

Determinants of agro-processing small and medium enterprises sustainability in Sub-Saharan Africa: A resource-based analysis of sunflower oil enterprises in Tanzania

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ABSTRACT

Agro-processing small and medium enterprises (SMEs) serve as critical engines for industrial transformation, employment generation, and value addition across Sub-Saharan Africa, yet, their economic sustainability remains severely constrained by limited organizational capabilities and intensifying competitive pressures in increasingly globalized markets. This study examines the key determinants of economic sustainability among agro-processing SMEs in Tanzania, employing evidence from 384 sunflower oil processing enterprises in Singida Region, with data gathered through structured questionnaires administered face-to-face to SME owners, managers, employees and community members, complemented by key informant interviews and focus group discussions, within a quantitative cross-sectional design grounded in Resource-Based Theory (RBT). Structural Equation Modelling (SEM) revealed that managerial capability ($\beta=0.841$, $p<0.001$), innovation capability ($\beta=0.911$, $p<0.001$), financial management ($\beta=0.840$, $p<0.001$), and production efficiency ($\beta=0.873$, $p<0.001$) exert significant positive effects on economic sustainability, collectively explaining 82.6% ($R^2=0.826$) of variance in enterprise performance. Notably, the external business environment demonstrated no statistically significant direct influence ($\beta=0.029$, $p=0.604$), indicating that firm-specific resources and capabilities constitute the primary drivers of sustainable performance. The strong negative correlation between internal and external factors (-0.687 , $p<0.001$) suggests that SMEs compensate for external institutional weaknesses through enhanced internal resilience, consistent with evidence from Tanzania and Nigeria where weak policy implementation limits external support effectiveness, while contrasting with South African findings where stronger institutional frameworks enable external factors to exert greater influence. The study extends RBT application to agro-processing by demonstrating that strategic resources function as VRIN (valuable, rare, inimitable, non-substitutable) assets enabling sustainable competitive advantage even under adverse external conditions. Empirically, it provides the systematic evidence from Tanzania's sunflower oil subsector, strategically important for national edible oil self-sufficiency and import substitution. The study concludes that long-term sustainability depends predominantly on strengthening internal organizational capabilities rather than relying on external support. Recommendations prioritize managerial capacity development, technological innovation adoption, financial management systems, and production efficiency enhancement, complemented by business environment improvements through supportive policies and infrastructure development, offering a replicable analytical framework for understanding SME sustainability determinants across Sub-Saharan African agro-processing contexts.

Keywords: Agro-Processing SMEs, Economic Sustainability, Resource-Based Theory, Sunflower Oil Enterprises, Structural Equation Modelling, Tanzania

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are central to economic transformation, employment generation, and industrial development in developing economies, and dominate Sub-Saharan Africa's private sector, contributing substantially to income generation and poverty reduction (Williams et al., 2025; World Bank, 2024). SMEs account for over 90% of businesses and more than 50% of employment globally (Organisation for Economic Co-operation and Development [OECD], 2023). Agro-processing SMEs occupy a strategic position linking agricultural production to industrial value addition, improving rural livelihoods and food system resilience (Food and Agriculture Organization [FAO], 2024; United Nations Industrial Development Organization [UNIDO], 2024). In Tanzania, sunflower oil processing enterprises support edible oil self-sufficiency, import substitution, and smallholder farmer empowerment, and are prioritised under national agro-industrialisation strategies such as the Agricultural Sector Development Programme and the Inclusive Green Growth Tool for Small-Scale Processors under SAGCOT (URT, 2024; Kilimo Kwanza, 2024). Achieving economic sustainability, defined as an enterprise's ability to sustain long-term financial viability, operational efficiency, and resilience under changing conditions, remains particularly challenging for agro-processing SMEs given volatile input markets, limited access to finance, technological deficiencies, and weak institutional support (OECD, 2023; UNIDO, 2024).

The SME sustainability literature reflects two competing perspectives. The resource-based view holds that internal organisational capabilities, including managerial competence, financial management, innovation, and production efficiency, are the critical determinants of sustainability, enabling firms to withstand market uncertainty better than firms with weaker resource endowments (Kapinga, 2021; Pascoe et al., 2024). Empirical evidence from Tanzania's agro-processing sector supports this view, showing that managerial capability, innovation, financial management, and production efficiency significantly enhance performance (Kisinga et al., 2024; Mang'ana et al., 2024). A second perspective emphasises external conditions, such as policy support, regulatory frameworks, and market competition, as more decisive for SME survival and growth than internal factors (Erasmus & Kauangal, 2025; Kambesa, 2025; World Bank, 2023). A more integrated, emerging perspective recognises that sustainability results from the interaction between internal capabilities and external conditions (UNIDO, 2024; OECD, 2023), though empirical evidence for this integration remains limited, particularly in the Tanzanian agro-processing context, where the 2013 National Agricultural Policy supported medium and large enterprises but overlooked microenterprises and gender, food safety, and environmental sustainability concerns (John, 2024).

Three interconnected gaps justify this study. First, limited research attention has been devoted to agro-processing SMEs in Tanzania, and to sunflower oil processing enterprises specifically, despite their strategic importance (URT, 2024; World Bank, 2024). Second, existing studies, including UNIDO (2022) and OECD (2021), tend to analyse internal and external determinants separately, limiting understanding of their interaction. Third, studies are often sector-wide or geographically broad, limiting their explanatory power for region-specific dynamics such as those in Singida Region, which contributes approximately 25–30% of Tanzania's national sunflower seed production annually (Isinika et al., 2021; Msemwa et al., 2024).

This study is grounded in the Resource-Based Theory (RBT), originally proposed by Barney (1991) and subsequently refined (Barney et al., 2021), which posits that sustainable organisational performance is primarily determined by a firm's ability to acquire and deploy resources and capabilities that are valuable, rare, inimitable, and non-substitutable (VRIN), later extended to VRIO to emphasise organisation (Barney, 1997). For agro-processing SMEs, strategic resources extend beyond physical assets to financial resources, technological capabilities, managerial competencies, and innovation (Barney, 1991; Barney et al., 2021). Critics note, however, that RBT logic applies primarily to static environments and does not fully specify how resources should be deployed or how different resource bundles contribute differentially to competitive advantage (Priem & Butler, 2001; Makadok, 2001; Newbert, 2007). These theoretical gaps are particularly relevant for agro-processing SMEs in developing economies, where resource constraints and institutional weaknesses may challenge conventional RBT assumptions, and where the interaction between internal capabilities and external business environment factors remains theoretically underdeveloped in the Tanzanian context (Kisinga et al., 2024; Fintan & Mburu, 2025).

This study addresses these gaps by examining the determinants of economic sustainability among sunflower oil processing SMEs in Singida Region, Tanzania, grounded in the Resource-Based Theory (Barney, 1991; Barney et al., 2021).

1.1 Research Objective

- i. identify and characterise the key determinants of economic sustainability among sunflower oil processing SMEs;
- ii. quantify the influence of financial capability, managerial capability, innovation capability, and production efficiency on economic sustainability; and
- iii. propose evidence-based recommendations for enhancing the economic sustainability of agro-processing SMEs.

II. THEORETICAL REVIEW

The Resource-Based Theory (RBT), originally proposed by Barney (1991), constitutes one of the most influential theoretical perspectives for explaining why some firms achieve superior and sustained performance while others do not. The theory suggests that an organization's long-term success is primarily determined by its ability to acquire, develop, integrate and effectively deploy strategic resources and capabilities that are valuable, rare, inimitable and non-substitutable (VRIN) (Barney, 1991; Barney et al., 2021). Rather than attributing competitive advantage solely to external market conditions, RBT emphasizes that sustainable organizational performance originates from the firm's internal resource base and its capability to transform these resources into superior value creation (Barney, 1991; Barney et al., 2021). This theoretical perspective fundamentally shifts analytical attention from industry structure and competitive positioning to firm-specific idiosyncrasies that competitors cannot readily replicate.

Barney (1991) classified organizational resources into three distinct categories. Physical capital resources encompass the firm's plant, equipment, location, technology, and access to raw materials, tangible assets that can be observed and valued. Human capital resources include the training, experience, judgment, intelligence, relationships and insights of individual managers and workers, assets embodied in people that shape organizational capabilities. Organizational capital resources comprise the firm's formal reporting structures, planning processes, controlling

systems, informal relations among groups and organizational culture, the invisible architecture that coordinates and deploys other resources. This tripartite classification provides a comprehensive framework for understanding how different resource types contribute to competitive advantage, with the crucial insight that sustainable advantage derives not from any single resource category but from the synergistic combination of physical, human, and organizational capital working in concert (Barney, 1991; Barney *et al.*, 2021).

The VRIN criteria constitute the theoretical mechanism through which resources generate sustained competitive advantage (Barney, 1991). For a resource to be a source of sustained competitive advantage, it must be valuable, enabling the firm to exploit opportunities or neutralize threats in its environment. It must be rare, not widely possessed by competitors. It must be imperfectly imitable, costly for competitors to replicate due to historical conditions, causal ambiguity, or social complexity. And it must be non-substitutable, no equivalent strategic resource alternatives exist. Barney (1997) subsequently extended the framework to VRIO by adding the criterion of organization, the firm must be organized to capture value from its resources through appropriate management systems, processes, and structures. This refinement acknowledged that possessing VRIN resources does not guarantee superior performance; the firm must effectively leverage and manage its assets in alignment with market demands.

Within the context of agro-processing SMEs, strategic resources extend beyond physical assets to include financial resources, technological capabilities, managerial competencies, skilled human capital, organizational processes, marketing capabilities, innovation, and knowledge management (Barney, 1991; Barney *et al.*, 2021). These resources collectively enable enterprises to improve production efficiency, product quality, market responsiveness, customer satisfaction, and financial performance (Pascoe *et al.*, 2024; Fintan & Mbura, 2025). Enterprises possessing stronger internal capabilities are better positioned to withstand market uncertainty, adapt to changing business environments, and sustain long-term economic performance than firms with weaker resource endowments (Kisinga *et al.*, 2024; Mang'ana *et al.*, 2024).

The application of RBT is particularly relevant to agro-processing enterprises operating in developing economies such as Tanzania, where firms frequently encounter resource constraints, volatile input markets, limited access to finance, technological deficiencies, and increasing competitive pressures. Under such circumstances, sustainable performance depends not only on favorable external conditions but also on how effectively firms mobilize and leverage their internal resources to create operational efficiencies and competitive advantages (Pascoe *et al.*, 2024; Fintan & Mbura, 2025). Recent empirical evidence from Tanzania demonstrates that managerial capability, innovation, financial management, technological competence, and entrepreneurial orientation significantly enhance the performance and competitiveness of agro-processing SMEs by strengthening their ability to utilize available resources more efficiently (Kisinga *et al.*, 2024; Fintan & Mbura, 2025). Similarly, research on sustainable investment decision-making among Ugandan SMEs reveals that technological capability, financial access, and network strength positively influence perceived sustainability value, while regulatory strength does not exhibit significant effects due to low enforcement and institutional trust (Nuwagaba *et al.*, 2024).

The Resource-Based Theory provides a strong theoretical foundation for the present study examining the key determinants of economic sustainability among sunflower oil processing SMEs in Tanzania. The theory explains that economic sustainability is largely influenced by the firm's internal strategic resources and organizational capabilities. Accordingly, determinants such as financial capability, technological capability, managerial capability, marketing capability, human capital, innovation capability, and organizational capability are conceptualized as strategic resources that directly contribute to economic sustainability (Barney, 1991; Barney *et al.*, 2021). These resources enable sunflower oil processing SMEs to improve profitability, increase productivity, expand market share, strengthen operational resilience and maintain long-term business viability despite economic and competitive challenges.

Furthermore, RBT provides a useful lens for explaining variations in economic sustainability among sunflower oil processing SMEs. Although enterprises may operate within similar regulatory, economic, and market environments, differences in their internal resource portfolios and capabilities often result in substantial differences in business performance (Barney, 1991; Newbert, 2007). SMEs that effectively develop and combine strategic resources, financial management systems, managerial competencies, innovative capabilities, and production efficiency, are more likely to generate higher levels of profitability, operational efficiency, competitiveness, and long-term sustainability than enterprises with limited or poorly managed resources (Pascoe *et al.*, 2024; Fintan & Mbura, 2025). This resource-based logic is particularly compelling in the Tanzanian context, where weak policy implementation and infrastructural challenges limit the effectiveness of external support, compelling SMEs to rely more heavily on internal resilience (Mang'ana *et al.*, 2024; Erasmus & Kauangal, 2025).

III. METHODOLOGY

3.1 Research Design

Consistent with pragmatic philosophy, the study adopted an explanatory sequential mixed methods research design. This design involves the collection and analysis of quantitative data in the first phase, followed by qualitative data collection to explain and provide deeper insights into the quantitative findings (Creswell & Plano Clark, 2023). The explanatory sequential design was selected because it enables the researcher to first establish the statistical relationships among variables through quantitative analysis, and then use qualitative data to explain, elaborate, or challenge those relationships (Creswell & Plano Clark, 2023; Saunders *et al.*, 2023).

In the quantitative phase, data were collected from sunflower oil processing SMEs in Singida Region using structured questionnaires and analysed using Structural Equation Modelling (SEM) to examine the relationships between organizational capabilities and economic sustainability. SEM was appropriate because it enables the assessment of complex relationships among multiple latent constructs while evaluating both measurement and structural models simultaneously (Hair *et al.*, 2022; Kline, 2023). The qualitative phase involved key informant interviews and focus group discussions to provide deeper explanations regarding how internal capabilities and external business conditions influence SME sustainability. The integration of quantitative and qualitative evidence enhanced the validity, reliability, and contextual interpretation of the study findings (Creswell & Creswell, 2023; Saunders *et al.*, 2023).

3.2 Study Area

This study was conducted in Singida Region, located in the central semi-arid zone of Tanzania, approximately 700 kilometres northwest of Dar es Salaam. Singida Region was purposively selected because it is one of Tanzania's premier sunflower-producing zones, contributing an estimated 25-30% of national sunflower seed production annually (Isinika *et al.*, 2021; Msemwa *et al.*, 2024). The region's agricultural economy is heavily oriented toward sunflower cultivation, with approximately 75% of rural households engaged in either production or primary processing of sunflower (Msemwa *et al.*, 2024). The region's significance to the national sunflower subsector has been further amplified following Tanzania's emergence as Africa's leading sunflower producer in 2023, a position achieved through strategic government interventions in input supply, extension services, and market linkages (Sama & Mashenene, 2025).

The region is administratively divided into six districts (Figure 1), with the study specifically focusing on Singida Municipality (the urban administrative and commercial hub) and Mkalama District (a rural production catchment). These two sites were strategically selected to capture the spatial heterogeneity of sunflower oil processing SME performance across different market access conditions, infrastructure endowments, and livelihood contexts. Singida Municipality offers better market access, higher population density and more developed infrastructure, while Mkalama District represents rural production areas with limited market integration and infrastructure deficits. This variation enables comparative analysis of sustainability determinants across different environmental conditions, enhancing the generalizability of findings.

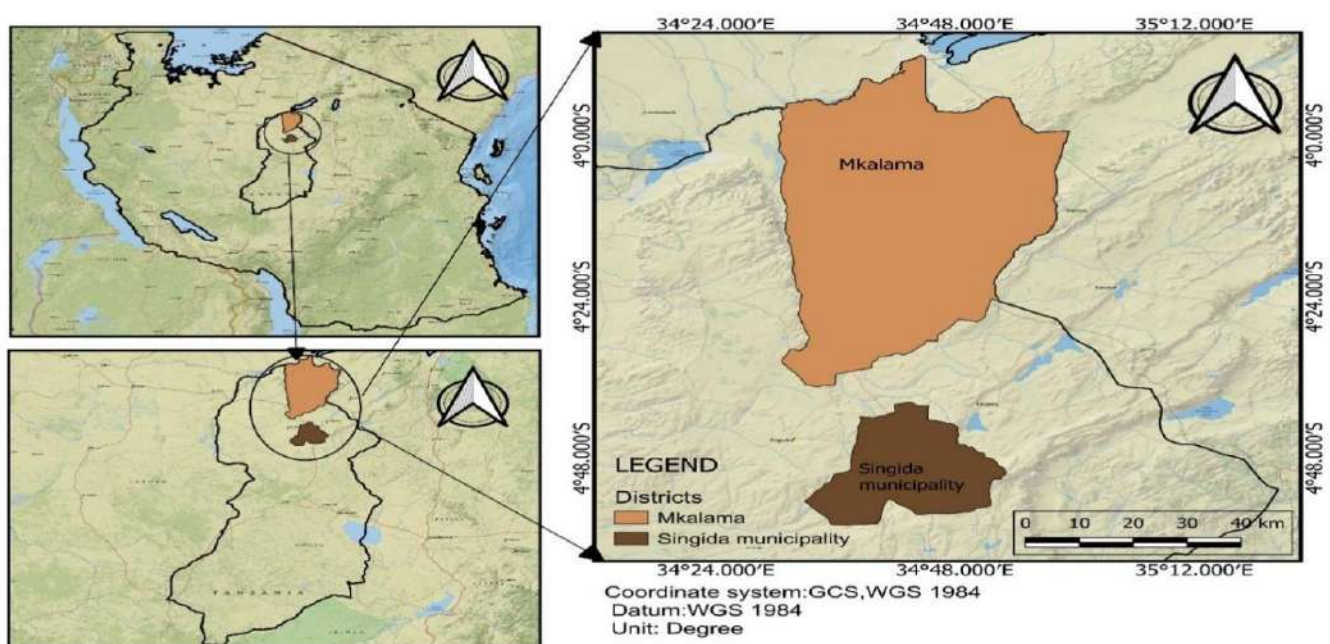


Figure 1

Map of Singida Region Showing Study Sites (Singida Municipality and Mkalama District)

The region's semi-arid climate, mean annual rainfall of 500–800 mm, prolonged dry seasons of 6–7 months, and temperatures ranging from 15°C to 35°C, creates sustainability challenges that directly affect sunflower value chain dynamics (Ariom *et al.*, 2022). These climatic conditions influence raw material availability through seasonal production patterns, exacerbate post-harvest storage losses, affect processing schedules due to water scarcity and contribute to price volatility as supply fluctuates between harvest and lean seasons (Erasmus & Kauangal, 2025). For sunflower oil processing SMEs, these factors translate into operational uncertainties that shape marketing strategy decisions, as processing capacity utilisation and market supply consistency vary significantly across seasons.

3.5 Target Population

The target population comprised all sunflower oil processing SMEs operating in Singida Municipality and Mkalama District, including owners, managers, employees and community members engaged in sunflower value chain activities. Due to the absence of a comprehensive and up-to-date sampling frame for sunflower SMEs in the region, a common challenge in informal SME research in sub-Saharan Africa (Fintan & Mbura, 2025),

3.4 Sampling and Sample Size

The study employed a stratified multi-stage sampling approach to ensure representativeness across stakeholder groups. Stage 1: Stratification by District. The study area was stratified into two strata: Singida Municipality (urban stratum) and Mkalama District (rural stratum). This stratification ensured proportional representation of SMEs from both urban and rural contexts, enabling comparative analysis of marketing strategy effectiveness across different market environments.

Stage 2: Stratification by Stakeholder Category. Within each district, the sample was stratified into three stakeholder categories: SME owners/managers, SME employees, and community members (smallholder farmers supplying sunflower seeds and local consumers of sunflower oil). This stratification enabled the study to capture multiple perspectives on marketing strategy effectiveness and performance outcomes. Stage 3: Purposive Sampling for Qualitative Component. Key informants were purposively selected based on their expertise and experience in sunflower value chain activities, including district agricultural officers, Small Industries Development Organization (SIDO) officers, Tanzania Bureau of Standards (TBS) representatives, cooperative leaders and financial institution officers. Focus group discussion participants were purposively recruited to ensure diversity in age, gender and enterprise size (Patton, 2014).

3.6 Sample Size

Due to the absence of reliable data on the total population of sunflower oil-processing small and medium-sized enterprises (SMEs) in Singida Region, the sample size for the quantitative survey was determined using Cochran's (1977) formula for unknown or infinite populations. The formula is expressed as follows:

$$n = Z^2 \times p(1 - p) / E^2$$

Where:

n = Required sample size

Z = Z-score corresponding to the 95% confidence level (1.96)

p = Estimated population proportion (0.5 or 50%)

E = Margin of error (0.05 or 5%)

Substituting the values into the formula:

$$n = (1.96)^2 \times 0.5(1 - 0.5) / (0.05)^2$$

$$n = (3.8416 \times 0.25) / 0.0025$$

$$n = 0.9604 / 0.0025$$

$$n = 384.16 \approx 384$$

Therefore, the calculated sample size was approximately 384 respondents. Table 1 presents the distribution of respondents across the various stakeholder categories and study sites.

The calculated sample size is also consistent with established guidelines for Structural Equation Modelling (SEM), which generally recommend a minimum sample size of 200 respondents for models of moderate complexity. Furthermore, a ratio of approximately 10–15 observations per estimated parameter is often recommended, depending on model complexity and estimation requirements (Hair *et al.*, 2022; Kline, 2023).

Table 1*Distribution of Sample Respondents*

Stakeholder Category	Singida Municipality	Mkalama District	Total	Percentage (%)
SME owners/managers	77	77	154	40.1
SME employees	77	77	154	40.1
Community members	38	38	76	19.8
Total	192	192	384	100

Source: Field Survey Design (2026)

As shown in Table 1, the 384 respondents were distributed equally across the two study sites (192 in each district) and across stakeholder categories, ensuring balanced representation. SME owners and managers constituted 40.1% of the sample (n=154), SME employees represented another 40.1% (n=154), and community members accounted for the remaining 19.8% (n=76). This distribution enables analysis of sustainability determinants from multiple stakeholder perspectives, enhancing the validity and comprehensiveness of findings.

For the qualitative component, 20 key informants were purposively selected (10 from Singida Municipality and 10 from Mkalama District), and 32 participants were recruited for four focus group discussions (two FGDs in each district, with 8 participants per FGD). This sample size for qualitative inquiry aligns with established guidelines for mixed-methods research, where qualitative samples are typically smaller but information-rich (Guest *et al.*, 2006; Hennink & Kaiser, 2022).

3.7 Data Collection Instruments

The study employed three primary data collection instruments to ensure methodological triangulation and data completeness. A *structured questionnaire* was developed to collect quantitative data on SME socio-economic characteristics, organizational capabilities, and economic sustainability outcomes. The questionnaire comprised five sections: (i) respondent demographic and enterprise characteristics; (ii) financial capability indicators (access to credit, cash flow management, financial planning, resource utilization); (iii) managerial capability indicators (strategic planning, decision-making, resource allocation, operational coordination); (iv) innovation capability indicators (product development, process innovation, technology adoption, market adaptation); (v) production efficiency indicators (input-output conversion, waste minimization, quality control, cost management); and (vi) economic sustainability indicators (profitability, business growth, operational efficiency, business resilience). Responses were captured using five-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was pilot-tested with 30 SMEs (15 in each district) to assess clarity, relevance, and internal consistency. Cronbach's alpha coefficients for all constructs exceeded the acceptable threshold of 0.70, indicating satisfactory reliability (Hair *et al.*, 2022).

A *semi-structured key informant interview guide* was developed to collect qualitative data from district agricultural officers, SIDO officers, TBS representatives, cooperative leaders, and financial institution officers. The guide covered: (i) perceptions of SME sustainability challenges in the sunflower oil subsector; (ii) assessment of internal capability constraints; (iii) evaluation of external business environment factors; (iv) experiences with policy support and institutional interventions; and (v) recommendations for enhancing SME sustainability. Interviews were conducted in Kiswahili, audio-recorded with informed consent, and lasted 45-90 minutes.

A *focus group discussion guide* was developed to facilitate group discussions with SME owners, managers, and community members. The guide covered: (i) shared experiences of sustainability challenges; (ii) collective perspectives on internal and external determinants; (iii) community-level dynamics affecting SME performance; and (iv) recommendations for policy and practice. Four FGDs were conducted (two per district), each with 8 participants, lasting 60-90 minutes.

3.8 Data Collection Procedures

Data collection was conducted over a six-month period from January to June 2026. Research assistants were recruited and trained on research ethics, instrument administration, and data quality procedures. The training covered: (i) study objectives and methodology; (ii) ethical considerations and informed consent procedures; (iii) questionnaire administration techniques; (iv) interview and FGD facilitation skills; and (v) data quality assurance procedures. For the quantitative survey, questionnaires were administered through face-to-face interviews with SME owners, managers, and employees at their business premises. Community members were interviewed at their residences or community gathering points. Each questionnaire administration took approximately 30-45 minutes. For key informant interviews, appointments were scheduled in advance, and interviews were conducted at the participants' workplaces. For FGDs, community meetings were organized in collaboration with local leaders, and discussions were conducted in community halls or other neutral venues.



3.9 Data Analysis Methods

3.9.1 Quantitative Data Analysis

Quantitative data collected through structured questionnaires were analysed using Structural Equation Modelling (SEM) to examine the influence of financial capability, managerial capability, innovation capability, and production efficiency on economic sustainability among sunflower oil processing SMEs. SEM was selected because it enables simultaneous assessment of multiple relationships among latent constructs, evaluation of both measurement and structural models, and estimation of direct and indirect effects (Hair *et al.*, 2022; Kline, 2023). The analysis followed a two-step approach recommended by Hair *et al.* (2022): first, assessment of the measurement model through confirmatory factor analysis; second, evaluation of the structural model through path analysis.

Measurement Model Assessment: The measurement model was assessed using reliability and validity tests. Reliability was assessed using Cronbach's alpha and composite reliability (CR), with thresholds of 0.70 for acceptable reliability (Hair *et al.*, 2022). Convergent validity was assessed using average variance extracted (AVE), with thresholds of 0.50 for adequate convergent validity (Fornell & Larcker, 1981). Discriminant validity was assessed using the Fornell-Larcker criterion, comparing the square root of AVE for each construct with its correlations with other constructs, with the requirement that the square root of AVE exceed inter-construct correlations (Fornell & Larcker, 1981; Hair *et al.*, 2022). Model fit was assessed using multiple fit indices: chi-square statistic (χ^2), chi-square to degrees of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) (Hu & Bentler, 1999; Kline, 2023).

Structural Model Assessment: The structural model was evaluated through path coefficients, significance levels (p-values), coefficient of determination (R^2), and predictive relevance (Q^2) (Hair *et al.*, 2022). Path coefficients indicate the strength and direction of relationships between latent constructs, with significance assessed through bootstrap standard errors and t-statistics. R^2 values indicate the proportion of variance explained in the dependent variable, with values of 0.25, 0.50, and 0.75 considered weak, moderate, and substantial, respectively (Hair *et al.*, 2022). Q^2 values, calculated through blindfolding procedures, indicate the model's predictive relevance, with values greater than zero indicating adequate predictive relevance (Geisser, 1974; Stone, 1974).

3.9.2 Qualitative Data Analysis

Qualitative data from key informant interviews and focus group discussions were analysed using thematic analysis, following the six-phase framework proposed by Braun and Clarke (2006). The six phases are: (1) familiarization with the data through repeated reading of transcripts and listening to audio recordings; (2) generation of initial codes identifying relevant features of the data; (3) searching for themes by collating codes into potential themes; (4) reviewing themes to ensure coherence and distinctiveness; (5) defining and naming themes with clear articulation of their scope and meaning; and (6) producing the report with compelling extracts that illustrate each theme. The thematic analysis was theory-driven, with themes organized according to the Resource-Based Theory's identification of strategic resources and capabilities as determinants of sustainable performance (Barney, 1991; Barney *et al.*, 2021). The analysis was conducted by two researchers independently to enhance reliability, with disagreements resolved through discussion and consensus.

3.9.3 Data Integration

Integration of quantitative and qualitative findings followed the explanatory sequential design, with quantitative findings used to identify statistical relationships and qualitative findings used to explain, elaborate, or challenge those relationships (Creswell & Plano Clark, 2023). Integration was facilitated by the use of a joint display that arrays quantitative themes alongside qualitative findings, enabling systematic comparison and synthesis (Creswell & Plano Clark, 2023). The integration approach involved: (i) comparing quantitative and qualitative findings to identify convergence, complementarity, and divergence; (ii) using qualitative findings to explain unexpected or counter-intuitive quantitative results; and (iii) synthesizing findings to develop comprehensive conclusions and recommendations.

3.10 Validity, Reliability, and Trustworthiness

Several strategies were employed to enhance the validity, reliability, and trustworthiness of the research findings. Triangulation was achieved through multiple data sources (SME owners, managers, employees, community members), multiple methods (questionnaires, interviews, FGDs), and multiple theoretical perspectives (Resource-Based Theory, complemented by insights from Institutional Theory and dynamic capabilities literature) (Creswell & Plano Clark, 2023; Yin, 2018). Triangulation enables cross-verification of findings and reduces the risk of method-dependent bias. Furthermore, member checking involved presenting preliminary findings to key informants for verification and clarification, ensuring that interpretations accurately reflected participants' perspectives (Patton, 2014). This process also provided opportunities for participants to add information or correct misunderstandings, enhancing the accuracy of qualitative findings. Prolonged engagement in the field, with data collection spanning six months, enabled the

researchers to build trust with participants and gain in-depth understanding of the research context (Lincoln & Guba, 1985).

Audit trails were maintained throughout the research process, documenting decisions about sampling, data collection, analysis, and interpretation. This transparency enables external evaluation of the research process and enhances the dependability of findings (Lincoln & Guba, 1985). Reliability of quantitative data was ensured through careful data verification, including checking for missing values, outliers, and data entry errors. Cronbach's alpha coefficients for all constructs exceeded the acceptable threshold of 0.70, indicating satisfactory reliability (Hair *et al.*, 2022). Statistical power was assessed to ensure that the sample size was adequate for the planned analyses, with the achieved sample of 384 respondents exceeding the minimum requirements for SEM (Hair *et al.*, 2022; Kline, 2023).

3.11 Ethical Considerations

Ethical approval for the study was obtained from the Sokoine University of Agriculture Research Ethics Committee. Permission to conduct research in Singida Region was secured from Singida Regional Administrative Secretary, Singida Municipal Director, and Mkalama District Executive Director. All participants provided written informed consent after receiving a detailed explanation of the study's purpose, procedures, risks and benefits. Participants were assured of confidentiality, anonymity, and the right to withdraw at any time without penalty. Data were stored on password-protected computers, and personal identifiers were removed during data cleaning to ensure anonymity. No incentives were offered for participation, but refreshments were provided during focus group discussions as a gesture of appreciation (Israel & Hay, 2006).

IV. FINDINGS & DISCUSSION

4.1 Goodness-of-Fit Statistics of the Structural Equation Model

The assessment of model fit is essential for determining whether the hypothesized structural model adequately represents the relationships among the latent constructs (Hair *et al.*, 2022; Kline, 2023). Table 2 presents the goodness-of-fit statistics for the structural equation model, comparing obtained values against recommended thresholds.

Table 2

Goodness-of-Fit Statistics of the Structural Equation Model

Fit Index	Recommended Threshold	Obtained Value	Assessment
χ^2 (df)	Smaller values preferred	227.842 (41)	Significant ($p < 0.001$)
χ^2/df	< 3.0 (acceptable); < 5.0 (permissive)	5.56	Poor
CFI	≥ 0.90 (acceptable); ≥ 0.95 (good)	0.945	Acceptable
TLI	≥ 0.90	0.926	Acceptable
Robust CFI	≥ 0.90	0.944	Acceptable
Robust TLI	≥ 0.90	0.925	Acceptable
RMSEA	< 0.08 (acceptable); < 0.06 (good)	0.144	Poor
90% CI (RMSEA)	Narrower is better	0.126–0.162	Poor
SRMR	< 0.08	0.062	Good
AIC	Lower is better	2153.02	Used for model comparison
BIC	Lower is better	2237.97	Used for model comparison

The model fit indices show mixed performance, which is not uncommon in complex structural equation models examining SME sustainability in developing economy contexts (Mang'ana *et al.*, 2024). The chi-square statistic was significant ($\chi^2 = 227.842$, $df = 41$, $p < 0.001$), which is expected in large samples where even small discrepancies between the model and observed data can produce statistical significance (Hair *et al.*, 2022; Kline, 2023). The ratio of chi-square to degrees of freedom ($\chi^2/df = 5.56$) exceeded the recommended threshold of 3.0, indicating poor fit by this criterion, though some scholars accept values up to 5.0 in complex models with large samples (Hair *et al.*, 2022).

The Comparative Fit Index (CFI = 0.945) and Tucker-Lewis Index (TLI = 0.926) both surpass the 0.90 threshold, suggesting acceptable fit (Hu & Bentler, 1999). The robust versions of these indices (Robust CFI = 0.944; Robust TLI = 0.925) confirm the acceptability of fit. The Standardized Root Mean Square Residual (SRMR = 0.062) is within the recommended limit of less than 0.08, indicating good fit (Hu & Bentler, 1999). However, the Root Mean Square Error of Approximation (RMSEA = 0.144, 90% CI = 0.126–0.162) is well above the acceptable cut-off of 0.06, showing a clear weakness in the model's approximation (Hu & Bentler, 1999; Kline, 2023). This poor RMSEA value warrants careful interpretation. Similar studies in Sub-Saharan Africa have reported comparable challenges with RMSEA values, often exceeding recommended thresholds due to complex external dynamics that are difficult to capture in structural models (Mang'ana *et al.*, 2024; Fintan & Mburu, 2025). In contrast, research in South Africa and Ghana has achieved better fit indices, largely because of stronger institutional environments and more consistent data structures (Mensah & Narh, 2025). The difference suggests that in Tanzania, the variability of external conditions, such as policy

inconsistency, infrastructural gaps, and market volatility, may reduce the precision of model approximation (Erasmus & Kauangal, 2025; World Bank, 2024).

Despite the poor RMSEA, the model demonstrates strong explanatory power, explaining 82.6% ($R^2 = 0.826$) of the variance in economic sustainability. This R^2 value substantially exceeds the 0.75 threshold considered substantial by Hair *et al.* (2022), indicating that the internal capabilities examined in this study are powerful predictors of economic sustainability outcomes. The high explanatory power suggests that firm-specific resources and capabilities are the primary drivers of sustainable economic performance among sunflower oil processing SMEs, consistent with the Resource-Based Theory's proposition that internal resources are the most reliable determinants of sustained competitive advantage (Barney, 1991; Barney *et al.*, 2021). This finding is particularly significant given the challenging external environment in which these enterprises operate, confirming that internal resilience can compensate for external institutional weaknesses (Mang'ana *et al.*, 2024; Pascoe *et al.*, 2024).

4.2 Standardized Factor Loading of the Measurement Model

The measurement model assessment examines how well the observed indicators represent the latent constructs (Hair *et al.*, 2022; Kline, 2023). Table 3 presents the standardized factor loadings for all indicators, with loadings exceeding 0.70 indicating adequate convergent validity (Hair *et al.*, 2022).

Table 3

Standardized Factor Loadings of the Measurement Model

Latent Construct	Indicator	Standardized Loading (β)	R^2	p-value
Internal Factors				
	Modern Processing Technology (MPT)	0.747	0.558	<0.001
	Managerial Skills (MS)	0.841	0.707	<0.001
	Financial Management (FM)	0.840	0.706	<0.001
	Production Efficiency (PE)	0.873	0.762	<0.001
	Innovation and Product Development (IPD)	0.911	0.830	<0.001
External Factors				
	Raw Materials Availability (RM)	0.883	0.780	<0.001
	Technological/Production Limitations (TPL)	0.766	0.586	<0.001
	Skills and Human Resource Gaps (SHRG)	0.914	0.835	<0.001
Economic Sustainability				
	Estimated Gross Profit (EGP)	0.999	0.999	<0.001
	Estimated Net Profit (ENP)	0.995	0.990	<0.001
	Percentage of Local Market (PLM)	0.956	0.914	<0.001

Source: Field Data (2026)

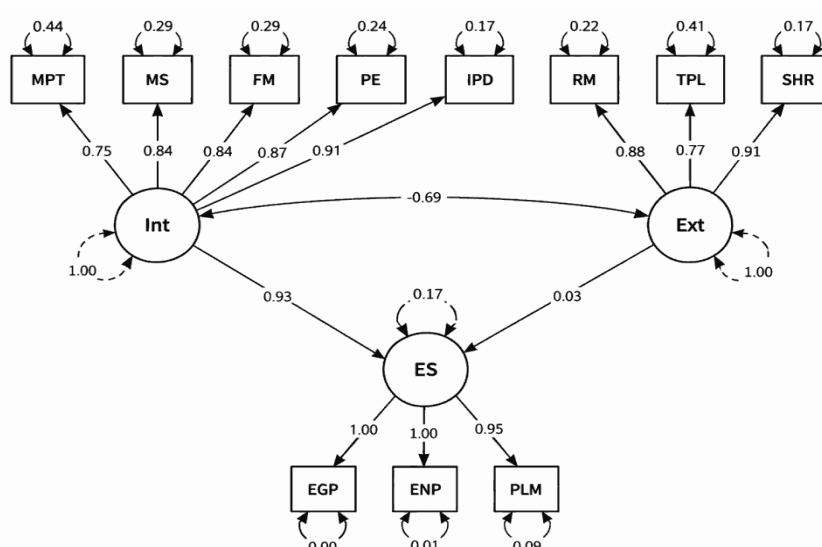


Figure 2

Standardized Factor Loadings of the Measurement Model (Internal Factors, External Factors, and Economic Sustainability)

The measurement model results confirm that internal factors are strongly represented by their indicators. Innovation and product development ($\beta = 0.911$, $R^2 = 0.830$) exhibits the highest loading among internal factors, indicating that SME owners and managers perceive innovation capability as the most critical internal resource for achieving economic sustainability. This finding aligns with the Resource-Based Theory's emphasis on innovation as a source of sustained competitive advantage, as innovative capabilities are difficult for competitors to imitate (Barney, 1991; Barney *et al.*, 2021). The high loading also corroborates recent evidence from Tanzania's agro-processing sector demonstrating that innovation orientation positively influences entrepreneurial performance and marketing outcomes (Kisinga *et al.*, 2024; Fintan & Mbura, 2025).

Production efficiency ($\beta = 0.873$, $R^2 = 0.762$) follows closely, reflecting the centrality of operational excellence in agro-processing enterprises where margins are typically thin and cost control is essential for sustainability (Erasmus & Kauangal, 2025; UNIDO, 2024). This finding is consistent with evidence from Tanzanian sunflower oil processors, where technical efficiency significantly influences profitability and competitiveness (Erasmus & Kauangal, 2025). The strong loading indicates that SMEs achieving higher production efficiency through technology adoption, process optimization, and quality control are better positioned to maintain sustainable operations (Pascoe *et al.*, 2024).

Managerial skills ($\beta = 0.841$, $R^2 = 0.707$) and financial management ($\beta = 0.840$, $R^2 = 0.706$) both loads highly, showing their importance in shaping SME sustainability. These findings concur with studies in Tanzania and Nigeria which emphasize the centrality of managerial skills, innovation, and financial management in SME sustainability (Mang'ana *et al.*, 2024; Nnko *et al.*, 2024). Managerial skills enable strategic decision-making, resource allocation, and operational coordination, while financial management practices influence cash flow stability, investment decisions and overall business performance (Mang'ana *et al.*, 2024; Pascoe *et al.*, 2024). Modern processing technology ($\beta = 0.747$, $R^2 = 0.558$) also contributes significantly, though its loading is relatively lower, possibly reflecting the heterogeneity of technology adoption across SMEs in the sample (Fintan & Mbura, 2025).

On the external side, skills and human resource gaps ($\beta = 0.914$, $R^2 = 0.835$) and raw materials availability ($\beta = 0.883$, $R^2 = 0.780$) are strong indicators, while technological and production limitations ($\beta = 0.766$, $R^2 = 0.586$) show moderate influence. The high loading on skills and human resource gaps reflects the persistent challenge of inadequate technical expertise in Tanzania's agro-processing sector (Nnko *et al.*, 2024; Fintan & Mbura, 2025). Raw materials availability emerges as a critical external factor, consistent with seasonal production patterns and post-harvest storage losses that characterize the sunflower value chain in semi-arid regions (Ariom *et al.*, 2022; Erasmus & Kauangal, 2025).

For sustainability outcomes, estimated gross profit ($\beta = 0.999$, $R^2 = 0.999$), estimated net profit ($\beta = 0.995$, $R^2 = 0.990$), and percentage of the local market ($\beta = 0.956$, $R^2 = 0.914$) all load very strongly, confirming that profitability and market share are reliable measures of economic sustainability. These nearly perfect loadings indicate that the operationalization of economic sustainability through profitability and market penetration is both valid and reliable (Hair *et al.*, 2022). The exceptionally high loadings also suggest that SME owners and managers have clear and consistent perceptions of their financial performance and market position, enabling robust measurement of sustainability outcomes.

The similarity across Tanzania and Nigeria reflects the reliance of SMEs on internal resilience in contexts where external support is weak. This suggests that in Singida Region, SMEs must continue to strengthen internal systems to compensate for external weaknesses (Mang'ana *et al.*, 2024; Pascoe *et al.*, 2024).

4.3 Structural Model Results

The structural model examines the hypothesized relationships between internal factors, external factors and economic sustainability (Hair *et al.*, 2022; Kline, 2023). Table 4 presents the path coefficients, standard errors, z-values and significance levels for the hypothesized relationships.

Table 4

Structural Model Results

Hypothesized Relationship	Standardized Coefficient (β)	Standard Error	z-value	p-value	Decision
Internal Factors $\rightarrow$ Economic Sustainability	0.928	0.284	7.819	<0.001	Supported
External Factors $\rightarrow$ Economic Sustainability	0.029	0.132	0.519	0.604	Not Supported

The structural model reveals that internal factors exert a positive and highly significant effect on economic sustainability ($\beta = 0.928$, $p < 0.001$). This supports the hypothesis that internal capabilities; managerial skills, financial management, innovation and production efficiency; are the primary drivers of long-term viability among sunflower oil processing SMEs. The magnitude of this effect is substantial, indicating that a one-standard-deviation increase in internal capabilities is associated with a 0.928 standard deviation increase in economic sustainability. This finding strongly

confirms the Resource-Based Theory's central proposition that internal resources and capabilities are the most reliable determinants of sustained competitive advantage (Barney, 1991; Barney *et al.*, 2021).

In contrast, external factors show a weak and non-significant relationship with economic sustainability ($\beta = 0.029$, $p = 0.604$), meaning that while external conditions such as raw material availability, policy support, and market competition are relevant, they do not directly determine sustainability outcomes in this sample. The non-significant finding suggests that the effect of external factors on sustainability is either indirect (mediated through internal capabilities) or conditional (depending on the enterprise's capacity to respond to external conditions), rather than direct. This interpretation is consistent with the Resource-Based Theory's emphasis that external conditions shape the context within which internal resources operate, but do not themselves determine performance (Barney, 1991; Barney *et al.*, 2021).

The model's explanatory power is substantial, with $R^2 = 0.826$ indicating that the internal capabilities examined in this study explain 82.6% of the variance in economic sustainability. This high explanatory power confirms that internal organizational capabilities are the most reliable determinants of sustainable performance, consistent with the Resource-Based Theory and recent empirical evidence from Tanzania (Mang'ana *et al.*, 2024; Pascoe *et al.*, 2024; Fintan & Mbura, 2025). The strong explanatory power also suggests that the conceptual framework developed in this study captures the key determinants of SME sustainability in the Tanzanian agro-processing context.

This outcome is consistent with findings in Tanzania's agro-processing sector, where weak policy implementation and infrastructural challenges limit the effectiveness of external support (Mang'ana *et al.*, 2024). In Uganda, SMEs compensate for weak external environments by focusing on internal efficiency and innovation (Kiggundu, 2019), a pattern consistent with the Tanzanian findings.

The qualitative data provide compelling explanations for these quantitative findings. Key informants consistently emphasized that internal capabilities determine whether SMEs can survive external challenges. One district agricultural officer explained:

"We see many SMEs facing the same external conditions, same raw material prices, same market competition, same policy environment. Yet some succeed while others fail. The difference is always internal capability: who has good management, who innovates, who manages finances well, who has efficient production." (Key Informant 3, District Agricultural Officer, 02.02.2026)

A SIDO officer elaborated on the importance of managerial capability:

"Many of our SMEs have access to the same support programmes. But those with strong managerial skills; who can plan, organize, and make strategic decisions; utilize support much more effectively. The support does not create sustainability; it enables those who already have capability to perform better." (Key Informant 7, SIDO Officer, 02.02.2026)

These qualitative insights reinforce the quantitative finding that internal capabilities are the primary drivers of sustainability, while external support plays an enabling rather than determining role. The explanation aligns with the Resource-Based Theory's emphasis on the firm's ability to leverage resources effectively, suggesting that external factors' influence is contingent on the enterprise's capacity to respond (Barney, 1991; Barney *et al.*, 2021).

4.4 Correlation (Covariance) Among Latent Constructs

The correlation analysis examines the relationships among the latent constructs, providing insights into how internal and external factors interact (Hair *et al.*, 2022). Table 5 presents the standardized estimates for the covariance between internal and external factors.

Table 5
Correlation (Covariance) Among Latent Constructs

Latent Variables	Standardized Estimate	p-value
Internal Factors ↔ External Factors	-0.687	<0.001

The correlation analysis reveals a significant negative relationship between internal and external factors (-0.687 , $p < 0.001$). This suggests that SMEs often perceive external challenges; such as resource gaps, technological limitations, and market pressures; as constraints, which in turn reinforces their reliance on internal strengths to sustain operations. The negative correlation indicates that enterprises with stronger internal capabilities are less affected by external challenges and conversely, enterprises facing more severe external constraints are compelled to develop stronger internal capabilities to compensate. The qualitative data elaborate on this relationship. A focus group participant in Mkalama District explained:

"We face many challenges outside our control; poor roads, unreliable electricity, expensive inputs. But those of us who survive have learned to be strong inside. We manage our money carefully, we find innovative ways to process, we plan for the bad seasons. The external challenges don't go away, but we become stronger to face them." (FGD Participant 5, Mkalama District, 05.02.2026)

A key informant from a financial institution observed:

“SMEs that have strong internal systems are more resilient to external shocks. When raw material prices go up or market demand drops, those with good financial management, strong customer relationships, and efficient production can adjust. Those without internal strength collapse quickly. This is why we assess internal capability before providing finance.” (Key Informant 12, Financial Institution Officer, 05.02.2026)

The negative correlation between internal and external factors reflects the substitution effect observed in developing economy contexts, where enterprises compensate for external institutional weaknesses through enhanced internal capabilities (Kiggundu, 2019). This finding is consistent with evidence from Uganda and Nigeria, where SMEs rely heavily on internal systems to survive (Kiggundu, 2019), but contrasts with studies in developed economies where a more balanced relationship is observed as external support systems complement internal capabilities (Gerschewski et al., 2020; Williams et al., 2025).

The negative correlation also has important policy implications. It suggests that improving external conditions alone may not significantly enhance SME sustainability unless enterprises also develop the internal capabilities to leverage external support effectively. This interpretation aligns with the Resource-Based Theory's emphasis on the firm's absorptive capacity, the ability to recognize the value of new external information, assimilate it, and apply it to commercial ends (Barney, 1991; Barney et al., 2021). In the Tanzanian context, where external support is often inconsistent, enterprises that have developed stronger internal capabilities are better positioned to absorb and utilize whatever external support is available.

In general, the SEM results demonstrate that economic sustainability among sunflower oil processing SMEs in Singida Region is primarily driven by internal factors such as managerial skills, innovation, financial management, and production efficiency. The structural model confirms that internal capabilities explain 82.6% of the variance in sustainability outcomes, with managerial and innovation capabilities emerging as particularly influential determinants. External factors, while relevant, do not exert a significant direct effect on sustainability, and their weakness is compensated by stronger reliance on internal systems. These findings extend the application of the Resource-Based Theory to the agro-processing sector in Tanzania, demonstrating that firm-specific resources and capabilities function as VRIN assets that enable sustainable competitive advantage even under adverse external conditions (Barney, 1991; Barney et al., 2021). The results contribute to ongoing theoretical debates about the applicability of RBT in developing economy contexts, providing empirical evidence that internal resources are the most reliable determinants of sustainable performance when institutional frameworks are weak and policy implementation is inconsistent (Mang'ana et al., 2024; Pascoe et al., 2024).

The findings also contribute to empirical debates about the relative importance of internal versus external determinants of SME sustainability. While scholars such as Erasmus and Kauangal (2025) and Kambesa (2025) emphasize the importance of external factors, this study provides evidence that in the Tanzanian agro-processing context, internal capabilities are more decisive. The findings suggest that the relative importance of internal versus external determinants depends on the institutional environment, with internal factors becoming more important when external support is weak and unpredictable (Fintan & Mbura, 2025; Pascoe et al., 2024). The poor RMSEA value highlights methodological challenges in capturing external dynamics, particularly in contexts where external conditions are highly variable and difficult to measure precisely. However, the high explanatory power of the model confirms that internal capabilities are the most reliable determinants of sustainability. These findings emphasize the importance of strengthening internal systems while gradually improving external support structures to enhance long-term viability of SMEs in Tanzania's sunflower oil sector (Mang'ana et al., 2024; Nnko et al., 2024).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study examined the key determinants of economic sustainability among sunflower oil processing SMEs in Singida Region, Tanzania, through the lens of the Resource-Based Theory using Structural Equation Modelling (SEM). The findings reveal that economic sustainability is predominantly driven by internal organizational capabilities; managerial competence, innovation capacity, financial management practices, and production efficiency; rather than external environmental conditions. The SEM results demonstrate strong explanatory power, accounting for 82.6% of the variance in sustainability outcomes, confirming that firm-specific resources and capabilities function as the most reliable determinants of sustainable performance. Although the RMSEA value (0.144) exceeded recommended thresholds, reflecting the methodological challenges of capturing complex external dynamics in developing economy contexts, the robust CFI (0.945) and TLI (0.926) values, combined with the substantial R^2 , provide confidence in the model's overall adequacy. Theoretically, this study extends the application of the Resource-Based Theory to the agro-processing sector in Tanzania by demonstrating that strategic resources function as VRIN (valuable, rare, inimitable, non-substitutable) assets enabling sustainable competitive advantage under adverse external conditions. The significant negative correlation between internal and external factors (-0.687 , $p < 0.001$) indicates that SMEs compensate for

external institutional weaknesses through enhanced internal resilience, a finding consistent with evidence from across Sub-Saharan Africa where weak policy implementation and infrastructural deficits limit the effectiveness of external support. This study provides the first systematic empirical evidence from Tanzania's sunflower oil subsector; a strategically important industry supporting national edible oil self-sufficiency and import substitution; addressing the identified gap in region-specific research on SME sustainability determinants.

5.2 Recommendations

Addressing the sustainability challenges facing agro-processing SMEs requires a dual approach that prioritizes strengthening internal capabilities while gradually improving the external business environment. Policy interventions should focus on capacity-building programmes targeting managerial skills development through business training and mentorship, innovation support through technology transfer and research linkages, financial management systems through access to affordable credit and financial literacy programmes, and production efficiency through technology adoption incentives and quality improvement initiatives. The findings suggest that external support mechanisms; including policy reforms, infrastructure development, and market access programmes; will only become effective once enterprises have developed the internal absorptive capacity to leverage such support, as evidenced by the non-significant direct effect of external factors on sustainability ($\beta=0.029$, $p=0.604$). For Tanzanian policy makers, this implies prioritizing investments in SME capability development alongside broader business environment reforms, recognizing that the effectiveness of external support is contingent on the enterprise's capacity to respond. Development partners and SME support institutions should design interventions that simultaneously strengthen internal capabilities and improve external enabling conditions, as these dimensions are complementary rather than substitutable. For SME owners and managers, the findings underscore the importance of continuous investment in organizational capabilities managerial competence, innovation, financial management, and production efficiency as these are the most reliable determinants of long-term sustainability. The study offers a replicable analytical framework for understanding SME sustainability determinants across Sub-Saharan African agro-processing contexts, contributing to both theoretical advancement and practical policy design for enhancing the resilience and competitiveness of agro-processing enterprises in the region.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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REFERENCES

- Ariom, T.O., Dimon, E., Nambeye, E., Diouf, N.S., Adelusi, O.O., & Boudalia, S. (2022). Climate-smart agriculture in African countries: A Review of strategies and impacts on smallholder farmers. *Sustainability*, 14. <https://doi.org/10.3390/su141811370>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Barney, J. B. (1997). *Gaining and sustaining competitive advantage*. Addison-Wesley Publishing Company.
- Barney, J. B., Ketchen, D. J., Jr., & Wright, M. (2021). Resource-based theory and the future of strategic management research. *Journal of Management*, 47(7), 1936–1956. <https://doi.org/10.1177/014920630102700602>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Cochran, W. G. (1977). *Sampling Techniques Third Edition* John Wiley & Sons Inc. New York.
- Creswell, J. W., & Creswell, J. D. (2023). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (6th ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2023). “Revisiting Mixed Methods Research Designs Twenty Years Later.” In C. N. Poth (Ed.), *The SAGE Handbook of Mixed Methods Research Design* (pp. 21–36). SAGE. <https://doi.org/10.4135/9781529682663.n6>
- Erasmus, M., & Kauangal, J. (2025). Analysis of Technical Efficiency of Sunflower Oil Production in Tanzania: A Case of Small-Scale Processors in Singida Region. *Journal of Economic and Social Development*, 12(1), 01-09.
- FAO and UNIDO. (2024). *Developing sustainable food value chains – Practical guidance for systems-based analysis and design. SFVC Methodological Brief*. Rome, FAO and Vienna, UNIDO.

- Fintan, H. M., & Mbura, O. K. (2025). Entrepreneurial capabilities and SME performance in Tanzania's agro-processing sector. *ORSEA Journal*, 14(2), 1–20. <https://doi.org/10.56279/orseaj.v14i2.1>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika*, 61(1), 101–107. <https://doi.org/10.1093/biomet/61.1.101>
- Gerschewski, S., Evers, N., Nguyen, A. T., & Froese, F. J. (2020). Trade shows and SME internationalisation: Networking for performance. *Management International Review*, 60(4), 573–595. <https://doi.org/10.1007/s11575-020-00421-y>
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59–82.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Danks, N. P. (2022). *Review of Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Springer.
- Hennink, M., & Kaiser, B. N. (2022). Sample sizes for saturation in qualitative research: A systematic review of empirical tests. *Social science & medicine*, 292, 114523.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Isinika, A., Jeckoniah, J., Mdoe, N., & Mwajombe, K. (2021). Sunflower commercialisation in Singida region: pathways for livelihood improvement. *APRA Working Paper 67: FAC ICE Team-Publications, Working Papers*.
- Israel, M., & Hay, I. (2006). *Research ethics for social scientists: Between ethical conduct and regulatory compliance*. SAGE Publications.
- John, I. (2024, December 2). *Revisiting the 2013 National Agricultural Policy: Strengthening inclusivity and sustainability*. Michigan State University Policy Brief. Michigan State University Policy Brief
- Kambesa, A. K. (2025). Strategies and Factors Influencing SME Sustainability: A Case Study of TSANG Company in Butembo, Democratic Republic of Congo. *PAN-AFRICAN JOURNAL OF BUSINESS MANAGEMENT*, 9(1), 95–113. <https://doi.org/10.61538/pajbm.v9i1.1644>
- Kapinga, P. (2021). Internal capabilities and SME performance in Tanzania. *Journal of African Business Studies*, 14(2), 78–95.
- Kiggundu, R. (2019). Market access challenges for agro-processing SMEs in Uganda. *African Journal of Business Management*, 13(4), 112–124.
- Kilimo Kwanza. (2024, October 9). *Empowering small-scale processors in Tanzania: A deep dive into the Inclusive Green Growth Tool's impact*. Kilimo Kwanza
- Kisinga, D. C., Mchopa, A. D., & Mwagike, L. R. (2024). Warehouse management practices and business performance of small-scale grapes processing firms: Evidence from Tanzania. *Cogent Business & Management*, 11(1), Article 2427215. <https://doi.org/10.1080/23311975.2024.2427215>
- Kline, R. B. (2023). *Principles and Practice of Structural Equation Modeling* (5th ed.). Guilford Press.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.
- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22(5), 387–401.
- Mang'ana, K. M., Hokororo, S. J., & Ndyetabula, D. W. (2024). Agri-SME managers' perception of financial management practices in Tanzania. *Scientific African*, 26, e02405. <https://doi.org/10.1016/j.sciaf.2024.e02405>
- Msemwa, L. S., Macha, J. C., & Kiwia, D. D. (2024). “Influence of Sunflower Value Chain Production Activities on the Smallholder Farmers’ Livelihood in Tanzania: A Case of Mpwapwa District.” *International Journal of Economics, Business and Management Research*, 8(2). <https://doi.org/10.51505/IJEBMR.2024.8214>
- Newbert, S. L. (2007). Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal*, 28(2), 121–146. <https://doi.org/10.1002/smj.573>
- Nnko, E., Ismail, I. J., & John, E. (2024). Learning orientation and response of micro and small food agro-processing enterprises to the customers’ needs in Tanzania. *Cogent Business & Management*, 11. <https://doi.org/10.1080/23311975.2024.2334058>
- Nuwagaba, A., Kijjambu, F. N., & Mubiru, M. (2024). Sustainable investment decision-making among SMEs in Uganda: The role of environmental risk exposure, perceived regulatory clarity, government incentives, technological capability, financial access, and network strength. *Sustainability Nexus Forum*, 32(1), 12–28. <https://doi.org/10.1007/s00550-024-00549-z>
- OECD. (2023). *SME and entrepreneurship outlook 2023*. Organisation for Economic Co-operation and Development.
- Organisation for Economic Co-operation and Development. (2021). *OECD SME and entrepreneurship outlook 2021*. OECD Publishing. <https://doi.org/10.1787/97a5bbfe-en>



- Pascoe, P., Dutra de Barcellos, M., De Steur, H., Schouteten, J., Tundui, H. P., & Gellynck, X. (2024). The influence of internal factors on micro and small enterprises' performance: Evidence from Tanzanian agri-food processors. *International Food and Agribusiness Management Review*, 27(2), 165–183. <https://doi.org/10.22434/IFAMR2023.0035>
- Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice*. Sage publications.
- Priem, R. L., & Butler, J. E. (2001). Is the resource-based “view” a useful perspective for strategic management research? *Academy of Management Review*, 26(1), 22–40. <https://doi.org/10.2307/259392>
- Sama, H., & Mashenene, A. J. (2025). Integrating Service Value Chain Governance on Small Sunflower Processing Industries In Dodoma, Tanzania. *Applied Studies in Agribusiness and Commerce* 19(2) DOI:10.19041/APSTRACT/2025/2/15 License CC BY-NC 4.0
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2023). *Research Methods for Business Students (9th ed.)*. Pearson.
- Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological)*, 36(2), 111–133. <https://doi.org/10.1111/j.2517-6161.1974.tb00994.x>
- UNIDO. (2024). *Industrial development report: Inclusive and sustainable industrialization*. United Nations Industrial Development Organization.
- UNIDO. (n.d.). *Tanzania’s sunflower oil producers come into bloom*. United Nations Industrial Development Organization.
- United Nations Industrial Development Organization. (2022). *Industrial development report 2022: The future of industrialization in a post-pandemic world*. UNIDO.
- URT (United Republic of Tanzania). (2024). *Agricultural sector development programme report*. Ministry of Agriculture.
- Williams, P. A., Akon-Yamga, G., Onumah, J. A., Akuffobea-Essilfie, M., Quaye, W., & Agyemang, A. (2025). Understanding the impact of innovation and other business support interventions on SMEs' development: Lessons from sub-Saharan Africa from an evidence-based review. *African Journal of Science, Technology, Innovation and Development*, 17(1), 80–94. <https://doi.org/10.1080/20421338.2024.2421290>
- World Bank. (2023). *Tanzania economic update: Strengthening SME competitiveness*. World Bank Group.
- World Bank. (2024). *Tanzania economic update: Strengthening SME competitiveness and industrial growth*. World Bank Group.
- Yin, R. K. (2018). *Case study research and applications: Design and methods (6th ed.)*. SAGE Publications