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A Hybrid Approach to Indigenous and Formal Financial Inclusion among Nuer Agro-Pastoralist Communities in South Sudan

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Abstract: *Financial inclusion is often understood through formal banking, credit, insurance and digital services, potentially overlooking indigenous mechanisms through which communities mobilise resources and manage risks. This article examines the integration of indigenous financial mechanisms with complementary formal services among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan. A mixed-methods approach generated data from 410 household questionnaires, 30 key informant interviews and six focus group discussions, supplemented by observation and document review. Indigenous financial practices recorded a composite mean of 4.29, perceived socio-economic transformation 4.09, and integration indicators 4.17. Pearson correlation revealed a strong, positive and statistically significant association between indigenous financial inclusion and perceived socio-economic transformation ($r = .789$, $p < .001$, $N = 410$). However, the cross-sectional design does not establish causality. Qualitative findings highlighted livestock-based wealth management, reciprocal lending, kinship support and community savings, alongside constraints including conflict, displacement, livestock losses, gender inequality and weak institutional linkages. The article proposes the Borchar Hybrid Financial Integration Framework (BH-FIF), founded on Indigenous Institutional Primacy, Institutional Complementarity and Contextual Sustainability. The framework advances a context-sensitive approach to financial inclusion, requiring piloting and evaluation to establish its practical effectiveness.*

Keywords: *Indigenous financial inclusion; hybrid financial systems; institutional complementarity; Nuer; agro-pastoralism; South Sudan; socio-economic transformation; Borchar Hybrid Financial Integration Framework.*

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1. Introduction

Financial inclusion has increasingly been recognised as an important instrument for promoting inclusive economic development, reducing household vulnerability and strengthening the capacity of individuals and communities to participate in economic activities. Traditionally, financial inclusion has been conceptualised around access to and utilisation of formal financial services, including savings accounts, credit facilities, insurance, payment systems and other regulated financial products. However, contemporary developments in financial technology and the expansion of digital financial services have broadened the scope of financial inclusion beyond conventional banking arrangements. The World Bank's Global Findex Database 2025 demonstrates the growing significance of digital connectivity, mobile technology and the use of

formal and informal financial mechanisms in shaping how individuals save, borrow, make payments and manage financial risks (Klapper et al., 2025). Nevertheless, increased availability of financial products does not necessarily translate into meaningful financial inclusion, particularly among populations experiencing geographical isolation, poverty, institutional fragility and limited access to essential infrastructure.

This distinction is particularly important in rural, pastoralist and agro-pastoralist economies, where financial resources are frequently mobilised through productive assets, reciprocal obligations, kinship networks, community savings arrangements and customary institutions. Such mechanisms perform financial and social functions that may not be adequately captured by conventional indicators of financial inclusion, which predominantly emphasise account ownership, formal borrowing and digital transactions. Evidence from agro-pastoralist communities in Kenya demonstrates the continued relevance of informal savings and borrowing arrangements in facilitating household financial participation. Bostedt (2021), for example, found that increased engagement with group-based savings organisations was associated with improvements in saving and borrowing behaviour among agro-pastoralist households in West Pokot County. This evidence suggests that financial inclusion in rural and pastoralist settings requires a broader analytical perspective that considers not only access to regulated financial services but also the locally embedded institutional arrangements through which households accumulate, exchange and mobilise resources.

The relevance of this broader perspective is particularly pronounced in South Sudan, where persistent conflict, economic instability, recurrent environmental shocks and inadequate institutional infrastructure have constrained livelihood opportunities and household resilience. The World Bank (2024), in its South Sudan Poverty and Equity Assessment, reported that approximately 76% of the population lived below the national poverty line, while extreme poverty affected more than two-thirds of the population. The assessment further identified conflict, weak governance, limited economic opportunities and recurrent natural disasters as interconnected drivers of poverty and vulnerability. These conditions have important implications for financial inclusion because households operating within fragile economic environments require mechanisms for accumulating productive assets, accessing emergency resources, managing livelihood risks and sustaining economic activities despite recurrent disruptions. Garang (2024) similarly demonstrates that civil conflict has weakened South Sudan's emerging financial sector through disruptions to banking infrastructure, reduced geographical access to financial services and constraints on household credit. Consequently, promoting financial inclusion in South Sudan requires attention to the structural and institutional conditions that shape the availability, accessibility, affordability and appropriateness of financial services.

Within this context, Nuer agro-pastoralist communities in Uror County, Jonglei State, provide an important setting for examining the relationship between indigenous financial institutions and formal financial inclusion. The economic and social organisation of Nuer communities has historically been closely associated with livestock, particularly cattle, which serve productive, economic, social and symbolic functions. Hutchinson's (1996) ethnographic analysis illustrates how cattle, money, social relationships and political organisation intersect within Nuer society. Beyond livestock-based wealth management, community resource mobilisation also occurs through reciprocal lending, kinship assistance, grain reserves, labour-sharing arrangements, community savings and customary governance structures. These practices constitute locally embedded mechanisms through which households mobilise resources, distribute risks, meet social obligations and respond to economic uncertainty.

Indigenous financial mechanisms should not be interpreted merely as substitutes for formal banking services or as residual arrangements arising from the absence of financial infrastructure. Rather, they represent institutionally and culturally embedded systems of resource mobilisation whose legitimacy is derived partly from social relationships, reciprocity, trust, reputation and shared customary obligations. Institutional scholarship, particularly Ostrom's (1990, 2005) work on collective action and institutional diversity, provides a useful foundation for understanding how locally developed rules and governance arrangements facilitate cooperation and collective resource management. Similarly, the Capability Approach advanced by Sen (1999) offers a broader understanding of financial inclusion by shifting attention from the availability of resources to the substantive opportunities those resources create. From this perspective, livestock ownership, reciprocal assistance and community savings become significant not simply because they represent financial assets, but because they may enable households to secure food, meet healthcare and educational expenses, support productive activities and respond to livelihood emergencies.

Despite their importance, indigenous financial mechanisms are not without institutional and structural limitations. Their effectiveness may be undermined by insecurity, displacement, livestock disease, cattle raiding, drought, flooding, inflation and the erosion of social networks. Furthermore, the concentration of household wealth in livestock may expose families to substantial

losses when environmental or security-related shocks occur. Reciprocal lending and kinship-based support may also be constrained when entire communities experience simultaneous economic distress. Gender relations introduce an additional dimension of financial exclusion because women's participation in savings, production and household resource mobilisation does not necessarily translate into equivalent ownership of productive assets or control over financial decisions. Kabeer (1999) emphasises the distinction between access to resources, agency and achieved outcomes, highlighting why financial inclusion should be assessed in terms of both participation and the capacity to exercise control over resources.

These limitations raise an important question concerning the institutional architecture of financial inclusion in fragile agro-pastoralist settings: how can indigenous financial mechanisms be strengthened through appropriate engagement with formal financial institutions without undermining their cultural legitimacy, community ownership and existing social functions? A formalisation-oriented approach may risk marginalising locally established institutions by imposing financial products and governance arrangements that do not adequately reflect community priorities, livelihood patterns or institutional capacities. Conversely, exclusive reliance on indigenous arrangements may leave households exposed to limitations in liquidity, capital accumulation, financial risk diversification, insurance, technological infrastructure and formal consumer protection. The challenge, therefore, is not necessarily to establish the superiority of one financial system over another, but to examine the possibilities and limitations of institutional complementarity.

Existing scholarship provides important foundations for this debate. Financial inclusion research has examined formal financial access, digital financial services and the determinants of savings and borrowing behaviour (Klapper et al., 2025; Bostedt, 2021). Institutional scholarship has demonstrated the significance of collective action, locally developed rules and community governance (Ostrom, 1990, 2005), while development research has highlighted the relationship between resources, agency and livelihood opportunities (Sen, 1999; Scoones, 1998). Research on South Sudan has also drawn attention to the detrimental effects of conflict and institutional fragility on financial sector development (Garang, 2024). However, these strands of scholarship are not sufficiently brought together to explain how indigenous financial mechanisms and formal financial services might be institutionally connected in fragile agro-pastoralist communities. In particular, there remains a need for context-specific empirical analysis of the financial functions performed by indigenous institutions, their perceived contribution to household socio-economic wellbeing, the structural constraints affecting their sustainability and the conditions under which complementary formal financial arrangements may be appropriate. The present study addresses this intersection through an empirical investigation among Nuer agro-pastoralist communities in Uror County.

Drawing on a convergent mixed-methods investigation involving 410 household questionnaire respondents, 30 key informants and six focus group discussions across six Payams, this article examines indigenous financial inclusion as an institutionally embedded process of resource mobilisation and socio-economic participation. It investigates the mechanisms through which indigenous financial practices facilitate household wellbeing, examines their statistical association with socio-economic transformation, identifies the institutional and structural challenges affecting their effectiveness, and explores community perspectives on their integration with formal financial services.

Building on the empirical findings, the article proposes the Borchar Hybrid Financial Integration Framework (BH-FIF), organised around three interconnected principles: Indigenous Institutional Primacy, Institutional Complementarity and Contextual Sustainability. Indigenous Institutional Primacy recognises the legitimacy, knowledge and governance capacities of locally established financial arrangements. Institutional Complementarity considers how selected formal financial services, including appropriate credit, savings, insurance, digital payment systems and technical support, may strengthen rather than displace indigenous mechanisms. Contextual Sustainability emphasises the need to account for conflict, displacement, livelihood mobility, environmental vulnerability, gender relations and institutional capacity when designing financial inclusion interventions. The framework is presented as an empirically informed conceptual proposal requiring prospective piloting, implementation assessment and independent evaluation rather than as an already validated intervention.

The article makes three related contributions. First, it advances a plural institutional understanding of financial inclusion by recognising indigenous mechanisms as significant components of the financial arrangements through which agro-pastoralist households mobilise resources and manage livelihood uncertainty. Second, it contributes context-specific empirical evidence on the relationship between indigenous financial practices and perceived socio-economic transformation among Nuer communities in South Sudan. Third, it proposes a context-sensitive framework for examining how indigenous and formal financial institutions may develop complementary relationships in fragile agro-pastoralist settings. In doing so, the article argues that sustainable financial inclusion should move beyond the conventional dichotomy between

formalisation and informality towards an approach that recognises institutional diversity, community agency, equitable participation and the structural conditions necessary for financial resilience.

2. Literature Review

Financial inclusion is situated within broader debates concerning economic participation, institutional development, livelihood security and poverty reduction. This review examines the theoretical and empirical foundations of indigenous and formal financial inclusion, with particular attention to how locally embedded financial mechanisms influence resource mobilisation and socio-economic wellbeing in agro-pastoralist communities. It draws on institutional, capability and sustainable livelihood perspectives to explain the relationship between financial institutions, household agency and livelihood outcomes. The empirical review further examines evidence from international, African and South Sudanese contexts to identify the knowledge gaps that justify investigating hybrid financial arrangements among Nuer communities.

2.1 Theoretical Framework

This study is anchored in two complementary theoretical perspectives: the Capability Approach (Sen, 1999) and Indigenous Knowledge Systems (IKS) Theory (Hoppers, 2002), with Emancipatory Theory (Habermas, 1984; Freire, 1970) providing a supplementary critical perspective. Together, these perspectives explain the developmental significance, cultural foundations and institutional dynamics of indigenous financial mechanisms and formal financial inclusion among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan.
The Capability Approach, developed by Sen (1999), conceptualises development in terms of people's substantive freedoms and opportunities to achieve lives they value. It moves beyond income, consumption and resource ownership to consider whether individuals can convert available resources into valued outcomes, including livelihood security, productive participation, social well-being and resilience. In this study, the approach provides a lens for examining how indigenous financial mechanisms, such as livestock-based resource mobilisation, reciprocal lending, communal savings and kinship support, enable households to access resources, manage risks and pursue livelihood opportunities.

Access to financial resources does not automatically translate into improved well-being. Their conversion into valued outcomes may depend on household decision-making, gender relations, market access, infrastructure and security. The approach therefore enables the study to assess financial inclusion in terms of its contribution to household capabilities rather than merely access to formal banking services. Recent scholarship continues to develop the operationalisation and measurement of capabilities in development research (Beadle et al., 2026).

The Indigenous Knowledge Systems Theory recognises knowledge generated and sustained through community experience, cultural practices, social relationships and intergenerational transmission (Hoppers, 2002). It challenges the assumption that formal or externally generated knowledge is inherently superior to locally developed knowledge. This perspective is particularly relevant because Nuer financial mechanisms are embedded in customary institutions, reciprocal relationships, trust, collective responsibility and livelihood practices.

Practices such as livestock-based exchanges, reciprocal lending, communal savings and kinship support represent locally developed arrangements for mobilising resources and managing socio-economic risks. IKS provides a basis for examining their cultural legitimacy, institutional organisation and continued relevance. Recent research highlights the importance of considering indigenous knowledge alongside formal institutional conditions when examining financial inclusion in Sub-Saharan Africa (Bonhoure, 2025). However, indigenous practices should also be critically examined because customary arrangements may reproduce inequalities relating to gender, age, wealth and social status.

The Emancipatory Theory, informed by Critical Social Theory (Habermas, 1984) and Freire (1970), provides a critical lens for examining power relations, structural exclusion and unequal participation. It helps explain how formal financial requirements, geographical barriers and inadequate infrastructure may constrain agro-pastoralist households' access to financial services. It also highlights the capacity of communities to develop alternative mechanisms for resource mobilisation. In this study, the perspective draws attention to who accesses and controls financial resources, whose knowledge is recognised and whether financial integration promotes equitable participation.

The three perspectives perform complementary analytical functions. The Capability Approach explains the potential contribution of financial mechanisms to livelihood opportunities and well-being; IKS Theory explains their cultural and institutional foundations; and Emancipatory Theory highlights power, exclusion and unequal participation. Together, they inform the proposed Borchar Hybrid Financial Integration Framework (BH-FIF) through three principles: Indigenous Institutional Primacy, which recognises the legitimacy of existing community arrangements; Institutional Complementarity, which promotes mutually supportive relationships between

indigenous and formal financial systems; and Contextual Sustainability, which emphasises livelihood benefits, resilience and equitable participation. The framework therefore provides a basis for examining how formal financial services can complement indigenous mechanisms without displacing their cultural legitimacy and locally grounded institutional strengths.

2.2 Empirical Review of Literature

Empirical research increasingly recognises that financial inclusion in rural and marginalised populations extends beyond access to conventional banking services. Bostedt (2021), examining saving and borrowing behaviour among agro-pastoralist households in West Pokot County, Kenya, found improvements in household savings and access to credit between 2007 and 2017, alongside increased engagement with financial training and informal group-based savings organisations. The study demonstrates the contribution of community-based arrangements to financial participation among agro-pastoralists. However, its focus on saving and borrowing behaviour provides limited explanation of how indigenous institutions interact with customary governance and broader socio-economic transformation.

Similarly, research on mobile financial services among African farmers by Ky (2022) found substantial mobile financial service usage among Kenyan farmers but considerably lower utilisation for agricultural purposes. The findings highlight the distinction between general access to digital financial services and their effective application to productive activities. More recently, Ky (2025), examining 25 sub-Saharan African economies, reported that mobile money could strengthen farmers' saving, borrowing and digital payment capacities, although adoption remained relatively limited. These findings suggest that digital financial inclusion offers opportunities for rural economic participation, but its developmental contribution depends on affordability, accessibility and adaptation to agricultural livelihood conditions.

Evidence from marginalised Kenyan counties further demonstrates the persistence of structural barriers. Wanzala and Obokoh (2025), using data from 320 informal-sector participants across Samburu, Narok, Turkana, Garissa and West Pokot counties, identified income instability, geographical isolation and inadequate financial infrastructure as important constraints to financial inclusion. Their findings are particularly relevant to the present study because they demonstrate that formal financial access is shaped by geographical and socio-economic conditions. Nevertheless, the study does not specifically examine the institutional relationship between indigenous resource mobilisation and formal financial services among pastoralist communities.

In South Sudan, Garang (2024) established that civil conflict weakened financial sector development through bank closures, reduced geographical access to automated teller machines and constrained household credit access. Further, Garang (2025), examining impediments to mobile money and financial inclusion, identified conflict-related economic disruption, inadequate infrastructure and socio-economic inequalities as major barriers to financial service expansion. These findings demonstrate the limitations of conventional financial inclusion strategies in fragile institutional environments. However, the studies primarily examine formal financial sector constraints rather than the complementary role of indigenous financial institutions in sustaining household livelihoods.

Collectively, existing studies establish the importance of community-based savings, digital financial services and institutional conditions in shaping financial inclusion. Nevertheless, three gaps remain. Empirically, limited evidence connects indigenous financial mechanisms with multidimensional socio-economic transformation among Nuer agro-pastoralist communities. Contextually, South Sudanese financial inclusion research has predominantly emphasised formal financial sector constraints, with insufficient attention to customary resource mobilisation and community financial institutions. Conceptually, existing studies provide limited integration of indigenous institutional legitimacy, formal financial services, and livelihood sustainability within a unified framework. This study addresses these gaps by examining indigenous financial mechanisms, their association with socio-economic transformation, the constraints affecting their effectiveness and the possibilities for institutional complementarity, culminating in the proposed Borchar Hybrid Financial Integration Framework.

3. Methodology

3.1 Introduction

This section presents the methodological procedures adopted to investigate indigenous models of financial inclusion and their contribution to socio-economic transformation among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan. It outlines the research philosophy, design, study area, target population, sampling procedures, research instruments, validity and reliability measures, data analysis procedures and ethical considerations. These procedures were designed to generate credible, contextually relevant and comprehensive evidence.

3.2 Research Philosophy

The study adopted an integrated philosophical orientation combining constructivism, critical realism and the

transformative paradigm. Constructivism provided the primary perspective for understanding how Nuer communities interpret financial practices within their cultural and social contexts. Critical realism complemented this approach by recognising structural conditions, including conflict, institutional fragility and limited infrastructure, that influence financial inclusion. The transformative paradigm emphasised social justice, community participation, indigenous knowledge recognition and empowerment. Together, these perspectives supported an understanding of indigenous financial inclusion as a socially embedded and developmentally significant phenomenon.

3.3 Research Design

The study employed a concurrent convergent mixed-methods cross-sectional design (QUAL + quan). Qualitative and quantitative data were collected during the same fieldwork period, analysed separately and integrated during interpretation. The qualitative strand was prioritised to capture participants' experiences and understandings of indigenous financial practices, while the quantitative strand examined patterns of participation and their association with socio-economic outcomes. The cross-sectional approach was appropriate given the study's geographical, logistical and security constraints.

3.4 Study Area

The study was conducted in Uror County, Jonglei State, South Sudan, covering six Payams: Motot, Pieri, Weikol, Pulchuol, Pathai and Padiek. The predominantly Nuer agro-pastoralist population relies on livestock production, subsistence agriculture, fishing and informal trade. Cattle occupy both economic and cultural significance, while kinship networks, reciprocal exchange and customary institutions support resource mobilisation and social protection. Limited banking infrastructure, recurrent insecurity and environmental challenges make the county particularly relevant for examining indigenous financial inclusion.

3.5 Target Population

The target population comprised Nuer men and women aged 18 years and above who participated directly or indirectly in household livelihood activities and indigenous financial practices. These included household heads, women involved in savings and trading activities, youth engaged in livestock production, elders, chiefs and customary leaders. The estimated accessible adult population across the six Payams was 43,500 (NBS, 2022). Their inclusion enabled the study to capture diverse gender, generational, livelihood and institutional perspectives.

3.6 Sampling

A multistage sampling strategy combining probability and non-probability techniques was employed to enhance sample selection across the study population. The quantitative sample size was determined using Yamane's (1967) simplified formula for finite populations, which considers population size and the desired margin of error. Based on a target population of 43,500 and a 5% margin of error, the calculation yielded an initial sample of approximately 396 respondents. The application of appropriate probability and non-probability sampling techniques was guided by the study objectives, population characteristics**,** and practical considerations (Ahmed, 2024; Yamane, 1967). Thirty key informant interviews and six focus group discussions, one in each Payam, were conducted, with qualitative adequacy guided by thematic saturation.

3.7 Research Instruments

Data were collected using household questionnaires, semi-structured key informant interview guides, focus group discussion guides, observation checklists and document review guides. Questionnaires generated standardised information on household characteristics, indigenous financial participation, savings, credit and socio-economic outcomes. Qualitative instruments explored cultural meanings, trust, reciprocity, customary institutions and community experiences. Instruments were reviewed, translated and adapted to ensure clarity and cultural appropriateness.

3.8 Validity, Reliability and Trustworthiness

We addressed content, construct, and face validity through expert assessment, alignment with study constructs, and pilot testing. Triangulation, member validation, peer debriefing, and reflexive documentation strengthened qualitative trustworthiness. Pilot data were used to assess internal consistency through Cronbach's alpha. The reported coefficients ranged from 0.803 to 0.889 across the four constructs, with an overall reliability coefficient of 0.850. A pilot study involving 44 questionnaires, two focus group discussions and three key informant interviews was conducted in Duk County.

3.9 Data Analysis

Quantitative data were coded, cleaned and analysed using SPSS Version 30. Descriptive statistics summarised respondent characteristics and study variables, while correlation examined relationships and group differences. Qualitative data from interviews, discussions, observations and documents were analysed thematically using Braun and Clarke's (2022) approach, supported by NVivo Version 14. Findings were integrated through comparison and triangulation to identify convergence, divergence and complementarity.

3.10 Ethical Considerations

Ethical approval for the study was obtained from the Tangaza University Ethics Review Committee, followed by the relevant national, state, county and local administrative authorisations in South Sudan. The study adhered to established ethical principles governing research involving human participants, including respect for autonomy, voluntary participation, informed consent, confidentiality and protection from harm (Council for International Organizations of Medical Sciences [CIOMS], 2016). Participants were informed about the study's purpose, procedures, potential risks and benefits before providing informed consent. Participation was entirely voluntary, and respondents were assured of their right to decline participation or withdraw at any stage without penalty.

To protect participants' identities, identifying information was excluded from research reports, and findings were presented in aggregate or anonymised form. Electronic and hard-copy records were stored securely, with access restricted to authorised members of the research team. The research team also observed Nuer cultural norms and customary practices throughout recruitment and data collection, using culturally appropriate engagement procedures to promote trust, respect and meaningful community participation. Particular attention was given to minimising potential social, cultural and psychological harm, consistent with international guidance on community engagement and the ethical conduct of research in diverse and resource-constrained settings (CIOMS, 2016). These safeguards were intended to uphold participants' dignity, privacy, autonomy and welfare throughout the research process.

4. Results and Discussions

This section presents and discusses the findings of the study on indigenous financial inclusion mechanisms and perceived socio-economic transformation among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan. The findings are drawn from 410 household questionnaires, 30 key informant interviews and six focus group discussions, supplemented by observation and document review. Quantitative data are presented using descriptive and inferential statistics, while qualitative findings are organised thematically to provide deeper insights into participants' experiences and perspectives. The discussion integrates evidence from both data sources in relation to the study objectives and relevant theoretical and empirical literature. Particular attention is given to indigenous financial practices, their perceived contribution to socio-economic wellbeing, the challenges affecting their effectiveness and sustainability, and opportunities for integration with formal financial services. The section concludes by drawing together the findings to inform the proposed Borchar Hybrid Financial Integration Framework (BH-FIF).

4.1 Introduction

This section presents and discusses findings on indigenous and formal financial inclusion among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan. It examines the respondents' characteristics, indigenous financial practices, their relationship with socio-economic transformation, challenges affecting these practices, and strategies for integrating indigenous mechanisms with formal financial services. The discussion draws on quantitative and qualitative evidence to inform the proposed hybrid approach to financial inclusion.

4.2 Response Rate and Distribution of Respondents

The study targeted 436 household respondents and retained 410 completed questionnaires, representing a response rate of 94.0%. This provided an adequate basis for the quantitative analysis. Respondents were drawn from six Payams: Motot (18.5%), Pathai (17.8%), Pieri (17.3%), Pulchuol (16.1%), Weikol (15.9%) and Padiek (14.4%). The distribution ensured representation across the study area.

4.3 Demographic and Socio-economic Characteristics

The findings showed that 71% of respondents were aged between 31 and 50 years, while men constituted 66.8% and women 33.2%. Approximately 90% had no formal education. Livelihoods were predominantly agro-pastoral, with 62% combining cattle herding, crop farming and small-scale business. Most respondents (80%) reported monthly incomes between SSP 20,000 and SSP 40,000. In addition, 62% participated in at least one indigenous financial arrangement. These characteristics demonstrate the importance of locally embedded financial mechanisms in communities where formal financial infrastructure and access to conventional financial services remain limited.

4.4 Indigenous Financial Systems and Practices

Indigenous financial practices were widely recognised among respondents, recording an overall mean of 4.29 (SD = 0.92). Long-term saving habits (M = 4.63), widespread use of indigenous savings arrangements (M = 4.54) and mutual support and reciprocity (M = 4.52) received particularly high ratings. Transparency recorded a mean of 4.13, while youth representation was comparatively lower (M = 3.97).

Qualitative findings reinforced the cultural and intergenerational foundations of these arrangements. One participant observed that "People understand because they inherit the system from their grandparents" (KII–CE2). Livestock was also described as a store of value and a resource for meeting household needs, supporting enterprise and assisting relatives. As one FGD participant explained, "Cattle are our bank" (FGD–CE1). These findings indicate that indigenous financial inclusion extends beyond savings and lending to encompass reciprocal obligations, productive assets, kinship relations and collective livelihood security.

4.5 Indigenous Financial Inclusion and Socio-economic Transformation

Respondents generally associated indigenous financial mechanisms with positive socio-economic outcomes, with the relevant composite mean reported at 4.09 (SD = 1.10). Social cohesion (M = 4.22), food security (M = 4.14), small-scale entrepreneurship (M = 4.13), household welfare (M = 4.10) and resilience to shocks (M = 4.09) were prominent. Women's economic empowerment recorded a comparatively lower mean of 3.97.

Pearson correlation analysis indicated a strong positive relationship between indigenous financial inclusion and socio-economic transformation ($r = .789$, $p < .001$, $n = 410$). This suggests that greater participation in indigenous financial arrangements was associated with more favourable socio-economic outcomes. The reported regression model was also statistically significant, $F(1, 408) = 674.647$, $p < .001$, with $R^2 = .623$ and adjusted $R^2 = .622$. On the intended model specification, this indicates that indigenous financial inclusion accounted for approximately 62.3% of the observed variation in socio-economic transformation. These findings demonstrate a strong statistical association and predictive relationship, although the cross-sectional design does not establish causality.

4.6 Challenges Affecting Indigenous Financial Systems

Despite their importance, indigenous financial arrangements faced considerable challenges, reflected in a composite mean of 4.07 (SD = 1.12). Declining trust (M = 4.19), livestock-related risks (M = 4.12), conflict and insecurity (M = 4.10), inflation (M = 4.09) and gender bias (M = 4.09) were identified as significant constraints. Qualitative accounts further highlighted displacement, limited financial infrastructure, weak communication networks and inadequate financial literacy. Gender inequalities were particularly evident in the unequal ownership and control of livestock and income. One woman explained that even when women earned money, decisions about its use were often made by men (FGD–W1). Thus, cultural legitimacy does not necessarily guarantee equitable participation or control over financial resources.

4.7 Integration of Indigenous and Formal Financial Systems

Respondents expressed support for linking indigenous mechanisms with formal financial institutions, recording a composite mean of 4.17 (SD = 1.04) and a relative importance index of .834. Capacity building and training ranked highest (M = 4.24; RII = .848), followed by policy recognition (M = 4.20; RII = .840), protection of traditional practices (M = 4.19; RII = .838), collaboration between banks and community groups (M = 4.17; RII = .834), government support (M = 4.13; RII = .826) and complementarity with formal microfinance institutions (M = 4.06; RII = .812).

Qualitative participants similarly advocated a hybrid arrangement in which traditional systems would retain their cultural and institutional foundations while formal services provided complementary support. This suggests that integration should not displace indigenous practices but strengthen their capacity through appropriate financial products, training, institutional partnerships and policy recognition.

4.8 Discussion and Implications for a Hybrid Approach

Overall, the findings demonstrate that indigenous financial mechanisms remain important sources of financial access, mutual support and livelihood security among Nuer agro-pastoralist communities. Their contribution is rooted in trust, reciprocity, livestock-based resource mobilisation and collective responsibility. However, insecurity, economic instability, gender inequalities and limited institutional support constrain their sustainability and inclusiveness.

The findings therefore support a hybrid approach based on three complementary principles: indigenous institutional primacy, institutional complementarity and contextual sustainability. Indigenous institutions should retain community ownership and cultural legitimacy, while formal financial institutions and public agencies provide complementary services, technical support and appropriate regulatory recognition. Such integration should respond to local livelihood patterns, insecurity, infrastructure constraints and gender relations. The proposed GNN Hybrid Financial Integration Framework provides an empirically informed basis for considering these linkages. It should, however, be understood as a proposed framework requiring further assessment and validation rather than an already tested intervention.

5. Conclusion and Recommendations

This section presents the overall conclusions drawn from the study on indigenous financial inclusion mechanisms and perceived socio-economic transformation among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan. The conclusions are based on the integrated interpretation of quantitative and qualitative findings in relation to the study objectives. Particular attention is given to the contribution of indigenous financial practices to resource mobilisation, mutual support, household welfare and community resilience, as well as the structural and institutional challenges affecting their sustainability. The section further provides recommendations for strengthening indigenous financial mechanisms through complementary formal financial services, policy recognition and context-sensitive institutional collaboration. Finally, it presents the proposed Borchar Hybrid Financial Integration Framework (BH-FIF) as an empirically informed approach to advancing inclusive and sustainable financial systems, while identifying areas requiring further research and practical evaluation.

5.1 Conclusion

The study examined indigenous and formal financial inclusion among Nuer agro-pastoralist communities in Uror County, Jonglei State, South Sudan, with a view to informing a hybrid institutional approach. The findings demonstrate that indigenous financial mechanisms remain central to household livelihood security, resource mobilisation and socio-economic wellbeing. Practices such as livestock-based wealth management, community savings, reciprocal lending, grain sharing and labour exchange are embedded in customary institutions, kinship relations and intergenerational knowledge. Their significance extends beyond financial transactions to include social cohesion, mutual responsibility and collective resilience.

The study established a strong positive association between indigenous financial inclusion and socio-economic transformation. Respondents particularly recognised contributions to social cohesion, food security, small-scale entrepreneurship and household welfare. However, the benefits of these arrangements are constrained by declining trust, livestock-related risks, conflict, displacement, inflation and gender inequalities. Women and young people do not always enjoy equitable access to productive assets or meaningful participation in financial decisions. Consequently, the existence of culturally established financial arrangements does not automatically translate into inclusive financial empowerment.

The findings also revealed considerable support for complementarity between indigenous mechanisms and formal financial institutions. Capacity building, policy recognition, protection of traditional practices and collaboration between banks and community groups emerged as important integration priorities. The study therefore concludes that sustainable financial inclusion in Nuer communities should not involve replacing indigenous systems with conventional financial institutions. Rather, it should build on their cultural legitimacy, accessibility and reciprocal foundations while addressing their institutional and operational limitations through appropriate formal support.

The proposed GNN Hybrid Financial Integration Framework provides an empirically informed basis for this approach. Its three principles, indigenous institutional primacy, institutional complementarity and contextual sustainability, recognise the importance of preserving community ownership while expanding access to financial knowledge, services and institutional partnerships. The framework offers a basis for policy and programme development, although further testing and validation are necessary before its effectiveness can be established.

5.2 Recommendations

Based on the findings, the study makes the following recommendations:

1. Policy recognition of indigenous financial mechanisms: The national and state governments should develop policies that recognise and support community-based savings, reciprocal lending and other indigenous resource mobilisation arrangements. Such recognition should protect cultural practices without imposing inappropriate regulatory requirements that undermine their autonomy.
2. Development of hybrid financial partnerships: Financial institutions, microfinance organisations and community-based groups should establish context-sensitive partnerships that connect indigenous savings arrangements with formal savings, credit and insurance services. These partnerships should complement rather than displace existing customary systems.
3. Capacity building and financial literacy: Government agencies, NGOs and development partners should provide training in financial management, record keeping, accountability, savings mobilisation and responsible borrowing. Training should accommodate local languages, literacy levels and agro-pastoral livelihood patterns.
4. Gender and youth inclusion: Community leaders and financial institutions should promote women's and young people's participation in financial decision-making, ownership of productive assets and access to savings and credit opportunities. Interventions should address customary barriers that restrict equitable control over resources.
5. Strengthening resilience and institutional safeguards: Community financial arrangements should be supported through appropriate risk-management mechanisms, including livestock protection, diversification of household assets and accessible emergency financing. Implementation should account for conflict, displacement and limited infrastructure.
6. Further research and framework validation: Researchers, policymakers and development partners should pilot and evaluate the proposed GNN Hybrid Financial Integration Framework in selected communities before wider adoption. Longitudinal and comparative studies should examine its sustainability, inclusiveness and contribution to household welfare.

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