
M1 × X2 → Y1	-0.147	1.000	0.317	0.004	0.891
M1 × X2 → Y2	0.085	0.649	0.517	0.001	0.509
M1 × X3 → Y1	0.151	2.102	0.036	0.023	0.907
M1 × X3 → Y2	-0.012	0.018	0.080	0.000	0.080

Path Moderation Effects (M1 × X → Y)	B	t-Value	p-Value	f²	Power
M1 × X4 → Y1	-0.014	0.987	0.324	0.000	0.084
M1 × X4 → Y2	0.030	0.368	0.713	0.001	0.146

Notes: β = path coefficient; f² = effect size; Power = statistical power for the respective path.
Source: Based on Survey data and PLS-SEM analysis output, using SmartPLS (2025).

4.2. Qualitative Insights

The qualitative strand contextualized and deepened the quantitative insights by exploring the lived experiences, constraints, and adaptive strategies of MSE operators in Afar. Using 84 Key Informant Interviews and 8 Focus Group Discussions, the analysis captured perspectives from entrepreneurs, NGO representatives, community elders, women, and youth.

A hybrid coding approach—deductive and inductive—identified key themes related to finance, markets, raw materials, training, and NGO support. The findings reveal that enterprise performance is heavily shaped by structural constraints including physical remoteness, volatile supply chains, informal institutional arrangements, and infrastructural deficits.

NGO support emerged as a critical enabling mechanism by providing material assistance, training, technology adoption, crisis response, and targeted programs for youth and women. However, participants emphasized challenges related to program sustainability, irregular follow-up, and misalignment with pastoral realities. A detailed synthesis of qualitative themes, sub-themes, and exemplar quotes is presented in Table 9.

Table 9. *Summary of Qualitative Findings: Determinants Influencing Operational Efficiency and Financial Stability of Pastoralist MSEs in Afar.*

Determinant	Sub-Themes	Definition / Focus	Representative Quotes
Access to Finance	Collateral & loan constraints	Limitations in accessing formal credit due to collateral requirements	"Local banks often require collateral that pastoral entrepreneurs cannot provide, limiting access to capital." (KI-07)
	Informal / clan-based savings	Reliance on community savings, family support, or (iqub) as temporary liquidity	"Sometimes clan members lend me money. But it's not always reliable." (FGD, Gela'Alu)
	NGO grants & emergency assistance	Short-term financial support from NGOs during crises	"During drought, one NGO brought water tanks. That allowed us to keep running small shops." (KI-17)
Market Linakges	Distance & seasonality	Physical remoteness and seasonal accessibility affecting sales	"Markets are often far and inaccessible during the rainy season, reducing sales opportunities." (KI-33)
	Infrastructure & facilities	Lack of storage, shade, and permanent market structures	"Without cold storage or warehouses, goods spoil quickly. Milk and meat cannot last." (FGD, Erabti)
	Customer demand fluctuations	Variable demand due to migration and mobility	"Weekly markets are critical, but droughts and poor roads mean fewer people attend these days." (FGD, Samurobi)
Raw Material Availability	Supply irregularity	Inconsistent access to raw materials affecting production	"Sometimes I cannot get enough flour for baking, especially during market season." (KI-12)
	Price volatility & quality	Unpredictable costs and poor input quality reduce profitability	"The cost of imported materials rises unpredictably, affecting my profit margins." (KI-34)
	Supply chain & processing limitations	Lack of local processing facilities limits value addition	"Our district is known for salt. But lack of machinery makes it hard to process. We sell raw salt at low prices." (FGD, Bidu)

Determinant	Sub-Themes	Definition / Focus	Representative Quotes
Capacity-Building Training	Skills development	Workshops improving business, managerial, and technical skills	"An NGO taught us food hygiene and packaging for milk products. This helped me sell butter at a better price." (FGD, Samurobi)
	Accessibility & relevance	Training limited by cost, distance, and contextual fit	"Workshops are irregular and often too expensive for youth entrepreneurs to attend." (KI-20)
	Sustainability	Temporary training without follow-up support limits long-term impact	"NGOs sometimes bring vocational trainers, which helps the youth, but such projects stop when funding ends." (FGD, Awash Fentale)
NGO Support	Training & capacity development	Enhancing managerial, financial, and entrepreneurial skills	"Through the NGO sessions, I learned how to track my daily sales and expenses properly." (KI-06)
	Financial & material assistance	Provision of microcredit, grants, and in-kind support	"Access to NGO microcredit enabled me to buy raw materials without relying on family loans." (KI-04)
	Market facilitation	Trade fairs, exhibitions, and networking opportunities	"Attending the NGO-led trade fair gave me exposure to new products and suppliers." (KI-05)
	Technology adoption	Digital tools for payments, record-keeping, and efficiency	"The NGO taught us to use mobile payments which improved sales tracking and reduced cash handling risks." (KI-03)
	Crisis response & risk mitigation	Aid and guidance during floods, droughts, or other disruptions	"During the drought, the NGO provided essential materials and guidance to keep our businesses running." (KI-71)
	Gender & youth programs	Targeted initiatives to enhance inclusion and entrepreneurship	"Youth-focused mentoring helped me launch my service business in Dubti with minimal risk." (KI-17)

Source: Based on KII and FGD field data and NVivo analysis output (2025).

4.3. Triangulation of Quantitative and Qualitative Findings

Triangulation revealed strong convergence between quantitative significance and qualitative insights. Determinants such as access to finance, market linkages, raw material availability, and NGO support consistently emerged as the most influential factors shaping operational efficiency and financial stability.

Qualitative findings clarified how structural challenges—such as high collateral requirements, mobility constraints, seasonality, and supply chain disruptions—explain the observed quantitative patterns. The selective moderating role of NGO support is also reinforced, as qualitative evidence shows NGOs most effectively address supply-related and crisis-related bottlenecks. A consolidated quantitative-qualitative comparison is presented in Table 10.

Table 10. *Triangulated Summary of Determinants Influencing Operational Efficiency and Financial Stability of Pastoralist MSEs in Afar.*

Determinant	Quantitative Effect	Qualitative Insights
Access to Finance (X_1)	Significant for Operational Efficiency ($\beta=0.043$, $p<0.001$); Not Significant for Financial Stability	Formal credit limited by collateral; informal savings and NGO support provide temporary relief.
Market Linkages (X_2)	Significant for both Operational Efficiency ($\beta=0.126$, $p=0.035$) and Financial Stability ($\beta=0.118$, $p=0.040$)	Distance, seasonality, poor infrastructure, and fluctuating demand constrain market access and profitability.
Raw Material Availability (X_3)	Significant for Financial Stability ($\beta=0.019$, $p=0.034$); Not Significant for Operational Efficiency	Irregular supply, price volatility, and lack of local processing reduce value addition and profitability.

Determinant	Quantitative Effect	Qualitative Insights
Capacity-Building Training (X_4)	Not Significant for both outcomes	Training improves skills but is limited by cost, distance, contextual fit, and short-term implementation.
NGO Support (M_1)	Strong significant effect on both outcomes (Y1: β=0.377, p<0.001; Y2: β=0.449, p<0.001)	Provides financial/material support, capacity building, market facilitation, technology adoption, crisis response, and promotes inclusion.
NGO × Raw Material (M1×X3)	Moderation significant for Operational Efficiency (β=0.151, p=0.036)	NGO interventions enhance the utility of specific resources, particularly raw material availability.
Other NGO Interaction Effects	Not Significant	Limited or no moderating influence on other determinant-performance pathways.

Source: Based on Survey and KII and FGD field data and PLS-SEM and NVivo analysis output (2025).

4.4. Hypotheses Testing

The Hypotheses were tested using bootstrapped path coefficients, t-statistics, and p-values. The analysis supported several direct-effect hypotheses related to access to finance, market linkages, raw material availability, and NGO support. Capacity-building training was not supported as a significant determinant.

Moderation hypotheses were supported only for the interaction between NGO support and raw material availability in predicting operational efficiency. The full hypothesis testing summary appears in Table 11.

Table 11. *Hypothesis Testing Summary for Direct and Moderating Effects of Determinants and NGO Support on MSE Performance.*

Hypothesis	Path	Effect Type	β (Path Coefficient)	t-Value	p-Value	Significance
H1a	X1 → Y1	Direct	0.043	4.133	0.000	Significant
H1b	X1 → Y2	Direct	-0.001	0.136	0.892	Not Significant
H2a	X2 → Y1	Direct	0.126	2.113	0.035	Significant
H2b	X2 → Y2	Direct	0.118	2.058	0.040	Significant
H3a	X3 → Y1	Direct	0.000	0.037	0.970	Not Significant
H3b	X3 → Y2	Direct	0.019	2.125	0.034	Significant
H4a	X4 → Y1	Direct	0.003	0.271	0.786	Not Significant
H4b	X4 → Y2	Direct	0.000	0.036	0.971	Not Significant
H5a	M1 → Y1	Direct	0.377	5.139	0.000	Significant
H5b	M1 → Y2	Direct	0.449	6.662	0.000	Significant
H6a	M1 × X1 → Y1	Moderation	0.066	1.053	0.292	Not Significant
H6b	M1 × X1 → Y2	Moderation	0.008	0.145	0.885	Not Significant
H7a	M1 × X2 → Y1	Moderation	-0.147	1.000	0.317	Not Significant
H7b	M1 × X2 → Y2	Moderation	0.085	0.649	0.517	Not Significant
H8a	M1 × X3 → Y1	Moderation	0.151	2.102	0.036	Significant
H8b	M1 × X3 → Y2	Moderation	-0.012	0.018	0.080	Not Significant
H9a	M1 × X4 → Y1	Moderation	-0.014	0.987	0.324	Not Significant
H9b	M1 × X4 → Y2	Moderation	0.030	0.368	0.713	Not Significant

Source: Author's analysis based on PLS-SEM results, 2025.

5. Discussion

5.1. Access to Finance and Performance Outcomes

The quantitative results reveal that access to finance significantly improves operational efficiency but does not meaningfully influence financial stability. The qualitative findings clarify this divergence by illustrating the structural and cultural barriers that limit the productive use of finance. Entrepreneurs repeatedly emphasized that formal financial institutions impose collateral requirements that most pastoral and semi-urban MSEs cannot meet, forcing them to rely on informal clan-based savings or rotating credit groups. These mechanisms provide short bursts of liquidity that help keep operations running—consistent with the positive effect on operational efficiency—but they are unreliable and inadequate for long-term investment, explaining why financial stability remains unaffected. The qualitative accounts also highlight the importance of NGO grants and emergency support during climatic shocks. Such short-term infusions sustain basic operations but rarely accumulate into long-term financial buffers, reinforcing the quantitative finding that finance is necessary but insufficient for fostering durable financial resilience in Afar's volatile environment.

5.2. Market Access and Performance Outcomes

The statistically significant effects of market access on both operational efficiency and financial stability are strongly supported by the qualitative evidence. Participants described long distances to markets, seasonal road inaccessibility, and the absence of adequate market infrastructure as major constraints; these directly undermine the ability to maintain consistent sales and manage inventory. The positive quantitative association reflects the experiences of enterprises with better access to predictable customer flows, reliable transport routes, and structured market spaces. Qualitative insights further explain the mechanism behind the observed link with financial stability: stable market participation reduces wastage, enables better pricing decisions, and helps enterprises anticipate seasonal demand fluctuations. The frequent mention of declining market attendance during droughts and mobility-driven demand shifts underscores the regional context in which market access becomes not only a logistical factor but a determinant of survival. Together, the mixed-methods evidence confirms that strengthening market linkages—through infrastructure, transport, and predictable trading schedules—is one of the most powerful levers for improving MSE performance in Afar.

5.3. Raw Material Availability and Performance Outcomes

While raw material availability had no significant impact on operational efficiency, it showed a modest but significant effect on financial stability. The qualitative findings offer a clear explanation: irregular supply, frequent price volatility, and inconsistent quality interrupt production processes, preventing day-to-day improvements in operational efficiency even when inputs are technically available. High transport costs and the absence of local processing facilities force enterprises to sell unprocessed raw materials at low prices or purchase imported materials at inflated costs. These narratives align with the positive effect on financial stability by revealing that enterprises benefit financially when supply is predictable and quality improves, even if the operational environment remains unstable. Thus, the mixed-methods findings converge on the notion that raw material reliability contributes more to long-term cost management and revenue predictability than to immediate operational gains—particularly in regions with fragile supply chains like Afar.

5.4. Training Opportunities and Performance Outcomes

The quantitative model found no significant relationship between training availability and either operational efficiency or financial stability. Qualitative evidence shows why: while training sessions occasionally improve technical skills, entrepreneurs consistently reported that workshops are irregular, expensive to attend, and poorly adapted to local needs. The absence of mentorship and follow-up support sharply limits the translation of training into behavioral or performance changes. Although some participants described gains in packaging, hygiene, and record-keeping, these improvements were isolated rather than systematic. The lack of sustained engagement explains the negligible statistical effect, demonstrating that capacity building produces limited enterprise-level impact when it is fragmented, donor-driven, and short-lived. This reinforces the need for structured, context-specific, and continuous training models that integrate practical mentorship rather than one-off sessions.

5.5. NGO Support: Direct and Moderating Effects

The strong positive quantitative effects of NGO support on both operational efficiency and financial stability correspond directly with the rich qualitative accounts emphasizing NGOs' role as pivotal institutional intermediaries in Afar. Interviews highlighted support in multiple domains—capacity development, microcredit provision, market facilitation, technology adoption, crisis response, and inclusion programs targeting youth and women. These interventions address the

constraints identified across other determinants, such as financial exclusion, limited managerial skills, and poor market connectivity. Qualitative insights also clarify why NGOs have such large measured effects: their programs are locally embedded, responsive to pastoral mobility patterns, and oriented toward practical problem-solving rather than rigid bureaucratic processes.

The moderating effect of NGO support on the relationship between raw material availability and operational efficiency is also well grounded in the qualitative material. Entrepreneurs described how NGOs assist in collective procurement, subsidize transport, coordinate supply chains, and provide material inputs during crises. These interventions reduce the transaction costs and logistical uncertainties that prevent enterprises from converting raw material access into operational improvements. Thus, the mixed-methods evidence demonstrates that NGO involvement does not merely supplement enterprise resources; it systematically enhances the effectiveness of those resources.

Integrating the quantitative and qualitative findings reveals a coherent narrative: MSE performance in Afar is shaped by an intricate interplay of resource access, market constraints, institutional support, and environmental risk. Financial and raw material constraints persist because institutional environments are weak; market access is a powerful performance driver because it moderates environmental volatility; and training remains ineffective because it is insufficiently embedded in broader support systems. NGO support emerges as the most influential determinant because it directly strengthens enterprise capabilities while also amplifying the effectiveness of other determinants—particularly in areas where formal institutions fall short.

This integrated perspective not only confirms the validity of the conceptual framework but also highlights the pathways through which internal resources and external institutional factors interact to shape enterprise resilience in a pastoralist region.

6. Conclusion and Recommendations

6.1. Conclusion

This study demonstrates that the performance of micro and small enterprises (MSEs) in Ethiopia's Afar Region is shaped by a dynamic interaction of resource availability, market connectivity, capacity-building efforts, and institutional support systems. Access to finance enhances operational efficiency but does not significantly improve long-term financial stability, largely due to persistent structural barriers, limited collateral capacity, and reliance on informal credit systems. Market access emerges as one of the strongest determinants of both operational efficiency and financial resilience, with reliable transport routes, predictable customer flows, and functional market infrastructure helping enterprises manage seasonal fluctuations and mobility-related challenges. Raw material availability contributes to financial stability, although its effect on day-to-day operational efficiency remains limited due to supply disruptions and high input costs. Capacity-building training shows minimal measurable impact when implemented as short-term, fragmented, or poorly contextualized interventions. Across all factors, NGO support plays the most influential role—both as a direct driver of enterprise performance and as a moderator that enhances the effectiveness of other determinants, particularly in resource-constrained environments. Overall, the findings affirm that resilient MSE performance in pastoral regions depends on tailored, flexible, and context-responsive institutional interventions that align with the socio-economic realities of the Afar Region.

6.2. Recommendations

Several actionable recommendations arise from these findings. First, financial inclusion mechanisms should be redesigned to accommodate the pastoral context by promoting collateral-free lending, expanding community-based savings and credit systems, and scaling flexible microfinance solutions that strengthen long-term financial stability. Second, investments in market infrastructure—including all-weather roads, local market hubs, and reliable trading schedules—are critical for improving operational efficiency and reducing volatility in sales and supply chains. Third, capacity-building initiatives should shift from one-off workshops toward sustained, mentorship-driven programs that include follow-up support, practical training, and content tailored to pastoral livelihoods and enterprise needs. Fourth, NGOs and development partners should continue and expand their multi-dimensional support—covering financial facilitation, supply chain coordination, market linkages, and crisis-response mechanisms—as these interventions address structural constraints and amplify the impact of other resources. Collectively, these strategies can strengthen enterprise resilience, enhance competitiveness, and support the development of a sustainable MSE ecosystem in pastoralist regions such as Afar.

Abbreviations

CSA	Central Statistical Agency
FGDs	Focus Group Discussions
IRB	Institutional Review Board
KIIs	Key Informant Interviews
MFIs	Microfinance Institutions
MSEs	Micro and Small Enterprise
MSEs	Micro and Small Enterprises
NGO	Non-Governmental Organization
NGO	Non-Governmental Organizations
PLS-SEM	Partial Least Squares Structural Equation Modeling

Author Contributions

Abubeker Ali Abubeker: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Writing - original draft, Writing - review & editing.

Gedif Tessema Sinshaw: Supervision, Validation

Assefa Tsegay Tensay: Supervision, Validation

Data Availability Statement

The datasets generated and/or analyzed during the current study are not publicly available due to confidentiality agreements with participating institutions in the Afar Regional State. However, the data are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors confirm that they have no financial, commercial, or other relationships that could be perceived as potential conflicts of interest in relation to this work. The authors declare no conflicts of interest.

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Biography

Abubeker Ali Abubeker is a PhD Candidate specializing in Management, with a research focus on micro and small enterprises, institutional environments, and entrepreneurial capacity in developing economies. He holds advanced academic training in management and research methodology and has contributed to several regional and national studies examining enterprise performance and policy interventions. His current work centers on empirical modeling, organizational performance, and institutional support mechanisms affecting MSEs in emerging markets. He is actively involved in data-driven research, field coordination, and scholarly writing, producing outputs aligned with contemporary management and development discourses.

Gedif Tessema Sinshaw is an Associate Professor of Management and currently serves as the Head of the School of Management and Public Administration within the College of Business and Economics at the University of Gondar. He holds a PhD in Management and has extensive experience in teaching, research, and postgraduate supervision. His scholarly interests encompass organizational leadership, strategic management, and public sector performance. Dr. Gedif has published widely in reputable journals and plays an active role in institutional development, academic leadership, and research mentorship, contributing significantly to the advancement of management scholarship and practice.

Assefa Tsegay Tensay is an Associate Professor of Management at the University of Gondar and the Editor-in-Chief of the *Ethiopian Journal of Business Management and Economics*. He has served in several key leadership positions, including Postgraduate Coordinator of the College of Business and Economics and Director of Human Resource Management at the University of Gondar. His research focuses on human resource management, organizational performance, and strategic leadership. A dedicated scholar, reviewer, and mentor, Dr. Assefa has made substantial contributions to academic excellence and institutional governance. He has published extensively in reputable international journals and continues to play a pivotal role in advancing management scholarship in Ethiopia.

Research Field

Abubeker Ali Abubeker: Micro and small enterprise development, Entrepreneurial performance analysis, Institutional support systems, Business environment assessment, Organizational capability development, Mixed research methods, Sustainable enterprise growth, Resource-based perspectives in management.

Gedif Tessema Sinshaw: Organizational leadership, Strategic management, Corporate social responsibility, Public sector performance, Ethical leadership studies, Knowledge management systems, Organizational culture and innovation, Change management in public organizations, Stakeholder engagement in management, Administrative innovation.

Assefa Tsegay Tensay: Servant leadership, Organizational citizenship behavior, Perceived organizational politics, Human resource management, Employee engagement and performance, Organizational culture and effectiveness, Corporate social responsibility in institutions, Social innovation and enterprise development, Public service management practices, Organizational behavior in developing contexts.