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Research Article

Exploring the Rural Poverty Prevalence and Eradication Strategies for Rural Development: The case of Kenya

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ABSTRACT

The World Bank estimates that about 689 million people live on less than $1.90 a day globally. Sub-Saharan Africa and South Asia collectively account for 85% of this number. In Kenya, 36.1% of the total population live below poverty line, 40.1% in rural and 29.4% in urban areas. This study seeks to determine the contributing factors to rural poverty in Kenya, identify the eradication strategies, and reveal the gaps in the strategies. The study relies on secondary sources of data, including government reports, research articles, theses, international organizations' reports etc. It applies correlation and regression methods of data analysis to test the hypotheses. The study established that the lack of, and inaccessibility of water and food are aggravating factors of rural poverty, while poverty levels do not drop with an increase in the household land size. It also revealed that increasing the income levels of individuals in rural areas reduces poverty. Finally, the study identifies inadequate community participation, political interference, embezzlement of funds, underfunding, resistance to devolution, less transparency and accountability, and duplication of roles as gaps in the strategies. The study proposes sealing the gaps to strengthen the strategies and inform future policies formulation efforts for successful poverty eradication.

1. Introduction

Poverty reduction is a priority nationally, regionally, and globally. However, the efforts have been impeded due to the use of conflicting definitions and measurement methods of poverty by different countries. Some have adopted a multidimensional approach to poverty measurement that addresses wider aspects of wellbeing including access to health, housing, and other social aspects aspects (Haveman & Wolff, 2004; Kan et al. 2018). On the other hand, economists tend to define poverty based on hardship, which reflects how much resources a family or an individual can access or their economic well-being and position. Studies have shown that poverty is mainly a rural phenomenon. The World Bank (2020) reported that 80% of the world poor live in rural areas despite rural population accounting for just 48% of the world population. The proportion grows to 83.5% when multidimensional aspects of deprivation are considered (Suttie, 2019). This disparity between urban and rural areas could be attributed to 'urban bias', which has resulted in the insufficient allocation of development resources to agriculture and rural economy (Bezemer & Headey, 2008). Therefore, the probability of suffering poverty and other deprivation in the rural areas where the global poverty rate of 17.2% is three times that in urban areas (5.3%) (Suttie, 2019).

The World Bank (2021) estimated that 9.2% of the world population (689 million people) lived on less than $1.90 a day by 2017. The numbers rise to 24.1% and 43.6% when the poverty line is $3.20 and $5.50 a day, respectively. Sub-Saharan Africa and South Asia regions collectively account for 85% of the total world poor, with more than a half of poor living in just the five most populous countries i.e., India, Nigeria, Democratic Republic of Congo, Ethiopia, and Bangladesh (Roy & Divyanshi, 2019). In South Asia the numbers declined by half between 1993 and 2015, while Sub-Saharan Africa saw an increase from 276 million in 1990 to 413 million in 2015 (De-La-O-Campos, Villani, Davis, & Takagi, 2018). Many Sub-Saharan Countries have since prioritized agriculture-oriented programs to eradicate poverty, with the sector being the main economic life for most of the rural population, employing about 80% of the active population and contributing between 30% and 50% to their Gross Domestic Product (GDP) (Akouegnonhou & Demirbaş, 2021). Kenya emphasizes the provision of basic social services, economic growth, and the creation of employment in its development goals (Radeny, van den Berg, & Schipper, 2012). The focus

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on economic growth has yielded significant results in Kenyan. The economy grew at an average of 5.3% between 2005 and 2016, a figure higher than the average of 4.9% observed for Sub-Saharan Africa in the same period (World Bank, 2018). However, the entrenchment of poverty in rural parts of Kenya proves that the growth has been skewed towards urban areas; a pointer to 'urban bias'. The Kenya Integrated Household Budget Survey (KIBHS) report of the year 2005/06 found that 47% of the Kenya population lived in poverty, with a majority (85%) in the rural areas (World Bank, 2009). A decade later, the number had dropped to 36.1%. Nevertheless, the rural poor were still more than the urban poor at 40.1% and 29.4% respectively (KNBS, 2018). The global Multidimensional Poverty Index (MPI) method developed Alkire-Foster provides higher figures. According to Oxford Poverty & Human Development Initiative, OPHI (2021), the MPI, covers 100 developing countries and measures acute multidimensional poverty by going beyond the traditional method of poverty measurement that relies on monetary value. It captures an individual's deprivation in health, education, and living standards. The paper therefore seeks to determine the contributing factors to rural poverty in Kenya, identify the eradication strategies, and reveal the gaps in the strategies. Addressing the gaps in the strategies would be important in strengthening the existing policies and inform future policy formulations for successful poverty eradication.

2. Measurement of Poverty

Development progress in the world increasingly is measured based on the number of people living in extreme poverty. High numbers are indicative of low development progress. Countries have therefore adopted different strategies to alleviate poverty, which continues to be a pressing issue globally. Extreme poverty eradication has been listed as the first goal of the United Nations in its Agenda 2030 programs. This would be realised by ensuring access to basic services, promoting equal rights to economic resources, ownership of lands, and natural resources (UN, 2015). These efforts are not new though. As Ferreira et al. (2016) indicate, the global efforts have been implemented through a) the Millennium Development Goals (MDGs), which intended to reduce by half the number of people living in extreme poverty between 1990 and 2015, b) the World bank, that in 2013 set a goal of ending poverty by 2030 and c) the goal to eradicate extreme poverty in all its forms by 2030 through the Sustainable Development Goals (SDGs).

The meaning and measurement of poverty continue to evolve with time to encompass all life dimensions as opposed to the traditional view that focused on economic capability. Economists for instance based their definition on income levels and would determine the poor according to the total headcounts of those below a globally defined poverty line/income level or consumption levels. This is the income poverty which is based on the international poverty lines of US$1.90, US$3.20, and US$5.50 per day, using the 2011 purchasing power parity prices (Sumner, Hoy, & Ortiz-Juarez, 2020). In its definition of the poor, the European Union goes beyond the income boundary to include any person, family, or a group of people with limited access to resources i.e., cultural, material, and social resources, and therefore not able to afford the minimum acceptable way of life in member states (Gordon, 2006). To delink poverty from just income measurement, the United Nations in 1995 included lack of access to basic services like education, food water, and health, inadequate housing, social exclusion and discrimination, high morbidity and mortality, and the unsafe environment as important poverty enabling factors (UN, 1996). Additionally, a more comprehensive and inclusive measurement of poverty known as global MPI has been used in 100 least developed countries and complements the monetary measurement by including other deprivations like education, health and living standards (Alkire & Foster, 2011). Anyone deprived of at least one-third of the weighted MPI indicators could therefore be classified as multidimensionally poor (OPHI, 2018).

3. Comparison of Rural and Urban Areas Poverty in Kenya

Kenya has two levels of government: the national and the 47 county governments. The constitution of Kenya provides that the two levels are distinct and interdependent, and would, therefore, work based on consultation and cooperation (GOK, 2010). Most of these counties are predominantly rural based on the classification of the Urban Areas and Cities Act, which uses population threshold to designate urban areas and cities. The Act defines the minimum population thresholds for a city, a municipality, a town, and a market centre as 250,000, 50,000, 10,000, and 2,000 respectively (ROK, 2019). Therefore, most Kenyan regions that do not meet the threshold have been categorized as urban. The 2019 Kenya Population and Housing Census Report established that majority of the Kenyan population i.e., 32,732,596 (68.82%) lived in rural areas while 14,831,700 (31.18%) lived in urban areas (KNBS, 2019b). Similarly, poverty is more widespread in the Kenyan rural than urban areas. The World Bank (2016) revealed that 90% of those in the bottom 40% of the income distribution in Kenya, live in rural areas. The rural areas also have high levels of illiteracy, child mortality and poverty rates, poor access to basic services like sanitation and electricity, and have approximately 8.3 million people who depend on farming as the main source of livelihood (Kai & David, 2020). However, with increased urbanization which results in urban sprawl, the agricultural areas are quickly transformed into other urban uses, particularly the residential land-uses, which might affect the overall agricultural yield in the urban areas (Caner & Engindeniz, 2021). Insufficient agricultural capacity in these areas could lead to high poverty

rates. Kenya classifies the poor into food poor, extremely poor and overall poor for effective analysis and understanding of the poverty situation.

First, the government uses the extreme poverty measure to determine poverty rates in the country. The World Bank, which is the main source of global information on extreme poverty revised the 'International Poverty Line' to $1.90 in 2015. Individuals living on less than 1.90 international dollars a day are classified as extremely poor (Cruz, Foster, Quillin, & Schellekens, 2015; Roser & Ortiz-Ospina, 2013). The line is calculated based on the monetary value of an individual's consumption. Likewise, the national poverty line in Kenya is determined based on an individual's or household's consumption. There are different lines for rural and urban areas due to differences in the prices of goods which affect the cost of living. The monthly national extreme poverty lines for urban and rural areas in Kenya have been set at Kenyan shilling (KSh) 1,954 (equivalent to US$ 0.6 per day) and KSh 2,551(US$ 0.8 per day) respectively. If the monthly adult equivalent total consumption expenditure per individual is less than the stipulated amount, an individual or household is considered to live in extreme poverty. The 2015/16 KIHBS determined 8.6%, (nationally), 11.2% (rural areas), 6% (peri-urban) and 3.4% in core-urban live in extreme poverty (KNBS, 2018). The global MPI shows that there are 13.3% (nationally), 4.3% (urban) and 18.0% (rural) who are categorized as 'severe poor' (OPHI, 2020). Both measurements indicate that more people in the rural areas are living in extreme poverty.

Food consumption is the second measurement of poverty in Kenya. The Food and Agriculture Organization (FAO) estimates that over 820 million people are undernourished due to lack of food, (FAO, IFAD, UNICEF, WFP, & WHO, 2019). The United Nations aims to eradicate poverty and achieve food security by ensuring zero hunger. This could be realized by addressing key areas of food security i.e., availability, access, stability, and utilization as identified in the World Food Summit of 1996 (Caraher & Coveney, 2016). The FAO recommended per capita food consumption per person per day is 2800 kcal, subject to regional variations (FAO, 2020). The 2015/16 KIHBS report revealed that 32% of Kenyans (35.8% in rural areas, 29.4% in peri-urban and 23.8% in urban areas) are unable to consume the minimum daily calorific requirement of 2,250 Kcal determined by the government (KNBS, 2018). The food poverty line in Kenya is thus the average expenditure (excluding the non-food expenditures) needed to attain the daily intake of 2,250 kilocalories, calculated as KSh 1,954 (US$ 0.6 per day) and KSh 2,551(US$ 0.8 per day) for rural and urban areas, respectively (KNBS, 2018). Again, it has been determined that more people in rural areas than urban areas live in food poverty.

Finally, 'absolute' or 'overall' poverty is a measurement used to determine the proportion of the population that cannot meet the minimum overall basic needs for the consumption needs. The number of people living in 'overall poverty' may vary in a country depending on the measurement used. Gentilini and Sumner (2012) explain that the national poverty lines (NPL) set by respective governments may yield different results from international poverty line (IPL) due to difference in methodologies and technical reasons. For instance, the overall poverty rate in Kenya computed based on World Bank revised 2011 PPPs of $1.90 per person per day was 37.08% in 2015 (Atamanov, Lakner, Mahler, Tetteh Baah, & Yang, 2020). Developing countries prefer to use the food-energy-intake (FEI) and the cost-of-basic needs (CBN) methods when calculating their absolute NPL (Ravallion, 2010). This may give a different result from the IPL. The CBN method specifies a consumption bundle that is thought to be adequate for basic consumption needs and calculates its cost. The cost varies depending on the targeted sub-groups like rural areas, urban areas, age, and gender. Individuals and households whose monthly adult equivalent total consumption expenditure per person is less than the determined poverty lines are said to be 'living in overall poverty'. The overall poverty line for the rural and urban areas have been set at KSh 3,252 (equivalent to US$ 1.0 per day) and KSh 5,995 (US$ 1.8 per day) respectively, therefore, 36.1% of Kenyan lived in overall poverty in 2015 (KNBS, 2018). The MPI gives a higher figure of 38.7% (OPHI, 2020). Table 1 shows the overall poverty in urban and rural areas, as well as the national dimension in Kenya using three different measurements comparatively.

Table 1
Overall poverty in Kenya

Scale	National Poverty Line (KNBS)	Global MPI (OPHI)	International Poverty Line (IPL)
National	36.1%	38.7%	36.8%
Urban	29.4%	41.8%	-
Rural	40.1%	48.3%	-

Source: (KNBS, 2018), (OPHI, 2020) and (Atamanov et al., 2020)

The three measurements indicate that there are more people living in poverty in the rural areas of Kenya than the urban areas. Therefore, the probability of suffering from poverty or deprivation in Kenya increases when one lives in rural areas.

4. Materials and Methods

This study primarily relied on secondary data including government reports, international organizations' research, academic articles, theses, conference papers, among others. The bulk of quantitative data used in the study analysis were derived from the different volumes of Kenya Population and Housing Census Report of 2019, the Kenya Integrated Household Budget Survey reports, the 2018 Basic Report on Well-being in Kenya, and the 2019 Gross County Product report. The reports have data on employment, income levels, economic activities, housing, education, health and so forth, which are crucial to understanding the wellbeing of the population and cover the 47 counties. The 2019 Kenya Population and Housing Census Nairobi and Mombasa

Counties classifies Nairobi as 100% urban, while majority of the remaining 45 counties are predominantly rural (KNBS, 2019c). As a result, data from Mombasa and Nairobi Counties were excluded from this study whose focus is rural poverty. The study sample size was 45, representing the 45 counties with rural population. These data in the reports are in government data sources such as official reports, and were collected through primary data collection methods like survey, interviews, focus group discussions, administration of questionnaires etc. To understand the government strategies to combat poverty in the rural areas, the study examined government policies, legislations, and research articles. These data were mainly qualitative that were analysed using the content and interpretive analysis methods. Seven hypotheses shown in table 2 were formulated to examine the existence, the strength, and the direction of the relationship between overall poverty and the contributing factors.

Table 2
Study hypotheses

Variables	Hypotheses
Rural food poverty	H_1: Access to food in the rural areas could cause a significant drop in overall rural poverty.
Rural population	H_2: A decline in rural population results in a fall in the number of people living below the overall poverty line in rural areas.
Rural agricultural land ownership	H_3: Rural households with bigger agricultural lands experience less overall rural poverty.
Natural water	H_4: A reduction in the number of people in rural areas relying on natural water sources signifies a drop in overall rural poverty in rural areas.
Rambling water	H_5: The higher number of rural populations using rambling water, the higher overall rural poverty.
Commercial water	H_6: The higher use of commercial water sources, the lower overall rural poverty.
Rural income	H_7: The higher income levels among the rural population causes a decrease of overall rural poverty.

Source: Authors

The regression method of statistical data analysis was relied upon to test the hypotheses and determine the existence of a relationship between the independent variables and overall rural poverty. Based on the outcome, the hypotheses were either rejected or accepted. The choice of multiple regression analysis technique for this study was due to its ability to simultaneously predict and explain the direct effects of multiple independent variables (not a single explanatory variable) on an outcome variable while accounting for the direct effects of each explanatory variables included in the model (Morrissey & Ruxton, 2018).

Both quantitative and qualitative methods of data analysis were employed in the study. The study focused on two broad areas; the prevalence of rural poverty in Kenya, and the eradication strategies employed by the government. First, the study examined eight variables to understand the rural poverty prevalence. They include a) overall rural poverty, b) rural food poverty, c) rural population, d) rural household agricultural land ownership, e) the use of natural sources of water, f) the use of rambling water sources, g) the use commercial water sources, and h) rural income. Parametric tests methods i.e., correlation and regression analysis were employed to test the hypotheses. Correlation analysis was used to examine the direction and the strength of the relationship between the variables. On the other hand, regression analysis helped in predicting the response of rural poverty (dependent variable) from the seven contributing factors (predictors). Second, to understand the efficiency, and identify the gaps in rural poverty eradication strategies, a qualitative data analysis method was applied. This involved the identification, interpretation, and content analysis of the strategies adopted by the government to realise rural development and achieve a balanced regional growth.

5. Evaluation and Discussion

The forty-seven devolved units and the national government are distinct but interdependent, and have specific roles assigned to them in the constitution (GOK, 2010). Nairobi and Mombasa Counties are 100% urban, while majority of the remaining counties are predominantly rural (KNBS, 2019c). The findings of regression and correlation analysis, and the qualitative analysis of strategies are deliberated in this section.

5.1. Correlation Analysis

The study sought to understand the strength of the relationship between the rural poverty variables for the determination of their statistical significance to the study and their importance in aggravating or eradicating rural poverty. The relationships were classified as strong, moderate, and low at 10%, 5% and 1% significance levels. The correlation table also helped in checking the absence of multicollinearity between the independent variables and how strong the predictables correlated with the outcome variable. The findings are summarized in Table 3.

To determine the absence of multicollinearity between independent variables, a correlation value more than would confirm the existence of multicollinearity, rendering such variables redundant. In the study, all the independent variables' correlation values were less than 0.7, confirming that none of the predictors are multicollinear and therefore valid to be used for the purpose of multiple regression. Additionally, the corre-lation table was relied upon to test if the independent variables showed at least some correlation with the outcome variable. The correlation values greater than 0.3 or more signify a correlation. All the predictors in the study met this assumption except agricultural land (-0.2), which was subsequently eliminated in the multi-ple regression analysis as shown in table 4.

Table 3
Correlation analysis findings

Pearson Correlation	Overall rural poverty	Rural food poverty	Rural population	Agricultural land	Natural water	Rambling water	Commercial water	Rural income
Overall rural poverty (%)	1.000.	.922.000**						
Rural food poverty (%)	.922.000**	1.000.						
Rural Population (%)	.392.004**	.465.001**	1.000.					
Agricultural land (ha)	.201.092*	.080.301	-.053.366	1.000.				
Natural water (%)	.396.004**	.430.002**	.570.000**	-.177.122	1.000.			
Rambling water (%)	.411.003**	.265.039**	-.303.022**	.246.051*	-.167.137	1.000.		
Commercial water (%)	-.280.031**	-.307.020**	-.626.000**	.164.141	-.395.004**	.398.003**	1.000.	
Rural income (KSh)	-.635.000**	-.543.000**	-.264.040**	-.221.072**	-.343.011**	-.328.014**	.133.191	1.000.
N	45				Dependent Variable: Overall Rural Poverty			

, **, * indicate that correlation is significant at the 0.10, 0.05 and 0.01level, respectively.*
Source: Authors

5.1.1. Strong Relationships

At p 0.1, 0.05, and 0.01 levels of significance, the following variables were statistically significant and related. Strong positive correlation between the overall rural poverty and rural food poverty, strong positive correlation between the use of natural sources of water and rural population, strong negative correlation between the use of commercial water and rural population, strong negative correlation between income and rural poverty, and strong negative correlation between income and rural food poverty.

5.1.2. Moderate Relationships

The following variables statistically significant and related at p 0.1, 0.05, and 0.01 levels of significance: Moderate positive correlation between the rural population and rural food poverty, moderate positive correlation between the use of natural water and rural poverty, moderate positive correlation between the use of natural sources of water and rural food poverty, moderate positive correlation between the use of rambling water and rural poverty, moderate negative correlation between the use of rambling water and rural population, moderate positive correlation between the use of commercial water and the use of rambling water, moderate negative correlation between rural income and the use of natural water, and moderate negative correlation between rural income and the use rambling water.

5.1.3. Low Relationships

At p 0.1, 0.05, and 0.01 levels of significance, the following variables were determined as statistically significant and related: Low positive correlation between the size of rural household agricultural land ownership and rural population, low positive correlation between the use of rambling water and rural food poverty, low positive correlation between the use of rambling water and the rural household agricultural land, low negative correlation between the use of commercial water and rural poverty, low negative correlation between the use of commercial sources of water and rural food poverty, and low negative correlation between rural income and size of agricultural land owned by a rural household.

5.2. Regression Analysis

The study also examined the impact of the contributing factors to overall rural poverty (independent variables) on overall rural poverty (dependent variable).The hypotheses stated in table 2 were tested in the regression analysis. The findings in table 4 show that both the direction of impact and what amount of its

Table 4
Regression analysis findings

Dependent Variable: Overall Rural Poverty	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
Constant:	8.138	7.334		1.110	.274		
Rural food poverty	.896	.082	.754	10.904	.000***	.497	2.012
Rural population	-.029	.071	-.031	-.413	.682	.423	2.363
Natural water	.034	.043	.050	.775	.443	.573	1.744
Rambling water	.367	.119	.201	3.080	.004**	.559	1.789
Commercial water	-.267	.139	-.128	-1.914	.063*	.533	1.877
Rural Income	-7.382E-5	.000	-.113	-1.784	.083*	.597	1.674

** p < 0.10, ** p < 0.05, *** p < 0.01*

Source: Authors

First, the findings demonstrate the existence of a relationship between rural food deprivation and the overall poverty rates in rural areas. The B-value for the Rural Food Poverty is 0.896, indicating that an average rise by a single percentage of rural food poverty causes the overall rural poverty to rise by 0.896%, with other factors held constant. This implies that addressing the food access problem in the rural areas would reduce overall rural poverty. The action also complements the United Nation's goal of ending hunger in the world by achieving food security and improving nutrition by the year 2030 (UN, 2015). It is estimated that 35.8% of the Kenyan rural population cannot meet the average daily minimum calorific requirement of 2250 Kcal (KNBS, 2018). Rural food poverty is worsened by harsh climatic conditions affecting a large part of the country that is considered arid and semi-arid (ASAL). The ASAL regions are characterized by low and erratic rainfall which affects agricultural production in the absence of good technology for irrigation and water harvesting. Over 80% of Kenya's landmass is ASAL and home to a third of Kenya's population as well as 70% of livestock in the country (Fitzgibbon, 2012). However, agricultural production in high potential areas of Kenya is also impeded by a lack of assets among farmers, forcing them to cultivate small pieces of land inadequate to sustain living (GOK, 2009). Out of 6,354,211 farming households in Kenya, 5,637,450 households (88.7%) still engage in subsistence farming, while just 506,687 households (8%) do commercial farming (KNBS, 2019a).

Land sub-division is also practice common in rural areas affecting agricultural land productivity. A study by the Catholic Church's Jesuit Hakimani Centre (JHC) found the cultural practice of sub diving lands among siblings to be a major threat to food security since small land are not agriculturally productive (Jamah & Oduor, 2014). The practice is widespread due to land inheritance practices, individualization of titles, agricultural land value, and high housing demand (Museleku, 2018). Subdivision also reduces the scales required for commercial production on the land by limiting the potential for mechanization, increased use of technology, and expanded infrastructure on the lands. Additionally, despite rural households owning huge lands, drought and less application of modern technology have limited farm utilization resulting in food insecurity. The ASAL regions for instance are home to 36% of Kenyans, and occupy about 89% of Kenyan land (GOK, 2019). The households in the ASAL areas have more lands available for agriculture than those in the non-ASAL areas. However, the use of land for agriculture in ASAL areas is hampered by drought. By contrast, more households in non-ASAL areas practise agriculture despite lower average land ownership. A comparison of land ownership and utilization in the ASAL and Non-ASAL regions is shown in tables 5. and 6

Table 5
Average household agricultural land ownership and utilization in ASAL counties.

ASAL County	Average household Agricultural Land (ha)	Proportion of farming households (%)
Garissa	1.09	34.292
Wajir	4.047	49.995
Mandera	4.419	50.534
Marsabit	1.128	51.073
Isiolo	2.204	45.608
Average per household (ha)	2.578	46.30

Source: Author's computation from (KNBS, 2019a)

Table 6
Average household agricultural land ownership and utilization in Non-ASAL Counties

Non-ASAL Counties	Average household agricultural land (ha)	Proportion of farming households (%)
Bungoma	0.624	78.399
Siaya	0.551	77.95
Kakamega	0.508	77.558
Kisii	0.537	71.554
Murang'a	0.442	72.882
Average total per household (ha)	0.533	75.669

Source: Author's computation from (KNBS, 2019a)

Secondly, the results prove the existence of a relationship between the use of boreholes and wells as their main sources of water and the overall rural poverty. The B-value for the use of rambling water is 0.367, meaning that for every rise in the use of boreholes and wells by a percentage, the overall rural poverty increases by 0.367% holding the other independent variables fixed. Most of the dug wells in the rural areas are unprotected and vulnerable to contamination. The WHO (2020) classifies unprotected dug wells, unprotected springs and surface waters as unimproved water sources that are easily contaminated. In the 45 Counties studied, 11.2% of the population were found to rely on boreholes/tube wells for drinking water (KNBS, 2019a). The boreholes in rural areas are mostly manually drilled. As Danert (2015) explains, manually drilled boreholes have been widely used in the marginalized rural areas of Kenya for

irrigation and domestic purposes since the 1970s but raises questions about their safety and water quality considering a lack of understanding of hydrology among the manual drillers. In Kakamega County for instance, it was established that the concentration of mercury, lead, and arsenic in most boreholes was more than World Health Organization recommended levels, and therefore, would pose serious health problems to the residents if used for domestic purposes (Christine, Kibet, Kiprop, & Were, 2018). Martínez-Santos, Martín-Loeches, Díaz-Alcaide, and Danert (2020) point out that the main advantage of manually dug boreholes is their affordability. This explains why among the rural poor, the use of manually dug boreholes is very high as they cannot afford alternative improved sources.

Thirdly, there is evidence linking the use of commercial water and the overall rural poverty levels. The B-value for the use of commercial water is -0.267, implying that for every percentage rise in the number of rural populations using commercial water, there is a drop in overall rural poverty by 0.267% holding other independent variables constant. The assumption is that a household that can afford commercial water is not poor. The high poverty levels in rural areas have therefore made the use of commercial water to be significantly low. A study conducted among 450 rural households in Guangxi province, provides a clear relationship between the use of purchased water and wellbeing. In the study, Alasdair et al. (2017) establish that the purchase of bottled waters was common among high-income households with younger, literate, and male heads. In Kenya, consumption of commercial water is more common in urban than rural areas due to higher poverty rates in rural areas. Commercially water is consumed more in schools, restaurants, markets, on streets, mass gatherings, places of work, spotting, and wedding activities among others (Williams et al., 2015).

Finally, it is established that rural income plays a significant role in determining overall rural poverty. The B-value for the income is -7.382E-5, suggesting that for every additional earning (KSh) on average income, the rates of rural poverty would reduce by 7.382E-5% holding other independent variables constant. The main source of income in rural areas is agriculture. However, factors like land-subdivision, climatic shocks, declining soil qualities, constantly fluctuating markets for agricultural products, plant diseases and pests' infestations, and low public and private investment in agriculture have affected the performance of the sector (Njeru, 2018). This has affected the sources of income leading to high poverty rates in rural areas.

Overall, access to food, rural income, and access to water have a direct bearing on the well-being of a rural population. Actions aimed at improving their ease of accessibility will undoubtedly lead to a drop in overall rural poverty levels. Effective utilization of the land for agricultural is also important to raise household income, and food availability hence lowering rural poverty levels. This require that impeding factors like drought, land-subdivision, plant diseases, among others are addressed. Table 7 shows a summary of the accepted and rejected hypotheses from the study.

Table 7
The hypothesis test result

Variables	Hypotheses	Accepted/Rejected hypothesis	B-coefficients
Food poverty	H_1: Access to food in the rural areas could cause a significant drop in overall rural poverty in the rural areas.	Accepted ($p< 0.01$)	0.896
Rural population Proportion	H_2: A decline in rural population result into a decreasing level of number of people living below the overall poverty line in rural areas.	Statistically insignificant	
Agricultural land ownership	H_3: Households with bigger lands available for agriculture experiences less poverty in the rural areas.	Statistically insignificant (a correlation value of 0.2 is too weak)	
Use of natural water	H_4: A reduction of number of people in the rural areas relying on natural water sources signifies a drop of overall rural poverty in the rural areas.	Statistically insignificant	
Use of rambling water	H_5: A higher number of rural populations using rambling water means that the overall poverty rates are high.	Accepted ($p< 0.05$)	0.367
Use of commercial water	H_6: The use of commercial water sources in rural areas represents a significant decline of rural poverty.	Accepted ($p< 0.10$)	-0.267
Rural income	H_7: Higher income levels among the rural population leads to a decrease of overall rural poverty.	Accepted ($p< 0.10$)	-7.382E-5

Source: Authors

5.3. Poverty Eradication Strategies through Decentralization

Decentralization is a governance concept with different dimensions but a common understanding that central entities play lesser roles in the decision-making process by letting entities at lower levels have much bigger roles. It involves "the transfer of power and resources away from central government" and not the other way round (Schneider, 2003). At independence, the founders of the Republic of Kenya declared the fight against poverty, ignorance, and diseases as the main pillar of governance that needed immediate and long-term attention (Nyamboga, Nyamweya, Sisia, & George, 2014). However, the efforts to achieve development were affected by the strongly centralized and vertically integrated regional development planning regime inherited from the colonial government, which encouraged skewed development in the country (Laji, 2019; Rutten, 1990). To achieve balanced growth and rural development, the various governments have attempted to devolve political, administrative, and fiscal aspects through several decentralization strategies like Sessional Paper No. 10 of 1965, Special Rural Development Program, District Focus for Rural Development, Regional Development Authorities, Fiscal Decentralization, and Policy on Devolution. The success and gaps of the strategies are discussed in this section.

5.3.1. African Socialism and Its Applications to Planning in Kenya.

Formulation of Sessional Paper No. 10 of 1965 marked the initial step by the independent government of Kenya to address inequality of development. The policy ensured decentralization of planning functions from the national levels to provinces, districts, and municipalities, and that development implemented by local administrative units was based on local inputs (GOK, 1965). The policy envisaged public investments in high potential areas with an abundance of natural resources, rainfall, transport networks, and fertile lands to yield faster returns for economic growth in the country. However, it can be said that priority projects implementation couldn't be done equitably but favoured some regions over the others resulting in a huge regional development discrepancy (Stiftung, 2012). Public investment in areas that had the highest absorptive capacity meant that the areas that had been ignored during the colonial period got neglected further due to low their low potential, while resources were concentrated in other regions (CRA, 2012). According to Oyugi, J., and Kaara (2018), the policy objective of ensuring that development could trickle down from high to the low potential areas failed due to lack of a framework to redistribute revenues and benefits accrued from the highly productive areas to the areas with low potential. This encouraged unbalanced regional growth even further.

5.3.2. Special Rural Development Programme

The Special Rural Development Programme (SRDP) policy was initiated by the government in 1971 to address plights of the unemployed youth, and poor and landless farmers in rural areas. The SRDP was born out in regards of concerns that the previous agriculture and rural development policies were inadequate, and new strategies that would create more jobs in rural areas and raise income from agriculture were needed (Ergas, 1982). The pilot projects were tried in six rural administrative divisions and a special fund (S.R.D.P. Funds) that included external funding from donors was established. Project implementation was done by a local committee, assisted by a team of foreign advisors. The policy's goal was to create employment, generate income in the rural areas, develop skills and techniques necessary for Kenya, and to have a domino effect in other rural parts of the country (Cohen & Hook, 1987). Poor coordination between line ministries, lack of technical and administrative capacity at the district level, and inadequate involvement of community contributed to the failure of the policy (Kirori, 2003). The SRDP was finally phased out in 1975.

5.3.3. The District Focus for Rural Development.

The 'District Focus Policy for Rural Development' was formulated in 1983 policy as a response to failure by the SRDP and previous development policies to resolve most of the rural development problems. It distributed government powers, functions, and authorities two levels down from the presidency and provincial headquarters to the officials at the district level who were closer to the people. Rutten (1990) explains that the policy adopted both a 'top-down sectoral approach' at the central government and the 'integrated, horizontal bottom-up approach' at the district level, whereby the ministries at the central government retained the responsibilities of overall policy formulation and planning of both national and multi-district programs, while projects were implemented at the district level. It bestowed the authority to identify and implement district-based projects at the district level instead of the provincial and national levels (Opata, 2004). The aim was to hasten decision making and encourage citizens' participation. Lack of transparency and accountability by government officials, inadequate consultations with the locals, little budget allocation, and political interference were identified as main barriers to the policy success (Omiti, Owino, Otieno, & Odundo, 2002).

5.3.4. Regional Development Authorities

The government's intention to achieve balanced spatial development within and between regions of Kenya has seen it embrace a regional-based development model. In 1974, the government delineated six regions based on rivers and large water bodies in the country as the basis for national development (UN-Habitat, 2016). This would help achieve equitable national development by sustainably using the basin-based resources to create employment and ensure equitable resource distribution to achieve rural-urban balance (GOK, 2020). The policy faces various challenges including lack of a framework for effective community participation, wastage of resources due to duplication of functions, and inadequate funding (KHRC & SPAN, 2010).

5.3.5. Fiscal Decentralization

Inadequate funding and the hesitance by the central government to loosen bureaucratic capture are some of the reasons for the failure of efforts to attain development, resource distribution and, equity in the country, especially in rural areas (Bagaka, 2008). While functions were decentralized, the funds did not follow. According to Mitullah (2012), the parliament created Constituency Development Fund (CDF) and Local Authorities Transfer Fund (LATF) in 2003 and 1999 respectively to reinforce decentralization and overcome regional imbalances. The CDF was allocated 2.5% of the national revenue, while LATF had 5%. Unlike CDF that directed funds directly to constituencies that are political units meant for electoral purposes, LATF was meant for local authorities, which were administrative units. The new constitution 2010 abolished the local authorities, and instead created the 47 counties that are responsible for development in their areas of jurisdiction. The counties are entitled to annual financial allocation from the national government for development. CDF on the other hand is still active but faces challenges like political interference in the management, embezzlement of funds, inadequate citizen participation, lack of oversight on the projects and fund utilization, and inadequate funding (Wanyande & Wanyande, 2016).

5.3.6. Devolution

Kenya constitution has created 47 sub-national governments with a degree of functional autonomy for the purpose of governance and development. Devolution aims to achieve development through decentralization of state organs, functions, and services away from the central government, and enabling communities to manage their affairs by involving them in decision making (GOK, 2010). The county governments are allocated at least 15% of the national revenue to execute the functions assigned to them by the constitution (D'Arcy & Cornell, 2016). Significant developments have been realized in rural areas because of devolution. In the Northern Counties that have traditionally been marginalized, the level of infrastructural development laid down since the onset of devolution is estimated to have surpassed accomplishments achieved in more than fifty years (Kanyinga, 2016). However, its implementation has encountered challenges including the unwillingness of employees in some sectors to work in the devolved units (Kobia & Bagaka, 2014), embezzlement of funds (D'Arcy & Cornell, 2016), conflict within and between county governments for control of county resources (Lind, 2018), delay of financial disbursement and weak public participation (Kimathi, 2017).

6. Conclusion

The study finds that the strategies aimed at realizing rural development and bring about balanced growth in the country have had some degree of success despite challenges. Widely regarded as a failure, the S.R.D.P. played an important role in raising the level of awareness about the issues affecting the poor farmers in Kenya. On the other hand, the District Focus for Rural Development strategy promoted local communities' participation in development processes, streamlined development projects to the local needs and ensured effective use of local resources. The establishment of the Regional Development Authorities has also accelerated rural development and safeguarded equity in resource distribution and utilization. Through fiscal decentralization, the local communities have been granted a wider role in determining projects that reflects their needs and promoted accountability in projects implementation. Devolution of funds to the counties has allowed for more participation of citizens at the local levels in development prioritization, implementation as well as bridging regional development gaps in the country. The study in the case for Kenya ALSO focused on two areas: the contributing factors of poverty in the rural areas, and the rural poverty eradication strategies adopted by the government.

Firstly, the study has established that access to food, rural household land size, access to water, and rural income are important rural poverty variables. Whereas the inaccessibility of water and food have been identified as aggravating factors of rural poverty, the study reveals that the huge landownership by a rural household does not lead to a drop in overall rural poverty. Both land availability and utilization are important elements. Despite large land ownership, agricultural practices are hampered by harsh climate, old agricultural technologies, and land -subdivisions, that have undermined effective land utilization. Contrarily, a rise in rural income resulted in a decline in overall rural poverty. Hence, investing in agriculture would increase access to food and income, thus lowering overall rural poverty.

Secondly, the study has identified the gaps in rural poverty eradication strategies that have impeded the rural development and balanced growth in rural. While the decentralization has had some positive rural development outcomes and reduced regional development discrepancies, the cross-cutting challenges have led to the collapse of strategies or underachievement.

Key negative determinants in the strategies included inadequate community participation, political interference, embezzlement of funds, underfunding of projects, bureaucratic capture, lack of transparency and accountability, duplication of roles, and poor coordination among the ministries and development bodies. Additionally, a weak implementation framework for redistribution of benefits has been identified as a main factor that led to the failure of the sessional paper no 10 of 1965. On the other hand, it is considered that fixing the gaps in the strategies will strengthen decentralization and boost the efforts directed at achieving rural development and a balanced regional growth in the country.

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