

Multidimensional Asset Poverty and the Socio-Cultural Dynamics of Rural Deprivation in South Africa: Evidence from Hlokozi Village

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ABSTRACT

This study examines the socioeconomic status and determinants of asset poverty among rural households in Hlokozi village, located in KwaZulu-Natal, in South Africa. The study contributes to multidimensional poverty literature by integrating Principal Component Analysis (PCA)-based asset indexing with econometric modelling to reassess poverty measurement in rural settings. Using household survey data collected from the study area, a composite asset index was constructed to classify households as poor or non-poor. A probit regression model was subsequently employed to identify the socioeconomic determinants of asset poverty. The findings reveal that employment status, educational attainment (secondary, matric, and tertiary education), and the age of the household head significantly reduce the likelihood of asset poverty. In contrast, household head gender, marital status, and household size were found to have no statistically significant effect. The study conceptualises poverty as a multidimensional condition shaped by unequal access to education, employment opportunities, productive resources, and social infrastructure. The findings further demonstrate how structural inequalities and rural marginalisation continue to shape household welfare outcomes in former homeland areas. Given the limited empirical studies on asset poverty in rural South Africa, this study contributes context-specific evidence and policy-relevant insights into rural deprivation and social inequality.

Keywords: Rural Areas, Asset-poverty, Principal Component Analysis, Hlokozi, South Africa

JEL Classifications: H55, J14, J18

INTRODUCTION

Poverty remains one of the most persistent development challenges globally, particularly in sub-Saharan Africa, where it continues to constrain human welfare, limit economic mobility, and undermine inclusive growth trajectories (World Bank, 2022; UNDP, 2020). In South Africa, despite substantial post-apartheid policy reforms aimed at redistribution, social protection, and expanded access to basic services, poverty remains deeply entrenched across both urban and rural spaces. Evidence from Statistics South Africa indicates that poverty levels have declined only gradually over time, while deprivation continues to be unevenly distributed across regions and social groups (Stats SA, 2023). Rural communities remain disproportionately affected, reflecting enduring structural inequalities rooted in colonial dispossession, apartheid spatial planning, and uneven development trajectories.

Importantly, rural poverty in South Africa extends beyond material deprivation alone. It is embedded within historically constituted social relations, cultural norms, gendered power structures, and unequal systems of access to land, assets, and livelihood opportunities. In many rural communities, livelihoods continue to be shaped by customary tenure systems, kinship obligations, patriarchal inheritance practices, and household dependency

structures that influence both access to productive resources and the capacity to accumulate assets. These socio-cultural arrangements simultaneously provide social support and reproduce vulnerability, particularly among women, youth, and female-headed households. As such, poverty in rural South Africa cannot be understood solely through income deficits but must also be examined as a multidimensional and socially reproduced condition shaped by historical and cultural processes.

Trends in poverty between 2010 and 2025 illustrate both progress and persistent inequality. At the beginning of the 2010s, more than half of the South African population lived below the lower-bound poverty line (LBPL), with estimates exceeding 50% between 2010 and 2014 (Stats SA, 2014). Although poverty declined in subsequent years, the reduction has been slow and uneven. By 2015, poverty levels remained above 45%, before declining to 42.7% in 2019 and approximately 37.9% in 2023, representing nearly 23.2 million people (Stats SA, 2023; 2025). However, disaggregated evidence reveals stark spatial inequalities between urban and rural areas. Rural poverty levels exceeded 70% in the early 2010s and remained between approximately 54% and 56% by 2023, while urban poverty declined from around 40% to below 30% over the same period (Stats SA, 2023). These patterns demonstrate that although urbanisation has increased the concentration of poor populations within cities, the intensity and persistence of deprivation remain significantly worse in rural areas.

The persistence of rural poverty is also closely connected to broader processes of social change occurring within South Africa's rural economy and social fabric. Processes such as labour migration, declining agricultural livelihoods, youth unemployment, changing household structures, and the reconfiguration of customary authority have transformed traditional livelihood systems without necessarily expanding sustainable economic opportunities. While migration and social grants have become central survival strategies for many households, they have also altered intergenerational support systems and patterns of dependency within rural communities. At the same time, unequal access to education, infrastructure, healthcare, markets, and digital connectivity continue to reinforce spatial exclusion and limit social mobility. These conditions demonstrate how poverty is reproduced not only through economic constraints, but also through evolving social and cultural dynamics that shape everyday experiences of deprivation.

Despite the persistence of these multidimensional forms of deprivation, poverty in South Africa has predominantly been assessed using money-metric approaches that define deprivation primarily in terms of income or consumption thresholds. Although methodologically convenient, such approaches remain conceptually limited because they reduce well-being to monetary indicators while overlooking substantial variation in lived experiences. Households with similar income levels may experience vastly different realities depending on their access to services, infrastructure, education, social networks, and productive assets. Consequently, income-based measures often capture the means to well-being rather than well-being itself. Furthermore, their static orientation obscures the dynamic and multidimensional nature of poverty and limits the ability to distinguish between transient and chronic deprivation. These limitations are particularly significant in rural contexts where poverty is closely intertwined with social relations, cultural institutions, and unequal asset ownership patterns.

In response to these limitations, the global development agenda has increasingly embraced a multidimensional understanding of poverty, as reflected in the United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 4 (Quality Education) (United Nations, 2015). This shift recognises that poverty reduction is inseparable from broader processes of human development, capability expansion, and social inclusion. Sen's (1999) Capability Approach has been particularly influential in advancing the understanding that poverty should be viewed not merely as a lack of income, but as deprivation in the freedoms and capabilities required to live a meaningful life. Similarly, Human Capital Theory (Becker, 1964) emphasises the importance of education and skills in enhancing productivity and long-term welfare, while the Household Production Model (Becker, 1981) highlights how households allocate limited resources to sustain livelihoods under structural constraints. Together, these perspectives provide a more comprehensive framework for understanding rural deprivation as both an economic and socio-cultural phenomenon.

Nevertheless, the existing literature on poverty in South Africa remains heavily dominated by income and consumption-based approaches that inadequately capture the multidimensional and socially embedded nature of rural deprivation. Although multidimensional poverty studies have gained prominence internationally, empirical research within rural South Africa continues to pay limited attention to the ways in which socio-cultural structures, historical inequalities, and institutional arrangements shape patterns of asset accumulation and deprivation at the village level. While the Capability Approach has increasingly informed global poverty debates, few South African studies have systematically operationalised this framework through multidimensional asset-based measures that move beyond monetary indicators to capture lived experiences of deprivation within historically marginalised rural communities. Consequently, the literature remains fragmented in its ability to explain how historical spatial inequalities, evolving social relations, and cultural dynamics interact to reproduce persistent rural poverty and social exclusion in contemporary South Africa.

This study contributes to literature by advancing a multidimensional understanding of rural poverty through the integration of Principal Component Analysis-based asset indexing with socio-cultural and historical analysis. In doing so, the study moves beyond conventional income-based poverty measures to examine how deprivation is reproduced through interconnected economic, cultural, and institutional processes within Hlokozi village. The article further contributes empirically by generating context-specific evidence from a historically under-researched rural community in KwaZulu-Natal, while theoretically enriching multidimensional poverty debates through the application of Sen's Capability Approach within a culturally embedded rural setting. In addition, the study investigates the key determinants of asset poverty by examining how factors such as education, employment status, age, household structure, and other socioeconomic characteristics influence the likelihood of rural households experiencing deprivation. Through this integrated approach, the study contributes to broader debates on inequality, social exclusion, and rural development in South Africa. The remainder of the article is organised as follows. Section 2 reviews the literature on multidimensional and asset poverty. Section 3 outlines the conceptual framework, data, and research methodology employed in the study. Section 4 presents and discusses empirical findings, while Section 5 concludes the article and outlines policy implications.

LITERATURE REVIEW

Poverty and multidimensional deprivation in rural South Africa

Empirical inquiry into the determinants of poverty in South Africa and the broader Southern African region has generated a substantial body of literature (see for example, Sekhampu, 2012; Khumalo, 2013; Statistics South Africa, 2017; Niyimbanira, 2017; Francis and Webster, 2019; Jain et al., 2020; Mdluli and Dunga, 2021; Mdluli-Maziya et al., 2022; Maloma and Dunga, 2023). While these studies provide important insights into the extent and determinants of deprivation, much of the literature continues to conceptualise poverty primarily through income and consumption measures. Such approaches have been useful in identifying households below established poverty thresholds, yet they often fail to capture the broader social, cultural, and structural dimensions of deprivation that shape everyday experiences in rural communities.

In rural South Africa, poverty is deeply intertwined with historical processes of dispossession, spatial exclusion, and unequal access to productive resources (Francis and Webster, 2019; Zwane, 2022). The enduring legacy of apartheid continues to structure patterns of land ownership, infrastructure provision, labour market access, and service delivery, particularly within historically marginalised rural areas (Francis and Webster, 2019). Consequently, deprivation in these settings cannot be reduced solely to low-income levels but must also be understood in relation to unequal social relations, institutional exclusion, and limited capabilities. Sen's (1999) Capability Approach has been influential in advancing this broader understanding of poverty by emphasising the freedoms and opportunities individuals possess to achieve valued ways of living. From this perspective, poverty reflects not merely a lack of income, but a deprivation of capabilities and social opportunities necessary for human well-being.

This multidimensional understanding of poverty is particularly relevant in rural contexts where households often experience overlapping forms of deprivation, including inadequate housing, poor infrastructure, insecure livelihoods, limited educational opportunities, and restricted access to productive assets. Rural poverty therefore emerges as both a material and socially reproduced condition shaped by structural inequalities and everyday social practices. As such, scholars increasingly argue for approaches that move beyond narrow monetary indicators toward more comprehensive measures capable of capturing the complexity of lived deprivation (Mdluli and Dunga, 2021; Mdluli-Maziya et al., 2022; Maloma and Dunga, 2023).

Socio-cultural dimensions of rural poverty

An important limitation within conventional poverty literature is its limited engagement with the socio-cultural processes through which deprivation is reproduced. In many rural communities, access to resources is mediated through kinship systems, customary institutions, gender relations, and household power structures that influence both livelihood opportunities and patterns of asset accumulation. These social arrangements often function simultaneously as mechanisms of support and exclusion.

Research across rural Africa has shown that customary land tenure systems and patriarchal inheritance practices frequently shape unequal access to productive assets, particularly among women and youth. Although communal systems may provide social security and collective belonging, they may also reinforce unequal power relations by restricting independent ownership and decision-making authority. Female-headed households, for example, often experience greater vulnerability due to limited access to land, credit, agricultural inputs, and formal employment opportunities (Gounder, 2012; Khumalo, 2013; Sekhampu, 2013; Edoumiekumo et al., 2013). Similarly, youth in rural communities frequently encounter structural barriers to asset accumulation arising from unemployment, intergenerational dependency, and restricted access to productive resources.

The literature further highlights the importance of kinship networks and social reciprocity in shaping rural livelihoods (Gounder, 2012; Khumalo, 2013; Sekhampu, 2013; Edoumiekumo et al., 2013). Extended family systems, remittances, and redistributive obligations remain central survival mechanisms in many poor households. However, these systems may also constrain long-term accumulation where economically active household members are expected to support wider familial networks under conditions of scarcity. Poverty in rural South Africa is therefore embedded within broader systems of social reproduction in which cultural expectations, social obligations, and unequal household relations influence patterns of vulnerability and resilience.

Processes of social change have also transformed the organisation of rural livelihoods and household structures. Labour migration, declining agricultural activity, youth unemployment, and urbanisation have altered traditional support systems and reshaped social relations within rural communities. While migration and social grants have become important livelihood strategies, they have not fundamentally resolved structural inequalities associated with unemployment, limited infrastructure, and unequal development. These transformations illustrate how rural poverty is continually reproduced through the interaction between historical inequalities and evolving socio-cultural dynamics.

Asset poverty and multidimensional measurement

Traditional poverty studies in Southern Africa have predominantly relied on money-metric approaches based on income or expenditure indicators (Malik, 1996; Serumaga-Zake and Naudé, 2002; Mukherjee and Benson, 2003; Geda et al., 2005; Julie et al., 2008; Litchfield and McGregor, 2008; Akerele and Adewuyi, 2011; Gounder, 2012; Khumalo, 2013; Sekhampu, 2013; Edoumiekumo et al., 2013; Edoumiekumo et al., 2014; Niyimbanira, 2017; Statistics South Africa, 2017; Francis and Webster, 2019; Jain et al., 2020; Mdluli and Dunga, 2021; Mdluli-Maziya et al., 2022; Maloma and Dunga, 2023). Although these approaches provide useful information regarding income deprivation, they are limited in their ability to capture long-term welfare conditions and non-monetary dimensions of poverty.

In response to these limitations, a growing body of literature has adopted asset-based approaches to measure household welfare (Sahn and Stifel, 2000; Booysen, 2002; Sahn and Stifel, 2003; Vyas and Kumaranayake, 2006; Booysen et al., 2008; Achia et al., 2010; Xhafaj and Nurja, 2013; Bhorat and Van der Westhuizen, 2013; Bhorat et al., 2014; Adams et al., 2015; Farah, 2015; Habyarimana et al., 2015; Daka and Fandamu, 2016; Akinbode and Hamzat, 2017; Biyase et al., 2019; Zwane, 2022). Asset ownership is widely regarded as a more stable indicator of long-term socioeconomic status because it reflects accumulated wealth, access to services, housing quality, and productive capacity. Importantly, asset-based measures are particularly useful in rural contexts where incomes may fluctuate seasonally and where subsistence livelihoods complicate the accurate measurement of monetary welfare.

Methodologically, Principal Component Analysis has emerged as one of the most widely used techniques for constructing composite asset indices following the influential contribution of Filmer and Pritchett (2001). Alternative approaches such as Factor Analysis (FA), Multiple Correspondence Analysis (MCA), and fuzzy set methodologies have also been applied, though less frequently. These methods enable researchers to construct multidimensional measures of welfare by combining information on household assets, housing characteristics, and service access into a single composite index.

Within the South African context, studies applying asset-based poverty measures have produced important, though still limited, insights. For example, Biyase et al. (2019) utilised PCA and probit modelling techniques using National Income Dynamics Study (NIDS) data and found that education, employment status, and age of the household head significantly reduce asset poverty. Similarly, Zwane (2022) constructed an asset-based measure of socioeconomic status and demonstrated that education, marital status, and land ownership significantly influence household welfare outcomes. While these studies contribute meaningfully to multidimensional poverty analysis, they remain largely quantitative and often pay limited attention to the socio-cultural and historical processes that shape asset accumulation and deprivation in rural communities.

Furthermore, many existing studies rely on nationally aggregated datasets and descriptive analyses that inadequately capture localised rural realities. Consequently, important dimensions of deprivation such as customary tenure arrangements¹, gendered access to resources², household power relations, and kinship-based redistribution remain insufficiently examined within multidimensional poverty research. This limits the ability of existing literature to fully explain how structural inequalities are reproduced through everyday social and cultural practices in rural settings.

Against this backdrop, this study builds upon the existing literature in South Africa by advancing a more integrated and innovation-oriented understanding of rural poverty. It develops an integrated framework that

¹ Land held under customary tenure arrangements—often referred to as communal land—is a crucial, yet frequently contested, component in studies of asset poverty in developing countries.

² Despite making up a large portion of the agricultural workforce, women often lack the control over assets needed to escape poverty

combines the Capability Approach, Human Capital Theory, and the Household Production Model to explain multidimensional poverty at the household level within a rural South African context. The study further advances the measurement of asset poverty through the construction of a multidimensional asset index using Principal Component Analysis. More importantly, however, the article situates asset deprivation within broader socio-cultural and historical processes, demonstrating how kinship systems, customary tenure arrangements, gendered norms, and the enduring spatial legacy of apartheid shape patterns of inequality and social exclusion in rural communities. By integrating multidimensional poverty measurement with cultural and structural analysis, the study contributes to broader debates on poverty, inequality, and social change in rural South Africa.

RESEARCH METHODOLOGY

To assess asset-based poverty in Hlokozi village, this study employs a multi-method approach. First, Principal Component Analysis is applied to construct the asset index, as outlined in Section 3.1. Second, Section 3.2 examines the key determinants of poverty using a probit regression model. Finally, Section 3.3 describes the data and variables utilised in the analysis.

Construction of an asset index using PCA

Principal Component Analysis is a widely used multivariate statistical technique designed to reduce the dimensionality of a dataset while retaining as much of the original variation as possible. The primary objective of PCA is to extract the maximum variance from a set of correlated variables through a smaller number of uncorrelated components (Tabachnick & Fidell, 2007; Greyling, 2013). The first principal component represents a linear combination of observed variables that captures the largest proportion of common variance in the dataset, while subsequent components are derived from the residual correlations and are orthogonal (uncorrelated) to preceding components (Tabachnick and Fidell, 2007; Hair et al., 2010; Mooi and Sarstedt, 2011). These components are ordered such that the first explains the highest variance, followed by components with progressively smaller explanatory power (Booyesen, 2002; Vyas and Kumaranayake, 2006; Achia et al., 2010).

Formally, given a set of p observed variables measured across n households, PCA constructs p principal components as linear combinations of the original variables. The weights assigned to each variable are derived from the eigenvectors of the correlation (or covariance) matrix, while the corresponding eigenvalues indicate the amount of variance explained by each component (Tabachnick and Fidell, 2007; Hair et al., 2010). In poverty analysis, PCA is commonly employed to compute weights for an asset-based index, allowing for the aggregation of multiple indicators into a single composite measure of welfare (Nardo et al., 2005; Vyas and Kumaranayake, 2006).

$$PC_1 = \Phi_{11} A_1 + \Phi_{12} A_2 + \dots + \Phi_{1p} A_p$$

$$PC_2 = \Phi_{21} A_1 + \Phi_{22} A_2 + \dots + \Phi_{2p} A_p$$

$$\dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots$$

$$PC_p = \Phi_{p1} A_1 + \Phi_{p2} A_2 + \dots + \Phi_{pp} A_p$$

The implementation of PCA in constructing an asset poverty index follows three key stages. The first stage involves assessing the suitability of the data. This requires testing whether sufficient correlations exist among the variables. The Kaiser–Meyer–Olkin (KMO) measure is used to assess sampling adequacy, with values above 0.6 indicating that PCA is appropriate (Kaiser, 1974; Tabachnick and Fidell, 2007). Additionally, Bartlett’s test of sphericity evaluates whether the correlation matrix significantly differs from an identity matrix. A statistically significant result ($p < 0.05$) confirms that the variables are sufficiently interrelated to justify PCA (Hair et al., 2010).

The second stage involves determining the number of components to retain. Since variables often have different measurement scales, the correlation matrix is typically preferred over the covariance matrix (Tabachnick and Fidell, 2007). Several criteria guide component selection. The Kaiser criterion recommends retaining components with eigenvalues equal to or greater than one (Kaiser, 1974; Vyas and Kumaranayake, 2006), while an alternative approach is to retain components that cumulatively explain a substantial proportion (commonly above 50%) of the total variance (Mooi and Sarstedt, 2011; Greyling, 2013). The scree plot is also employed to visually identify the point (the “elbow”) beyond which additional components contribute marginally to explained variance (Hair et al., 2010). In practice, studies often retain only the first principal component or a few leading components that capture the most meaningful variation in household welfare (Xhafaj and Nurja, 2013).

The third stage focuses on the interpretation and refinement of the component structure. Factor loadings, which represent the correlation between variables and components, are used to interpret the underlying dimensions of deprivation (Achia et al., 2010; Habyarimana et al., 2015). To enhance interpretability, rotation techniques are applied. Orthogonal rotation, particularly varimax, is commonly used when components are assumed to be uncorrelated, as it maximizes the variance of loadings and produces a clearer pattern of association between variables and components (Field, 2005; Hair et al., 2010). This approach minimizes cross-loading and facilitates meaningful interpretation of the asset dimensions.

In line with empirical literature, asset variables are typically recorded into binary indicators reflecting ownership or access (for example, 1 = ownership/access; 0 = otherwise) prior to analysis (Booyesen, 2002; Achia et al., 2010; Habyarimana et al., 2015). The resulting component scores—particularly from the first principal component—are then used to construct the asset poverty index, which serves as a proxy for long-term household welfare. This approach, originally rooted in the work of Pearson (1901) and later formalized by Hotelling (1933), has become a standard method in multidimensional poverty analysis due to its ability to derive objective, data-driven weights and capture latent socioeconomic status.

Model specification of the determinants of poverty

Within this theoretical context, household welfare is conceptualised as a latent construct that is not directly observable but can be inferred through ownership of assets and access to basic services. Following the asset-based poverty literature, this study operationalises multidimensional deprivation using Principal Component Analysis, which reduces a set of correlated asset indicators into a single composite index of household welfare (Filmer and Pritchett, 2001). The resulting asset poverty index is then used to classify households into poor and non-poor categories. To maintain consistency with existing literature (see for example, Achia et al., 2010; Farah, 2015; Habyarimana et al., 2015; Daka and Fandamu, 2016; Akinbode and Hamzat, 2017; Zwane, 2022), the 40th percentile was chosen as an appropriate poverty measure. Therefore, we classified households as poor if their poverty index was below 40th percentile. Otherwise, they were classified as not poor (see, for example, Achia et al., 2010; Farah, 2015; Habyarimana et al., 2015). Formally, the latent propensity of household i to be asset poor is expressed as:

$$P_i^* = \beta_0 + \sum_{k=1}^n \beta_k X_{ki} + \varepsilon_i$$

where P_i^* represents the unobserved propensity to be asset poor, X_{ki} denotes a vector of household socioeconomic characteristics, and ε_i is the stochastic error term. The observed binary outcome is defined as:

$$P_i = \begin{cases} 1 & \text{if } P_i^* > 0 \text{ (asset poor)} \\ 0 & \text{otherwise} \end{cases}$$

The probability function is:

$$P(\text{Poverty}_i = 1 | X_i) = \Phi(\delta_0 + \beta X_i)$$

where $\Phi(\cdot)$ is the cumulative normal distribution function.

This relationship is estimated using a probit regression model, which facilitates the estimation of the probability that a household is asset poor conditional on its socioeconomic characteristics. Consistent with the theoretical framework developed above, the likelihood of asset poverty is hypothesised to be determined by several categories of explanatory variables, each grounded in established economic theory and supported by empirical literature.

Table 1: Description of variables used in empirical analysis

Dependent variable	Description of regression variables
Asset poverty	Asset poverty status; 1 = poor, 0 = otherwise
Explanatory variables	Description
Education	Head of household's education (years of schooling)
Primary	Education: primary education dummy (1 = yes, 0 = no)
Secondary	Education: secondary education dummy (1 = yes, 0 = no)
Matric	Education: matric dummy (1 = yes, 0 = no)
Tertiary	Education: tertiary dummy (1 = yes, 0 = no)
Marital status	Married or living with a partner: (1 = yes, 0 = otherwise)

Family size	Total number of individuals in the household
Age	Age in years of head of household
Gender	Gender: female dummy (1 = yes, 0 = no)
Employment	Employed (1 = yes, 0 = Otherwise)

Source: Author's compilation

Description of data

This study adopts a quantitative cross-sectional research design using primary household-level data collected from Hlokozi village. Structured questionnaires are administered to capture demographic, socioeconomic, and educational characteristics of households. Cross-sectional designs are widely used in poverty analysis because they allow for the identification of key correlates of poverty at a given point in time.

RESEARCH METHODS AND DATA

Research Instrument and Data Collection

This study is based on primary data collected from Hlokozi village, a predominantly rural settlement located within the Ubuhlebezwe Local Municipality, under the jurisdiction of the Harry Gwala District Municipality in KwaZulu-Natal (Figure 1). Hlokozi is situated near Ixopo, which serves as the municipality's main administrative and economic centre. The village has deep historical roots in traditional tribal land tenure arrangements and displays socio-spatial characteristics that are representative of the rural hinterland of southern KwaZulu-Natal. Geographically, the area is characterised by elevated plateaus rising to approximately 1,000 metres above mean sea level, interspersed with steeply incised valleys shaped by the Mthwalume River to the north and the Mzumbe River to the south. This topography creates a distinctly undulating and lush landscape commonly referred to as rolling hills. Although predominantly rural in nature, Hlokozi has a relatively high population concentration, with 8,415 residents recorded in 2011 across an area of 27.22 km², resulting in an estimated population density of 307 persons per km².

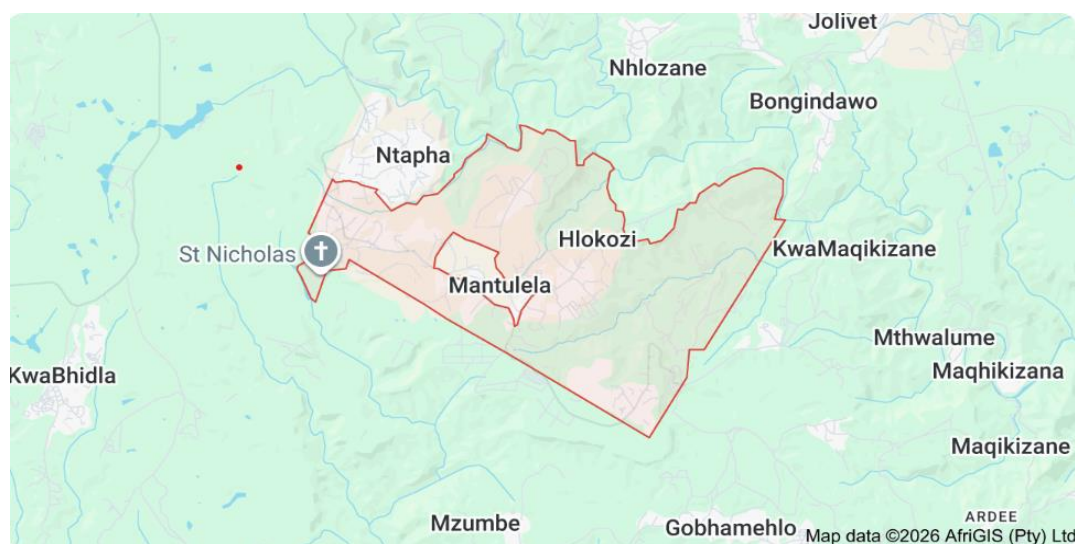


Figure 1. Location of study area

The study adopted a cross-sectional survey design to collect primary household-level data from Hlokozi village. Data were obtained from a sample of 232 household heads through face-to-face interviews conducted by ten trained fieldworkers who were proficient in the local language and possessed a strong understanding of the community's cultural and social context. The sample size compares favourably with similar rural household studies, such as that of Mazengiye et al. (2022) who utilised a systematic random sampling approach to survey 157 household heads across three kebeles in Libokemkem District, Ethiopia. The deployment of fieldworkers with local knowledge was intended to facilitate effective communication, build rapport with respondents, and enhance the overall accuracy and reliability of the data collected. A structured questionnaire was employed to gather both quantitative and qualitative information relevant to the study objectives, and formal approval to conduct the survey was secured from the village leadership prior to data collection.

Ethical principles were rigorously upheld throughout the research process. Ethical clearance was obtained from the relevant institutional Research Ethics Committee before the commencement of fieldwork, ensuring full compliance with established standards for research involving human participants. Participation was entirely voluntary, and informed consent was obtained from all respondents before interviews were conducted. Participants were adequately informed about the objectives of the study, the voluntary nature of their participation, and their right to withdraw from the study at any stage without any adverse consequences. To safeguard confidentiality and anonymity, no personally identifiable information was recorded, and all collected data were securely stored and handled exclusively for research purposes. In addition, fieldworkers received comprehensive training on ethical research conduct and the appropriate administration of survey instruments to ensure consistency, integrity, and reliability in data collection within the rural study setting.

EMPIRICAL RESULTS

Preliminary analysis

The findings in Table 2 reveal that 54.7% of households in Hlokozi village are female-headed, compared to 45.2% male-headed households, reflecting the enduring legacy of apartheid-era labour migration, spatial inequalities, and social exclusion in rural South Africa. The dominance of female-headed households highlights how historical and patriarchal systems continue to limit women's access to productive assets, employment opportunities, and economic resources (see, for example, May, 1998; Lipton and Ravallion, 1995; Potts, 2000), thereby reinforcing multidimensional poverty and vulnerability in former homeland areas.

Table 2: Head of household gender

Sex of the household head	Frequency	Percentage
Male	105	45.2
Female	127	54.7
Total	232	100

Source: Author's compilation

The findings in Table 3 show that 75% of respondents were married, while 14.6% were single, 6.9% widowed, and 3.4% divorced, reflecting the dominance of family-based household structures within Hlokozi village. These marital patterns highlight how poverty and household welfare are shaped not only by economic conditions but also by socio-cultural and institutional dynamics within rural communities. Marriage in rural South Africa is often associated with shared economic responsibilities, caregiving roles, and access to social support networks that may reduce vulnerability to deprivation. However, the findings also suggest that widowed, divorced, and single-headed households may face greater socioeconomic vulnerability due to limited access to income, productive assets, and social support structures. These patterns further reflect the enduring influence of historically embedded cultural norms and apartheid-era inequalities that continue to shape household structures, social relations, and access to resources in former homeland areas.

Table 3: Marital status of the head of household

Head of household's marital status	Frequency	Percentage
Married	174	75
Widowed	16	6.9
Divorced	8	3.4
Single	34	14.6
Total	232	100

Source: Author's compilation

The findings in Table 4 reveal that 52.2% of households in Hlokozi village consist of between 7 and 12 members, highlighting the prevalence of large household structures within the study area. This pattern reflects the enduring legacy of apartheid-era labour migration, spatial inequalities, and economic exclusion, which historically disrupted family structures and contributed to the formation of extended and dependency-based households in former homeland areas (May, 1998; Seekings and Nattrass, 2005). In line with the study's multidimensional contribution, large household sizes are not only associated with economic pressure but also reflect broader socio-cultural realities such as extended family systems, caregiving obligations, unemployment, and limited access to productive resources. While extended households may provide important social support networks, they also increase dependency burdens and place pressure on limited household income, food security, housing, and access

to basic services, thereby reinforcing multidimensional poverty and vulnerability within rural communities (Aliber, 2003; Lipton and Ravallion, 1995).

Table 4: The size of the household in the study area

Household size	Frequency	Percentage
1 - 6	82	35.3
7 - 12	121	52.2
13 and above	29	12.5
Total	232	100

Source: Author's compilation

The findings in Table 5 reveal that many households in Hlokozi village have access to land for residential use, cultivation, and grazing under customary tenure systems administered through the Ingonyama Trust and traditional authorities. These land arrangements reflect the enduring legacy of the apartheid system and the former homeland policies, which historically restricted private land ownership and concentrated Black rural populations in underdeveloped communal areas (Ntsebeza, 2005; Cousins, 2007). While customary tenure systems continue to provide communal identity, social belonging, and livelihood support, they may also reinforce unequal access to productive resources, particularly for women, thereby limiting agricultural investment, productivity, and long-term asset accumulation.

Table 5: Land ownership by the head of household

Landholding size (hectares)	Frequency	Percentage
≤5.00	158	68.2
5.01 - 10.00	48	20.6
10.01 - 15.00	22	9.4
>15.00	4	1.7
Total	232	100

Source: Author's compilation

The findings in Table 6 reveal that 51.3% of respondents earn between R500 and R1 500 per month, while only 12.1% earn above R5 501, highlighting the dominance of low-income households in Hlokozi village. These income patterns reflect the enduring legacy of the apartheid system, which historically marginalised rural communities through unequal access to education, employment opportunities, infrastructure, and productive resources (May, 1998; Seekings and Nattrass, 2005). The findings demonstrate that poverty in rural South Africa is multidimensional and shaped by broader structural, historical, and socio-cultural inequalities rather than income deprivation alone. Limited access to formal employment, dependence on subsistence livelihoods, and restricted economic opportunities continue to reinforce vulnerability and constrain long-term asset accumulation within rural households. The results therefore support the study's argument that contemporary rural deprivation in former homeland areas remains closely linked to historical patterns of exclusion and unequal development.

Table 6: Personal total gross monthly income

Personal total gross monthly income	Frequency	Percentage
Less than R500	8	3.4
Between R500-R1 500	119	51.3
R1 501-R2 500	47	20.3
R2 501-R3 500	19	8.2
R3 501-R4 500	8	3.4
R4 501-R5 500	3	1.3
More than R5 501	28	12.1
Total	232	100

Source: Author's compilation

Results of the construction of an asset-poverty index

The principal component analysis demonstrates that the dataset is statistically appropriate for multidimensional poverty analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.63, while Bartlett's test of sphericity was statistically significant ($p < 0.05$; $p = 0.000$), confirming sufficient intercorrelation among the variables to justify the application of PCA. Within the context of cultural analysis and social change, these results suggest that the selected indicators capture interconnected dimensions of deprivation that are embedded within broader social, institutional, and historical realities shaping rural livelihoods.

The Kaiser criterion was employed to determine the number of components to be retained for the analysis (see Table 7). Table 7 reports the initial eigenvalues, extracted component eigenvalues, and rotated component eigenvalues, each disaggregated into total coefficients, percentage variance explained, and cumulative variance contributions. Based on the Kaiser rule, eleven components associated with asset poverty were extracted. Collectively, these components explain approximately 60% of the total variation in the original dataset, indicating that rural poverty is multidimensional and shaped by a combination of socioeconomic, infrastructural, and cultural factors rather than by income deprivation alone.

As reflected in Table 7, the explanatory contribution of each successive component gradually declines, suggesting that the most significant dimensions of deprivation are concentrated within the first few components, while the remaining factors capture more nuanced forms of household vulnerability and social exclusion. This finding aligns with broader debates in social change scholarship, which emphasise that poverty is experienced through overlapping systems of material deprivation, unequal access to resources, and historically embedded forms of marginalisation.

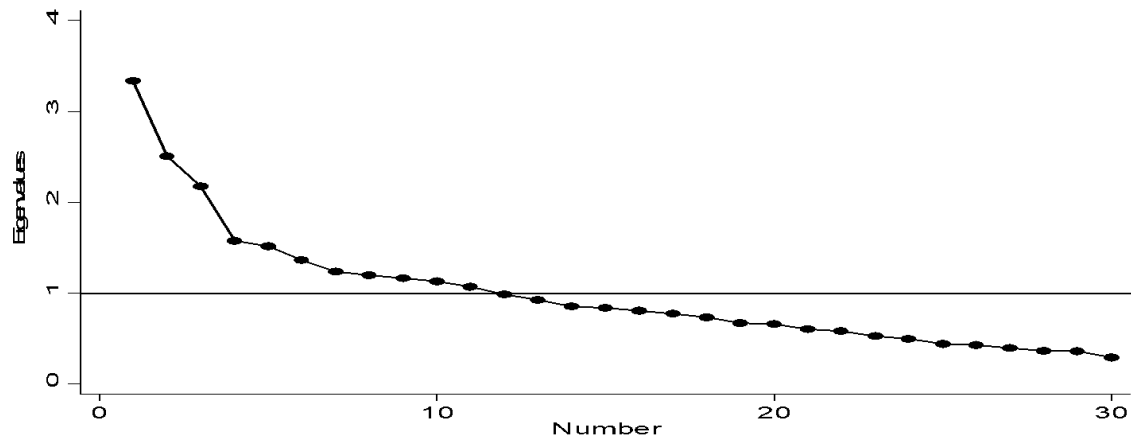


Figure 2 Scree plot for component analysis computed from field survey data.

Source: Author's calculation based on the field survey data

Table 7 Results for the extraction of components based on the field survey data

Component	First eigenvalues			Eigenvalues of the extracted components			Eigenvalues of rotated extracted components		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.34	0.111	0.111	3.334	0.111	0.111	2.885	0.096	0.096
2	2.50	0.084	0.195	2.504	0.084	0.195	2.204	0.074	0.170
3	2.18	0.073	0.267	2.177	0.073	0.267	1.984	0.066	0.236
4	1.77	0.053	0.320	1.575	0.053	0.320	1.747	0.058	0.294
5	1.58	0.051	0.370	1.516	0.051	0.370	1.566	0.052	0.346
6	1.56	0.045	0.416	1.363	0.045	0.416	1.426	0.048	0.394
7	1.37	0.041	0.457	1.237	0.041	0.457	1.395	0.047	0.440
8	1.23	0.040	0.497	1.199	0.040	0.497	1.286	0.043	0.483
9	1.19	0.039	0.536	1.164	0.039	0.536	1.282	0.043	0.526
10	1.13	0.038	0.573	1.131	0.038	0.573	1.250	0.042	0.568
11	1.07	0.036	0.609	1.071	0.036	0.609	1.245	0.042	0.609
12	0.98	0.033	0.642						

Source: Author's calculations based on field survey data

Method of extraction: Principal Component Analysis

The scree plot presented in Figure 2 was further used to validate the number of extracted components for analysing asset poverty. Visual inspection of the scree diagram identifies the threshold at the point where the eigenvalue curve begins to flatten and diverges from the reference line, indicating the optimal number of components to retain. To improve interpretability and strengthen the analytical meaning of the extracted dimensions, varimax rotation was applied to the retained factors. This rotation procedure generated a clearer factor loading structure, enabling a more meaningful interpretation of the social and cultural dimensions underpinning rural asset poverty.

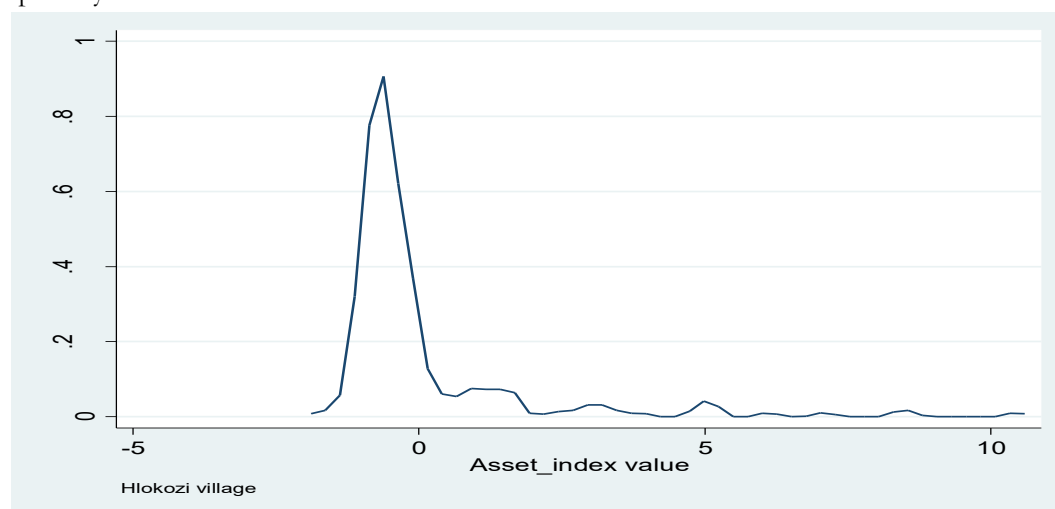


Figure 3. Distribution of households according to the asset-index values for the rural sample

Source: Author's calculation based on field survey data

The kernel density estimates in Figure 3 show that most households in Hlokozi village remain concentrated within low asset-poverty index levels, reflecting persistent multidimensional deprivation and limited asset ownership. Although some households show slight improvements in living conditions, structural barriers continue to constrain meaningful asset accumulation and socioeconomic mobility. The findings demonstrate that rural poverty in South Africa is deeply rooted in historical, socio-cultural, and institutional inequalities. The results further highlight the enduring legacy of apartheid policies, which dispossessed African rural communities of productive assets and restricted access to land, education, infrastructure, markets, and employment opportunities, thereby reinforcing intergenerational poverty and socio-spatial exclusion in former homeland areas (Aliber, 2003; ANC, 1994).

Descriptive results of assets derived from the PCA analysis

The findings presented in Table 8 reveal significant inequalities in asset ownership and access to services among households in Hlokozi village. The positive PCA factor scores for assets such as satellite dishes (0.4539), cameras (0.4472), cars (0.4324), internet access (0.3866), and bicycles (0.2951) indicate that ownership of these assets is strongly associated with higher socioeconomic status and improved household welfare, consistent with previous multidimensional poverty studies (Xhafaj and Nurja, 2013; Habyarimana et al., 2015; Bhorat et al., 2014). The wealth quintile analysis further highlights stark inequalities between poor and wealthy households, where households in quintile five reported substantially higher ownership of modern household and communication assets than households in quintile one. For instance, 56% of wealthier households owned electric stoves compared to only 6.3% of poorer households, while 80% of the richest households had landline telephones compared to 12% of the poorest households. Similarly, assets such as internet access, satellite dishes, generators, and cameras were largely concentrated among wealthier households and mostly absent among poorer households.

These findings demonstrate that rural poverty in South Africa extends beyond income deprivation and reflects broader forms of historical, social, and cultural exclusion. Access to communication technologies and modern household assets represent participation in evolving economic, informational, and social systems, while the absence of such assets among poorer households highlights limited digital inclusion, restricted socioeconomic mobility, and persistent structural inequalities. These patterns further reflect the enduring legacy of the apartheid system, which historically denied African rural communities' equal access to quality education, infrastructure, employment

opportunities, and productive resources, thereby reinforcing long-term spatial and socioeconomic inequalities in former homeland areas.

Table 8 Summary statistics, factor scores and classification into wealth quintile

Assets	Mean	Std dev.	Factor scores	Poorest	Second	Middle	Fourth	Richest
Radio	0.7543	0.4314	0.0265	0.7234	0.7174	0.8085	0.5870	0.9348
Stereo	0.1121	0.3161	0.0738	0.0638	0.0870	0.0213	0.0870	0.3043
Tape	0.0948	0.2936	-0.0251	0.1702	0.0652	0.0426	0.0217	0.1739
Television	0.7500	0.4339	-0.0475	0.7234	0.6957	0.7234	0.7826	0.8261
Video	0.4957	0.5011	0.0582	0.4255	0.2609	0.5957	0.4565	0.7391
Fridge	0.7543	0.4314	0.0104	0.7021	0.5870	0.7447	0.8261	0.9130
Gas stove	0.1379	0.3456	0.0541	0.1277	0.1522	0.1064	0.0652	0.2391
Tractor	0.0172	0.1305	0.0248	0.0213	0.0217	0.0000	0.0000	0.0435
Donkey cart	0.0172	0.1305	-0.1236	0.0638	0.0000	0.0000	0.0217	0.0000
Plough	0.7241	0.4479	0.0091	0.5957	0.7826	0.8085	0.7391	0.6957
Wheelbarrow	0.7802	0.4150	0.0391	0.6170	0.8043	0.8936	0.8043	0.7826
Grinding mill	0.0216	0.1455	-0.0225	0.0213	0.0217	0.0000	0.0000	0.0652
Land	0.1078	0.3107	0.0281	0.0851	0.1304	0.0851	0.0870	0.1522
Bicycle	0.0345	0.1829	0.2951	0.0000	0.0000	0.0000	0.0000	0.1739
Camera	0.0647	0.2464	0.4472	0.0000	0.0000	0.0000	0.0000	0.3261
Own car	0.1164	0.3214	0.4324	0.0000	0.0000	0.0000	0.0000	0.5870
Cell phone	0.6983	0.4600	-0.0116	0.6383	0.6957	0.6809	0.8261	0.6522
Satellite dish	0.0690	0.2539	0.4539	0.0000	0.0000	0.0000	0.0000	0.3478
Internet	0.0388	0.1935	0.3866	0.0000	0.0000	0.0000	0.0000	0.1957
Generator	0.0172	0.1305	0.1754	0.0000	0.0000	0.0000	0.0217	0.0652
Home tel. line	0.5819	0.4943	0.1941	0.1277	0.3478	0.7021	0.9348	0.8043
Electrics stove	0.3621	0.4816	0.2147	0.0638	0.1739	0.1915	0.8261	0.5652
Paraffin stove	0.0647	0.2464	-0.0609	0.1277	0.0435	0.0213	0.0435	0.0870
Cattle	0.6422	0.4804	-0.1044	0.7447	0.5652	0.6809	0.7174	0.5000
Sheep	0.0560	0.2305	0.0251	0.0213	0.0435	0.0426	0.0870	0.0870
Goats	0.3966	0.4902	-0.0236	0.4681	0.3261	0.2979	0.5652	0.3261
Pigs	0.0302	0.1714	-0.0376	0.0638	0.0435	0.0213	0.0000	0.0217
Horses	0.0086	0.0926	0.0543	0.1064	0.0217	0.1489	0.3261	0.2174
Donkeys	0.4095	0.4928	-0.0016	0.0213	0.0000	0.0000	0.0000	0.0217
Chickens	0.1638	0.3709	-0.0391	0.4255	0.4565	0.2553	0.5435	0.3696

Source: Author's calculation based on field survey data

FINDINGS AND DISCUSSIONS

Determinants of asset poverty

Table 9 presents the probit model results examining the determinants of asset poverty among subsistence farming households. The findings indicate that most explanatory variables are statistically significant at the 10% level or lower and display the expected signs, while the Pseudo R^2 of approximately 18% is considered acceptable for cross-sectional analyses (Muzan, 2015).

Table 9 Probit estimates on the determinants of asset poverty

Poverty status	Coeff.	Std Errors	Level of Sign	Marg. Eff.	Std Errors	Level of Sign
Household_employment	-0.6640	0.157	***	-0.0953	0.0271	***
Household_size	0.303	0.222		0.0312	0.0274	
Household_age	-0.0439	0.0111	***	-0.0074	0.0021	***
Household_gender	-0.0113	0.0813		-0.0013	0.0093	
Household_married	-0.0553	0.0608		-0.0064	0.007	
Primary	-0.0055	0.001	***	-0.0006	0.0001	***
Secondary	-0.0350	0.0087	***	-0.0040	0.001	***
Matric	-0.1731	0.0811	**	-0.0193	0.009	**
Tertiary	-0.3824	0.1292	***	-0.0887	0.0308	***
Observation	196					
<i>Pseudo R²</i>	0.13					

Clustered standard errors are reported in parentheses with ***, **, and *, denoting significance at the 1%, 5%, and 10% levels, respectively.

Source: Author's computation from field survey data

The results demonstrate that socioeconomic characteristics play a significant role in shaping household asset poverty within rural communities. For example, education emerges as one of the strongest determinants of reduced asset poverty. Higher educational attainment by the household head significantly decreases the likelihood of a household falling into poverty. For example, completion of primary, secondary, matric, and tertiary education reduces the probability of asset poverty by 0.5%, 3.5%, 17.3%, and 38.2%, respectively. These findings are consistent with Achia et al. (2010), who found that education enhances access to income opportunities and improves household welfare. The results suggest that education can also be understood as a form of social and cultural capital that enables greater participation in economic systems, knowledge networks, and processes of social mobility within rural societies.

Employment status also significantly reduces the likelihood of asset poverty. Households headed by employed individuals were found to be 9.5% less likely to experience asset deprivation. This finding highlights the importance of labour market participation in improving household living conditions and supports broader development literature linking employment to poverty reduction. In the context of cultural analysis, employment represents not only income generation but also social inclusion, dignity, and access to modern forms of economic participation that shape changing rural livelihoods.

Although household size was positively associated with asset poverty, the relationship was statistically insignificant. Nonetheless, the positive sign aligns with the findings of Imai et al. (2011), who argued that larger households often experience increased pressure on limited household resources, thereby increasing vulnerability to poverty.

Interestingly, the age of the household head was negatively associated with asset poverty and statistically significant, suggesting that older household heads are less likely to be asset poor. These findings support studies conducted in Tunisia, the United States, Malaysia, Zambia, Nigeria, and Botswana (Ghazouani & Goaid, 2001; Fisher & Weber, 2004; Mok et al., 2007; Daka & Fandamu, 2016; Akinbode & Hamzat, 2017; Lekobane & Seleka, 2017). However, the results differ from findings in Rwanda and Bangladesh, where older age increased the likelihood of poverty (Habyarimana et al., 2015; Farah, 2015). The negative relationship observed in this study may reflect the gradual accumulation of assets, farming experience, and social capital over the life course. This interpretation is consistent with the life-cycle theory of Ando and Modigliani (1963), which suggests that households accumulate resources during productive years and rely on savings during old age.

These findings demonstrate that asset poverty is not solely an economic condition but is also shaped by broader social structures, access to education, employment opportunities, generational dynamics, and patterns of social inclusion. The results further illustrate how structural inequalities continue to influence the distribution of resources and opportunities within rural South African communities undergoing social and economic transformation.

CONCLUSION

This study employed Principal Component Analysis (PCA) to construct an asset-based poverty index using data collected from Hlokozi village in KwaZulu-Natal, one of South Africa's poorest provinces. Extending

previous South African studies that mainly focused on descriptive assessments of household socioeconomic status, the study further applied a probit model to identify the determinants of asset poverty. The findings reveal that employment status, educational attainment (secondary, matric, and tertiary education), and the age of the household head significantly reduce the likelihood of asset poverty, while household gender, marital status, and household size were statistically insignificant.

The findings demonstrate that rural poverty is not merely an economic condition but is closely linked to social exclusion, unequal access to education, and limited participation in socioeconomic opportunities. Education emerges as a critical instrument for promoting social mobility, empowerment, and rural transformation. Consequently, policies aimed at improving rural education and labour force development are essential for reducing multidimensional poverty and addressing persistent inequalities in marginalized communities. In this regard, incentivizing qualified teachers to work in rural areas could strengthen educational outcomes and contribute to broader social and economic change in rural South Africa.

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