Eastern African Journal of Humanities and Social Sciences
Vol. 4 No. 2 (2025): ISSN (Online): 2958-4558
DOI: https://doi.org/10.58721/eajhss.v4i2.1357
Strategising Resilience: Economic Diversification as a Catalyst for Sustainable Livelihoods among the Maasai in Kilosa and Mvomero, Tanzania

Strategising Resilience: Economic Diversification as a Catalyst for Sustainable Livelihoods among the Maasai in Kilosa and Mvomero, Tanzania

Venance Shillingi & Bethsheba Sakinoi
Mzumbe University, Tanzania

Article History
Received: 2025-05-02
Revised: 2025-09-22
Accepted: 2025-10-11
Published: 2025-10-15

Keywords
Economic Diversification
Maasai
Resilience
Sustainable Livelihoods
Tanzania

How to cite:
Shillingi, V., & Sakinoi, B. (2025). Strategising Resilience: Economic Diversification as a Catalyst for Sustainable Livelihoods among the Maasai in Kilosa and Mvomero, Tanzania. *Eastern African Journal of Humanities and Social Sciences*, 4(2), 168-178.

Abstract
Pastoralist communities in sub-Saharan Africa are increasingly threatened by climate change, land degradation, and shifts in socio-economic conditions, which undermine traditional livelihoods such as transhumant livestock herding. Among the Maasai of Tanzania, these pressures have prompted a greater focus on economic diversification as a strategy to build resilience. This study examined how economic diversification enhances resilience and supports livelihoods among Maasai households in the districts of Kilosa and Mvomero. Drawing on resilience theory and the portfolio theory of risk and return, the research employs a mixed-methods approach, combining Partial Least Squares Structural Equation Modelling (PLS-SEM) with qualitative insights from interviews and focus group discussions. Findings reveal that over 82% of respondents engage in alternative income-generating activities beyond pastoralism, such as small-scale farming, trade, and tourism. Quantitative analysis reveals a significant positive relationship between economic diversification and community engagement ($\beta = 0.177$, $p = .030$), as well as an indirect effect on livelihood sustainability mediated by community engagement ($\beta = 0.112$, $p = .033$), which leads to the rejection of both null hypotheses. Qualitative insights further emphasise the importance of inclusive community structures and highlight barriers such as limited capital, skills training, and market access. The study concludes that economic diversification, when supported by strong community involvement and responsive policies, provides a practical path to resilience and sustainable livelihoods for pastoralist communities. Policy suggestions include expanding vocational and entrepreneurship training, improving rural infrastructure, and increasing access to microfinance, all of which are adapted to local needs through participatory, community-led methods.

Introduction
Pastoralist communities throughout sub-Saharan Africa are facing increasing challenges due to climate change, land degradation, diminishing grazing lands, and evolving economic landscapes (Nkedianye, et al., 2019; Nkedianye, et al., 2020). The Maasai of Tanzania, traditionally dependent on transhumant livestock herding, are increasingly contending with social and ecological transitions(Ameso et al., 2018; Kariuki et al., 2021; Nkedianye, Ogutu, Said, Kifugo, de Leeuw, et al., 2020; Sun et al., 2023) that threaten their conventional livelihood systems. Economic diversification

has emerged as a crucial adaptive strategy to enhance resilience and mitigate vulnerability. Diversification through petty trade, small-scale agriculture, tourism, and wage labour provides pastoral households with opportunities to buffer against climatic shocks and socio-economic uncertainties (Hill, 2015; Holland et al., 2022; Nkedianye et al., 2019). However, the success and sustainability of these strategies are influenced not only by market access and resource availability but also by the robustness of community structures and the extent of institutional support. Despite the growing scholarly focus on resilience and livelihood adaptation, there remains a paucity of empirical analysis regarding how diversification interacts with local engagement and policy environments in East African pastoralist contexts. This study addresses this gap by examining the impact of economic diversification on community engagement and livelihood sustainability among Maasai households in the Kilosa and Mvomero districts of Tanzania. The study is grounded in resilience theory(Anderson & Bollig, 2018; Greene et al., 2004) and the portfolio theory of risk and return(Elton & Gruber, 1997; Pandey, 2012), employing a mixed-methods approach(Salum, 2021) to explore how diversification strategies contribute to strengthening community capacities. In doing so, it contributes to the expanding body of literature advocating for locally grounded, culturally informed, and data-driven solutions to enhance resilience in pastoralist regions(Gai et al., 2022; Galvin, 2009; Nkedianye, et al., 2020).

Literature Review

Economic diversification constitutes a crucial adaptive strategy for ensuring sustainable livelihoods among pastoralist communities, particularly in response to climatic uncertainties, land degradation, and resource competition (Berhanu et al., 2007; Kassie, 2017). The traditional livestock-dependent economy of pastoralists is increasingly untenable due to frequent droughts, erratic rainfall, and diminishing grazing lands, necessitating a transition towards alternative income-generating activities (Benjaminsen et al., 2009; Nkedianye, Ogutu, Said, Kifugo, de Leeuw, et al., 2020; Unks et al., 2023). Research on pastoral communities in Ethiopia and Kenya indicates that engagement in small-scale farming, trade, eco-tourism, and wage employment has significantly enhanced economic stability and household resilience (Hill, 2015; Rotich et al., 2023). Similarly, among the Maasai in Tanzania, diversification into crop farming, retail businesses, artisanal work, and community-based tourism is becoming increasingly prevalent as a buffer against climatic and market-induced vulnerabilities. Expanding livelihood options assists pastoralists in stabilising household incomes and enables them to invest in education, healthcare, and infrastructure, thereby contributing to their long-term socio-economic well-being (Adzawla et al., 2020; Kariuki et al., 2021).

Furthermore, research shows that diversification enhances financial security, increases food sovereignty, and reduces dependence on external aid, thereby strengthening the sustainability of pastoralist economies amid changing environmental conditions. In addition to economic advantages, livelihood diversification promotes social resilience and enhances community cohesion among pastoral groups (Homewood et al., 2012). It enables communities to establish new networks and partnerships, primarily through engagement with markets, cooperative enterprises, and financial institutions, which help pastoralists access credit, insurance, and business opportunities. Moreover, integrating Indigenous knowledge into diverse livelihood strategies ensures that economic transitions remain culturally and ecologically sustainable, thereby preventing the erosion of traditional pastoral values (Adzawla et al., 2020; Hill, 2015). Among the Maasai, for instance, embracing agro-pastoralism and conservation-based tourism has generated new revenue streams and preserved their cultural heritage through sustainable tourism and indigenous craft industries. Furthermore, economic diversification alleviates intra-community conflicts stemming from scarce grazing resources, as alternative livelihoods lessen competition for land and water (Berhanu et al., 2007). By blending

modern economic practices with traditional resource management strategies, pastoralist communities are better positioned to cope with climate-induced shocks, maintain socio-political stability, and enhance their collective resilience amidst ongoing environmental and economic changes.

Theoretical Review

This study is anchored in resilience theory and the Portfolio Theory of Risk and Return. Resilience theory offers a conceptual framework for comprehending how communities adapt and reorganise in response to external stressors, including climate change, economic shocks, and environmental degradation (Greene et al., 2004). It highlights the ability of social-ecological systems to absorb disturbances while preserving core functions. In parallel, the Portfolio Theory of Risk and Return, initially formulated in finance (Elton & Gruber, 1997; Pandey, 2012), has been integrated into development studies to elucidate how households manage risks by diversifying income sources. The theory posits that households can mitigate their overall vulnerability in pastoralist livelihoods by distributing efforts across various livelihood activities with distinct risk profiles. This theoretical foundation informs the study's first hypothesis (H1), which proposes a positive relationship between economic diversification and community engagement. It also underpins the second hypothesis (H_2), which investigates the indirect effect of diversification on livelihood sustainability through social structures, aligning with resilience theory's emphasis on the mediating role of collective agency.

Empirical Review

Empirical evidence increasingly supports the notion that diversification constitutes a crucial strategy for rural adaptation. Kassie (2017) demonstrates that diversification markedly enhances food security within Ethiopian agro-pastoral communities. Similarly, Nkedianye et al. (2019) reports that households engaged in off-farm income-generating activities exhibit greater resilience to climate shocks. Adzawla et al. (2020) highlight the pivotal role of women in advancing diversification through informal markets, thereby linking income diversification to gender empowerment. These findings are consistent with the outcomes observed in this study, where Maasai women and youth emerge as central figures in developing new livelihood portfolios.

Furthermore, social capital bolsters economic adaptation by facilitating cooperative ventures, resource sharing, and access to information(McCabe et al., 2014; Nkedianye, Ogutu, Said, Kifugo, Leeuw, et al., 2020). However, the literature on diversification among Tanzanian pastoralists remains sparse, particularly concerning how diversification strategies are shaped and integrated within community structures. This study addresses this gap by combining the risk-spreading logic of Portfolio Theory with the socio-ecological perspective of resilience, providing novel insights into how economic strategies contribute to sustainability through community-driven mechanisms.

Methodology

Research Design

This study employed a mixed-methods approach, integrating both quantitative and qualitative methods to examine the effect of economic diversification on sustainable livelihoods within Maasai communities. The quantitative component tested hypotheses using PLS-SEM, whereas the qualitative component delved into personal experiences and challenges faced by the community.

Study Area

The research was conducted in the Kilosa and Mvomero districts of Tanzania's Morogoro region. These areas are mainly inhabited by pastoralist Maasai communities, which are facing increasing socio-ecological pressures from climate variability, land-use changes, and limited access to grazing land. The selected villages, Twatwatwa, Melela, and Parakuyo, are typical rural Maasai settlements where livelihood diversification has become more critical.

Study Population

The study focused on Maasai pastoral households involved in both traditional and alternative livelihoods within the two districts. The target population included 386 individuals from 13 Maasai villages across Kilosa and Mvomero.

Sample Size and Sampling Procedure

A multistage sampling method was employed to ensure representativeness and methodological rigour. In the first stage, five villages were randomly chosen from a list of 13 eligible villages in Kilosa and Mvomero districts. Selection criteria included accessibility, the presence of Maasai communities, and visible signs of economic diversification. In the second stage, the target population comprised 193 Maasai households in the selected villages. To determine an appropriate sample size for the quantitative survey, Yamane's (1967) formula was used.

$$\boldsymbol{n} = \frac{N}{1+N(e)^2}$$

$$\boldsymbol{n} = \frac{193}{1 + 193(0.05)^2}$$

$$\boldsymbol{n} = \frac{193}{1.4825}$$

$$\boldsymbol{n} = 130$$

Where:

n = sample size; N = population size (193); e = level of precision (0.05)

This resulted in a sample of about 130 respondents, of whom 120 completed the survey questionnaires, yielding a response rate of 92.3%. Respondents were selected through stratified random sampling to represent different genders, ages, and livelihoods, ensuring diversity within the community. For the qualitative component, 20 key informants, including local leaders, clan leaders, small-scale entrepreneurs, ward/village executive officers, and agricultural/livestock extension officers, were purposively selected based on their knowledge and community roles. In addition, six focus group discussions (FGDs) were conducted, each with an average of five participants. These discussions were stratified by gender (male/female) and age cohorts (youth/adults/elders) to explore community-level perceptions and contextual insights into economic diversification and resilience-building efforts.

Data Collection

Quantitative data were gathered using a structured Kiswahili questionnaire covering household demographics, income, community engagement, and perceptions of economic diversification. Qualitative data were collected through semi-structured interviews and focus groups exploring personal experiences, challenges, and local perspectives on livelihood diversification and resilience. These insights helped identify key themes for analysis, integrating qualitative and quantitative results. Participants varied, with FGDs stratified by gender and age. Fieldwork occurred from October to December 2024. Local leaders facilitated community entry and respondent recruitment. Discussions and interviews were audio-recorded (with consent), transcribed, and translated into English as needed. Qualitative transcripts were thematically coded inductively, where recurring concepts were identified through open coding, organised into broader categories through axial coding, and refined through selective coding. NVivo 12 ensured consistent and traceable analysis. Triangulating qualitative themes with quantitative data strengthened validity and deepened understanding of how economic diversification affects resilience and livelihoods among the Maasai.

Data Analysis

Quantitative data were analysed using Smart-PLS 4.0 (Hair et al., 2018; Sarstedt et al., 2019). PLS-SEM tested relationships between economic diversification (DVS), community engagement (COE), and livelihood sustainability (LIS). Reliability was evaluated with Cronbach's alpha, composite reliability, and AVE, all of which surpassed thresholds. Discriminant validity was confirmed via Fornell-Larcker. Qualitative data from interviews and FGDs were transcribed, coded, and thematically analysed, then triangulated with quantitative results to enhance validity and insight.

Ethical Considerations

Ethical approval was granted by the Mzumbe University – Directorate of Research and Postgraduate Studies (DRPS). All participants provided informed consent before data collection. Participants were reassured about confidentiality, voluntary involvement, and their right to withdraw at any time. Data were anonymised and stored securely.

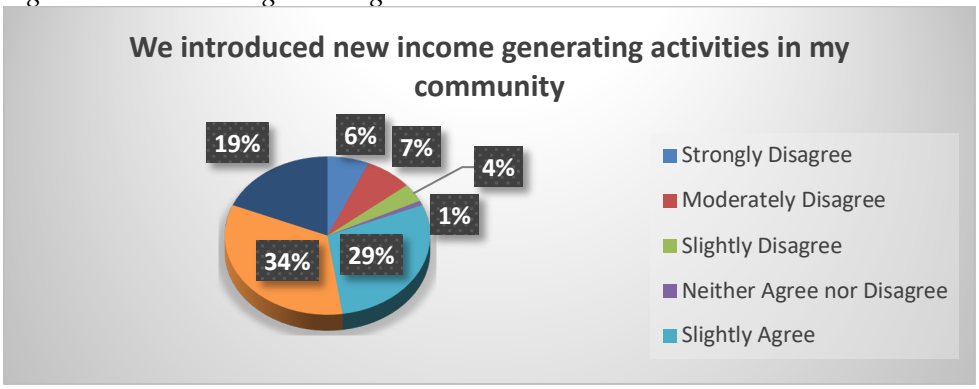
Results

The study focused on 130 respondents from five randomly selected villages in the Kilosa and Mvomero districts, representing a target population of 193 respondents. Out of the 130 questionnaires distributed, approximately 120 were completed and returned, yielding a response rate of 92.3%. This high response rate significantly enhances the reliability and validity of the quantitative findings. According to Creswell (2015), response rates exceeding 80% are deemed excellent in social science research, particularly in field-based studies conducted in rural and pastoralist settings where logistical and cultural barriers may impede participation. The 92.3% response rate aligns with similar empirical studies on livelihood diversification in sub-Saharan Africa. For instance Salum (2021), the study reported a 77% response rate in the implementation of strategic plans in Tanzania's executive agencies, while Abok, A.M. (2013) achieved a 70% response rate among respondents in Kenya. Consequently, the robustness of this response rate supports the generalizability of the findings and ensures that the perspectives captured represent the target Maasai communities in the two districts.

New Income-Generating Activities

Descriptive analysis indicates that a majority of respondents perceive the introduction of new income-generating activities within their community. Specifically, 34% moderately agreed, 29% slightly agreed, and 19% strongly agreed, culminating in 82% expressing agreement. Conversely, 6% strongly disagreed, 7% moderately disagreed, and 4% slightly disagreed. A mere 1% neither agreed nor disagreed. This predominantly positive perception suggests that the community actively pursues diversification beyond traditional pastoral practices.

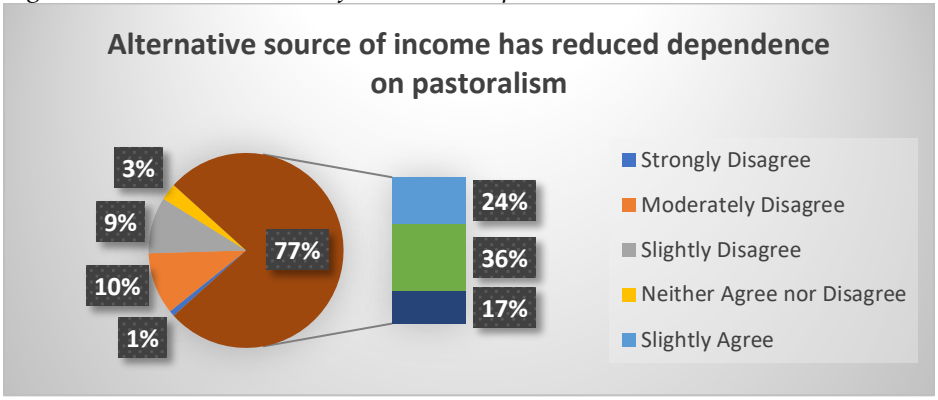
Figure 1: New income-generating Activities



Source: Field data, 2025

The analysis of alternative income sources indicates that 80% of participants reported having access to these sources. Specifically, 31% moderately agreed, 28% slightly agreed, and 21% strongly agreed, while 19% disagreed. This finding suggests that diversification is both a recognised policy narrative and a tangible reality within the community. Furthermore, regarding the impact of alternative income on reducing dependence, Figure 2 demonstrates that 77% of respondents acknowledged a reduction in their reliance on pastoralism due to alternative income opportunities. Among these respondents, 36% moderately agreed, 24% slightly agreed, and 17% strongly agreed.

Figure 2: Alternative source of income on dependence



Source: Field data, 2025

The study reveals that 77% of respondents perceived that possessing multiple income sources enhances household financial stability, with 36% moderately agreeing, 27% slightly agreeing, and 14% strongly agreeing. Additionally, the findings indicate that 77% of participants believed community income has increased due to diversification, with 37% moderately agreeing, 28% slightly agreeing, and 12% strongly agreeing. These results suggest that the benefits of diversification are acknowledged not only at the individual level but also at the community-level.

Furthermore, participants provided personal testimonies regarding the significance of diversification. One woman from Twatwatwa Village in Kilosa District stated,

> *We used to depend entirely on cattle, but now I sell vegetables and cook for schoolchildren. It is what feeds my family during the dry season. In the past, if our livestock got sick or there was no pasture, we had nothing to fall back on. However, since I started this small business, I can still buy food and pay school fees, even when the rains fail. It is difficult, but I do not worry as much as before.* (Interview, Twatwatwa Village, Kilosa District, 26th November 2024)

Another young Maasai (Moran) from Melela Village in Mvomero District remarked,

> *After I finished primary school, I started selling phone accessories when I'm not out herding cattle. It is not much, but it keeps me busy and helps support my family. Livestock is still important, but this small business offers an alternative way to earn money, especially during challenging times. I hope one day it can grow into something bigger.* (Interview, Melela Village, Mvomero District, 25th November 2024)

For quantitative data, specific procedures were followed before analysis. The results of the measurement model assessment confirmed that the SMART-PLS analysis met all necessary validity and reliability criteria. Outer loadings indicate the strength of each indicator's relationship with its latent construct; values ≥ 0.70 are generally deemed acceptable (Becker et al., 2012; Sarstedt et al.,

2019). Following the removal of underperforming items (COE1, LIS1, PIDK1, PIDK4), all retained indicators exhibited strong outer loadings, ranging from 0.706 to 0.942, confirming adequate indicator reliability across all constructs. Additionally, for Internal Consistency Reliability, three indicators were employed: Cronbach's Alpha (α), Composite Reliability (CR or rho_c), and Dillon-Goldstein's rho (rho_A). The thresholds for these indicators require values ≥ 0.70 to ensure acceptable reliability(Sarstedt et al., 2019). All constructs exceed the required thresholds, confirming internal consistency reliability.

Table 1: Internal Consistency Reliability

Construct	α (Alpha)	rho_A	CR (rho_c)	Interpretation
COE	0.856	0.866	0.896	Reliable
DVS	0.946	0.963	0.959	Highly reliable
LIS	0.842	0.854	0.895	Reliable

In terms of convergent validity, as assessed by Average Variance Extracted (AVE), a construct must attain an AVE of at least 0.50(Becker et al., 2012; Hair et al., 2018) to demonstrate that it accounts for a minimum of 50% of the variance in its indicators. All constructs meet the criterion for convergent validity.

Table 2: Convergent validity

Construct	**AVE**	**Interpretation**
COE	0.634	Acceptable
DVS	0.824	Excellent
LIS	0.681	Acceptable

Discriminant validity was further established using the Fornell-Larcker criterion, whereby the square root of each construct's AVE exceeded its correlations with other constructs. These results affirm that the measurement model is statistically robust and appropriate for structural equation modelling and hypothesis testing.

Hypothesis testing

Hence, two hypotheses were tested in this study, using Partial Least Squares Structural Equation Modelling (PLS-SEM). The first hypothesis (H1) proposed that economic diversification has a significant positive effect on community engagement.

Table 3: Direct Effects

Path	**Coefficient (β)**	**t-value**	**p-value**	**Result**
DVS → COE	0.177	1.879	0.030	Significant (p < .05)

Results from Table 3 indicated a path coefficient of β = 0.177 with a p-value of .030, leading to rejection of the null hypothesis and confirmation that diversification significantly enhances community participation. The second hypothesis (H_2) posited an indirect effect of economic diversification on livelihood sustainability through community engagement.

Table 4: *Indirect (Mediating) Effects*

Indirect Path	**Coefficient (β)**	**t-value**	**p-value**	**Result**
DVS → COE → LIS	0.112	1.832	0.033	Significant (p < .05)

The results from Table 4 confirmed a significant effect of economic diversification on community engagement, which, in turn, indirectly influenced livelihood sustainability (β = 0.112, p = .033). Community structures, including savings groups and women's cooperatives, were identified as essential enablers of economic engagement. Despite these successes, participants highlighted barriers such as a lack of start-up capital, inadequate training, and limited market access.

Discussion

The significant relationship between economic diversification and community engagement, as demonstrated in the SMART-PLS structural model (β = 0.177, p = .030), underscores the crucial role of local networks and collective action in enhancing livelihood outcomes among the Maasai. This finding indicates that households engaging in diversified economic activities, such as small-scale agriculture, petty trade, artisanal crafts, and tourism, are more likely to participate in community-based structures that promote mutual support, resource pooling, and learning. In all five study villages, that is Parakuyo, Twatwatwa, Mbwade, Melela, and Wami Sokoine, respondents emphasised the importance of group initiatives such as village savings and loan associations (VSLAs), youth enterprises, and women-led cooperatives. These structures serve as financial safety nets and platforms for sharing ideas, skills, and adaptation strategies. One focus group discussion (FGD) participant noted,

> *When an individual's business encounters failure, the savings group assists in facilitating recovery. No member is excluded from support. Members contribute modest amounts monthly, and when a member experiences challenges, such as loss of inventory or illness, the group extends support through loans or small grants. This initiative transcends mere financial assistance; it embodies trust, unity, and a collective commitment to ensuring that all members progress together* (FGD, Mbwade Village, Kilosa District, 14th October 2024)

Also, another woman similarly explained,

> *Members acquire skills in business management, record-keeping, and future planning. The group collectively offers support when a member faces challenges like drought, illness, or business failure. This entity is more than a savings group; it serves as a platform for communal growth and resilience-building* (Interview, Maasai Woman, Wami Sokoine Village, Mvomero District, 17th October 2024).

These sentiments reflect the function of social capital as an enabler of resilience, echoing Ameso et al., (2018) those who argue that trust-based networks strengthen a community's ability to respond to change through coordination, knowledge exchange, and collective agency. Notably, the model also confirmed a significant indirect effect of economic diversification on livelihood sustainability, mediated through community engagement (β = 0.112, p = .033). This suggests that while diversification alone contributes to resilience, its effectiveness is significantly enhanced when embedded within robust community structures. The implication is that community engagement does not merely coexist with diversification but actively shapes how it translates into sustainable outcomes. A youth from Melela stated,

> *Starting something new on your own is hard, but in a group, we get advice, support, and ideas. That is how people succeed here* (Interview, Maasai Youth, Mbwade village, Kilosa District, 11th November 2024)

Despite these strengths, participants consistently raised concerns about structural barriers. Across all FGDs, access to start-up capital, technical training, and markets was cited as a significant constraint. A woman from Parakuyo emphasised,

> *We want to expand our businesses, but no one gives us loans, and there is no place to learn how to do better.* (Interview, Maasai Woman, Parakuyo village, Kilosa District, 12th November 2024)

The lack of locally tailored financial instruments and capacity-building initiatives limits the scalability and sustainability of diversification efforts. These findings resonate with broader evidence from East African pastoralist contexts, where successful diversification often depends on enabling policy environments and institutional support (McCabe et al., 2014; Nkedianye et al., 2019). Additionally, the study uncovered a disconnect between national policy frameworks and grassroots realities. A local government official in Parakuyo observed,

> *Policies often fail because they do not involve the Maasai in decision-making. Decisions are made far away, without consulting those they affect.* (Interview, name withheld, Parakuyo village, Kilosa District, 12th November 2024)

This institutional gap undermines the relevance and effectiveness of top-down interventions. Hence, participants in Twatwatwa and Melela articulated a pronounced preference for participatory planning processes and the enhanced integration of Indigenous knowledge into formal systems. This perspective aligns with the arguments of other scholars, who emphasise the necessity of co-produced climate and development solutions rooted in local contexts (Holland et al., 2022; Nkedianye, Ogutu, Said, Kifugo, de Leeuw, et al., 2020; Wafula et al., 2022). This study ultimately demonstrated that economic diversification is most effective when embedded within an ecosystem characterized by robust community engagement, locally relevant training, gender-equitable finance, and responsive governance. The direct and indirect effects observed in the PLS model indicate that resilience is not a singular outcome, but a process shaped by interconnected economic, social, and institutional factors. Future development strategies should adopt a systems-thinking approach, ensuring that interventions reinforce and align with community-driven adaptation mechanisms.

Conclusion

This study presents compelling evidence that economic diversification constitutes a foundational strategy for enhancing sustainable livelihoods and community resilience among the Maasai in Tanzania's Kilosa and Mvomero districts. The study integrated structural equation modelling with rich qualitative insights; the findings demonstrate that diversification is a practical response to climate and economic uncertainties and a catalyst for social cohesion and adaptive capacity. Community engagement emerged as the most influential driver of livelihood sustainability, underscoring the importance of social capital, local leadership, and grassroots innovation in development processes. The study further highlights that the impact of economic diversification is significantly enhanced when embedded within robust community structures. The indirect effects captured through PLS-SEM emphasise that diversification operates most effectively with collective action, knowledge exchange, and inclusive decision-making.

Nevertheless, persistent barriers such as a lack of start-up capital, inadequate training, limited market access, and weak institutional coordination continue to constrain the scalability of these initiatives. Generally, the evidence indicates that resilience in pastoralist contexts is not achieved solely through economic strategies but through an ecosystem approach that integrates cultural knowledge, community participation, and responsive policy frameworks. The Maasai communities in this study are not passive recipients of change but active agents co-creating pathways to a more sustainable future. Supporting these efforts necessitates intentional, inclusive, and well-coordinated interventions at multiple levels.

References

Abok, A.M. (2013). Factors affecting effective implementation of strategic plans in non-governmental organisations in Kenya. *Doctoral Thesis,* Jomo Kenyatta University of Agriculture and Technology, http://ir.jkuat.ac.ke:8080/bitstream

Adzawla, W., Baumüller, H., Donkoh, S. A., & Serra, R. (2020). Effects of climate change and livelihood diversification on the gendered productivity gap in Northern Ghana. *Climate and Development*, *12*(8), 743–755. https://doi.org/10.1080/17565529.2019.1689093

Ameso, E. A., Bukachi, S. A., Olungah, C. O., Haller, T., Wandibba, S., & Nangendo, S. (2018). Pastoral resilience among the Maasai pastoralists of Laikipia County, Kenya. *Land*, *7*(2). https://doi.org/10.3390/LAND7020078

Anderson, D. M., & Bollig, M. (2018). Resilience and collapse : histories, ecologies, conflicts and identities in the Baringo-Bogoria basin, Kenya. *Journal of Eastern African Studies, 10*(1), 1-20, *https://doi.org/10.1080/17531055.2016.1150240*

Becker, J., Klein, K., & Wetzels, M. (2012). Hierarchical Latent Variable Models in PLS-SEM : Guidelines for Using Reflective-Formative Type Models. *Long Range Planning*, *45*(5–6), 359–394. https://doi.org/10.1016/j.lrp.2012.10.001

Benjaminsen, T. A., Maganga, F. P., & Abdallah, J. M. (2009). The Kilosa killings: Political ecology of a farmer-herder conflict in Tanzania. *Development and Change*, *40*(3), 423–445.

Berhanu, W., Colman, D., & Fayissa, B. (2007). Diversification and livelihood sustainability in a semi-arid environment: A case study from southern Ethiopia. *Journal of Development Studies*, *43*(5), 871–889. https://doi.org/10.1080/00220380701384554

Elton, E. J., & Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking & Finance*, *21*, 1743–1759.

Gai, A. B., Wahome, R. G., & Bett, R. C. (2022). Impact of resettlement on livestock production and performance among the Maasai pastoralists of RAPland village, Olkaria Kenya. *Pastoralism*, *12*(1). https://doi.org/10.1186/s13570-021-00212-6

Galvin, K. A. (2009). Transitions: Pastoralists living with change. *Annual Review of Anthropology*, *38*, 185–198. https://doi.org/10.1146/annurev-anthro-091908-164442

Greene, R. R., Galambos, C., & Lee, Y. (2004). Journal of Human Behavior in the Social Environment Resilience Theory. *Journal of Human Behavior in the Social Environment*, *8*(4), 75–91. https://doi.org/10.1300/J137v08n04

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). When to use and how to report the results of PLS-SEM, *European Business Review*, https://doi.org/10.1108/EBR-11-2018-0203

Hill, C. (2015). Livelihood Diversification through Migration among a Pastoral People: Contrasting Case Studies of Maasai in Northern Tanzania, *Hum Organ;* 73(4): 389–400.

Holland, K. K., Larson, L. R., Powell, R. B., Holland, W. H., Allen, L., Nabaala, M., Tome, S., Seno, S., & Nampushi, J. (2022). Impacts of tourism on support for conservation, local livelihoods, and community resilience around Maasai Mara National Reserve, Kenya. *Journal of Sustainable Tourism*, *30*(11), 2526–2548. https://doi.org/10.1080/09669582.2021.1932927

Homewood, K. M., Trench, P. C., & Brockington, D. (2012). Pastoralist livelihoods and wildlife revenues in East Africa: a case for coexistence? *Pastoralism*, *2*(1), 1–23. https://doi.org/10.1186/2041-7136-2-19

Kariuki, R. W., Western, D., Willcock, S., & Marchant, R. (2021). Assessing interactions between agriculture, livestock grazing, and wildlife conservation land uses: A historical example from East Africa. *Land*, *10*(1), 1–19. https://doi.org/10.3390/land10010046

Kassie, G. W. (2017). The Nexus between livelihood diversification and farmland management strategies in rural Ethiopia. *Cogent Economics and Finance*, *5*(1), 1–16.

McCabe, J. T., Smith, N. M., Leslie, P. W., & Telligman, A. L. (2014). Livelihood diversification through migration among a pastoral people: Contrasting case studies of Maasai in Northern Tanzania. *Human Organization*, *73*(4), 389–400. https://doi.org/10.17730/humo.73.4.vkr10nhr65g18400

Nkedianye, D. K., Ogutu, J. O., Said, M. Y., Kifugo, S. C., de Leeuw, J., Van Gardingen, P., & Reid, R. S.

(2020). Comparative social demography, livelihood diversification and land tenure among the Maasai of Kenya and Tanzania. *Pastoralism*, *10*(1). https://doi.org/10.1186/s13570-020-00165-2

Nkedianye, D. K., Ogutu, J. O., Said, M. Y., Kifugo, S. C., Leeuw, J. De, Gardingen, P. Van, & Reid, R. S. (2020). Comparative social demography, livelihood diversification, and land tenure among the Maasai of Kenya and Tanzania. *Pastoralism: Research, Policy and Practice,* 2.https://doi.org/10.1186/s13570-020-00165-2

Nkedianye, D. K., Ogutu, J. O., Said, M. Y., Kifugo, S., Leeuw, J. De, Gardingen, P. Van, & Reid, R. S. (2019). Livestock-wealth inequalities and uptake of crop cultivation among the Maasai of Kenya and Tanzania. *World Development Perspectives*, *14*(2), 100106. https://doi.org/10.1016/j.wdp.2019.02.017

Pandey, M. (2012). Application of Markowitz Model in Analysing Risk and Return, *Risk governance & control: financial markets & institutions,* 2(1), 7–15

Rotich, S. J., Funder, M., & Marani, M. (2023). Suburban pastoralists: Pastoral adaptation strategies at the rural-urban interface in Nairobi, Kenya. *Pastoralism*, *13*(1). https://doi.org/10.1186/s13570-023-00268-6

Salum, V. S. (2021). The Influence of Human Resource Strategies on Performance of Tanzania's Local Government Authorities. *Turk Turizm Arastirmalari Dergisi*, *3*(4), 220–233. https://doi.org/10.26677/tr1010.2021.905

Sarstedt, M., Hair, J. F., Cheah, J., Becker, J., & Ringle, C. M. (2019). *How to specify, estimate, and validate higher-order constructs in PLS-SEM. xxxx*. https://doi.org/10.1016/j.ausmj.2019.05.003

Sun, Q., Fu, C., Bai, Y., Oduor, A. M. O., & Cheng, B. (2023). Livelihood Diversification and Residents ' Welfare : Evidence from Maasai Mara National Reserve.*Int. J. Environ. Res. Public Health,* 20, 3859. https://doi.org/10.3390/ ijerph20053859

Unks, R. R., Goldman, M. J., Mialhe, F., & Gunnell, Y. (2023). Diffuse land control, shifting pastoralist institutions, and processes of accumulation in southern Kenya. *The Journal of Peasant Studies*, *50*(5), 1757–1790. https://doi.org/10.1080/03066150.2022.2160630

Wafula, W. M., Wasonga, O. V., Koech, O. K., & Kibet, S. (2022). Factors influencing migration and settlement of pastoralists in Nairobi City, Kenya. *Pastoralism*, *12*(1). https://doi.org/10.1186/s13570-021-00204-6