International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. 14, Issue 2, Feb 2026

https://ijecm.co.uk/

ASSESSING CASSAVA MARKETING, POLICY FRAMEWORKS AND VALUE CHAINS IN WESTERN KENYA

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Abstract

Cassava is a critical root crop in Kenya, contributing to food security and household income, yet its production, processing, and commercialization remain underdeveloped. This study assessed the potential of value-added cassava products to enhance food security and income generation in Migori and Siaya counties. Data were collected through key informant interviews and stakeholder consultations, focusing on cassava marketing, policy frameworks and value chains. Findings reveal that marketing of cassava products is predominantly informal, with small-scale traders and individual consumers dominating the value chain, while competition from substitute staples and minimal promotional strategies further limit sales. Value addition is minimal, primarily involving washing, peeling, chipping, and solar drying, with significant potential for mechanization and processing to enhance product quality and profitability. The policy environment is underdeveloped, with limited county-level regulations and insufficient stakeholder engagement in policy formulation. The study concludes that an integrated approach, including targeted policy development, institutional support, investment in processing technologies, market integration, and capacity building, is essential to strengthen the cassava value chain, improve productivity, and enhance household income and food security in Western Kenya.

Keywords: Cassava, Value Addition, Policy, Marketing, Food Security, Western Kenya

INTRODUCTION

Marketing is commonly defined as the organizational activity involved in promoting and selling products or services, including related functions such as market research and advertising (American Marketing Association, 2017). Policy refers to a course of action or sets of guiding principles adopted or proposed by an individual or organization to shape decisions and behaviour (Oxford English Dictionary, 2023). The value chain represents the series of activities through which a firm adds value to a product i.e. from production to marketing to the provision of after-sales services (Porter, 1985).

Agricultural and Livestock Research Organization (KALRO), in conjunction with various non-governmental and multilateral organizations, has put a lot into promoting cassava as a food crop and an income-generating activity (Mulu-Mutuku, 2013). However, despite these efforts, cassava production in Kenya remains low and is geographically concentrated in the Western and Coastal regions (Kenya Agricultural & Livestock Research Organization [KALRO], 2020). This situation has limited the absorption of cassava production into mainstream value chains being promoted by the government, in its bid to transform the agriculture sector and increase this sector's contribution to the nation's GDP. Furthermore, cassava peels can be processed

and used as generative sources of ethanol which is an alternative source of power (Nderitu, 2020). Ethanol produced from domestic sources is increasingly being seen as an alternative to crude oil and gasoline; due to its ability to mitigate environmental pollution and fossil oil savings (Inegbedion, Okoro & Adeyemi, 2020). As a result, investment in cassava production can be equated as an alternative to crude oil as a source of power (Inegbedion, Okoro & Adeyemi, 2020). The enormous amount of currency invested in the importation of oil and oil products and the pollution of the environment caused by the consumption of oil had for a long time compelled the search for an alternative to oil consumption (Ceballos, Rojanaridpiched, Phumichai, Becerra, Kittipadakul, Iglesias & Gracen, 2020).

Nderitu (2020) investigated socioeconomic and institutional factors faced by cassava farmers that influence their production decisions. The study suggested improving production policies by determining the socio-economic and institutional factors that influence smallholder farmers' participation in cassava production. However, the study did not address the use of farming policies in other areas. The study did not show policies that encourage training and education of farmers to increase their capacity to engage in cassava production profitability. Intercropping cassava with other food crops to fully and intensively utilize the land use. Understanding and determining the kind of production policies requires an in-depth understanding of the dynamic needs of both farmers and consumers through training and farmer group empowerment (KALRO, 2022). Concerning these findings, this established how the cassava value chain industry has evolved by establishing the influence of the status of cassava on food security in the western region of Kenya. Therefore, the purpose of this study is to assess cassava marketing, policy frameworks, and value chains in Western Kenya, with a focus on Migori and Siaya counties. Specifically, it seeks to evaluate the potential of value-added cassava products to enhance food security and household income.

Cassava Marketing

Opondo (2022) studied analysis of marketing margins of cassava farmers and traders in Siaya County. She points out that cassava farmers and traders in Siaya County have received support from various bodies because of cassava's economic importance to the region but, however, there is limited information on marketing margin analysis of cassava value chain. In the study, marketing margins were computed by comparing the differences between prices received by and paid for by actors. Multiple regression analysis was performed to identify determinants of cassava marketing margin. The findings revealed that the margins for traders were positively influenced by age, purchase times and experience of the household head. Transport and storage costs had a negative influence. Marketing margin for farmers was

positively influenced by access to extension services and quantity sold. However, distance to the market had a negative influence. The study concludes that transport and storage costs reduce marketing margins of the actors.

Ngenoh (2021) investigated the effects of marketing strategies on product line margins among the cassava micro-entrepreneurs in Migori county Kenya. The study opines that micro entrepreneurs ought to be strategic in marketing their products for relatively better marketing margins. Cassava production, utilisation, and marketing in Kenya is low compared with the other starchy food crops mainly maize, potatoes, and wheat. The study pointed out that this is due to the presence of cyanide content in cassava, which is poisonous, when roots are mishandled, leading to avoidance of the crop by potential consumers. This has affected its marketing and consumption in the country. This study was conducted in Migori County (Kuria West, Suna East, Suna West, and Uriri Sub-counties) in Kenya using a semi-structured questionnaire, administered to a sample of 267 cassava microenterprises, which was obtained using simple random sampling technique. The data was analysed using descriptive and inferential statistics.

Ngenoh (2021) showed that the main cassava product lines prevailing in study included fermented dried pellets (63.99%), raw tubers (19.94%), and unfermented dried cassava pellets (15.79%). Other cassava-based products (local brew) were =. involved the least (0.28%). The most used marketing strategies respectively were the pricing, product promotion, value addition and the formation of a marketing alliance mutually inclusive. Multivariate Probit results showed that age, gender, years of schooling, household size, major occupation (trading) marketing experience, seed money, entrepreneurial training, marketing information, market distance, group membership, farm gate and open-air marketing outlets significantly ($p<0.05$) influenced the choice of marketing strategies. Such choices led to the following marketing margins per product lines as follows: Fermented pellets (KES 50), unfermented pellets (KES 45), raw tubers (KES 30), and other cassava-based products as (KES 15). The study recommends that cassava microenterprises combine marketing strategies (Pricing, promotion and product improvement) that give maximum marketing margins on highly demanded cassava products (fermented and unfermented pellets) hence better performance. The findings of the study would be useful to scholars, arbitrageurs, development partners, and governments (National and the County) in policy making and implementation towards promotion of the underutilized and potential food and cash crops in the country.

Cassava Policies and Regulations

Inegbedion, Obadiaru & Obasaju (2020) published a document on policy improvements and cassava attractiveness in a Nigerian perspective. This document observed

whether actors in cassava production and proliferation can obtain optimum rewards on three strategies: Whether optimum rewards are obtained from selling cassava and its products to harvesters, whether optimum rewards are obtained from selling output at wholesale and whether optimum output is obtained from selling harvested returns at retail. The authors sought to achieve this by surveying 360 cassava farmers in 3 local governments of Edo South District in Nigeria. Results from this publication reveal that cassava producers in Edo South District of Nigeria can obtain more revenues from cassava farming in two ways: (1) Selling at retail in the local markets of Oredo and Egor local governments (2) Selling in wholesale at Ikpoba Okha local government. In doing so, Inegbedion and colleagues reveal that the farmers would be able to make N33040 per plot of 100 3100 ft (which is approximately N143724 per acre). The policy recommendations from this document is that cassava producers in Nigeria's Edo South District should consider selling their produce at retail and in wholesale in order to obtain maximum output.

Jickson (2021) provides a detailed prologue and history of cassava production in a Zambian context in order to evaluate the role of cassava in food security in two regions; Luapula and North Western (where cassava is grown on large scale as a stable food). The research achieved this by using oral interviews and review of 19thcentury prologues and archived literature. It is submitted that the role of cassava in food security changes with the ever dynamic, blustery government policies and regulations, climate and weather changes and world phenomena. For instance, Jickson (2021) explains that the famine and drought of 1910 in Zambia positioned cassava farming for subsistence use where farmers in the country grew the crop purposely as a means of livelihood for their families. In addition, the ability of cassava to withstand locust invasions catered it as an important food haven for the growing population of the then Northern and Southern Rhodesia copper belt groups. In brief, amplifying his results, Jickson (2021) shows that the role of cassava farming as a part of food security changes with changing technologies, world phenomena, government policies and regulations and climatic upheavals.

Discussions in Zhang et al. (2017) provide justifications of how cassava is used as a source of ethanol fuel. From the understanding that biofuels have been, and continue to be, fronted as the best alternatives to mitigate the challenges of energy climatic changes, the writers sought to investigate whether non-grain crops like cassava can be used as sources of fuel for an enormous growing economy in China. Key reasons are listed as to why non-grain crops are important energy sources (1) World fossil fuels are non-renewable, limited (2) Emission of greenhouse gases by burning fossil fuel heavily impacts climate change (3) Stock of biofuels from non-grain crops are cheaply and readily available. Results of this

document show that 13.64 MJ/L ethanol and 1473 $gCO_{2\text{-}eq}$/L ethanol are obtained from cassava ethanol, providing proof that it is a perfect alternative for fossil fuels. The paper provides policy recommendations on cassava peels and feedstock, majorly advocating that the government of China and other governments prioritise the policies and strategies such as the growth, production and proliferation of non-grain crops like cassava to produce energy.

Oruonye, Adamu & Suleiman (2021) on cassava value chain and food security issues in Nigeria: A Case of IFAD-VCDP Intervention in Taraba State, generated data through secondary (desk) research and archival materials where findings revealed IFAD-VCDP intervention only covers 5 LGAs in Taraba State. The programme trained farmers on how to develop appropriate and usable business plans, financial management and record keeping systems. About 25 participating farmer groups were able to access credit from financial institutions, 24 groups received inputs in cassava production. Some of the challenges annulled include inadequate funding, lack of adequate support to the marketing component, inadequate clean water and lack of improved mechanised cassava processing equipment. Based on the findings, the study recommended increasing support for cassava marketers, financial linkages and establishment of more cassava processing centres.

Costa (2021) studied the cassava value chain in Mozambique and found out that Cassava is the principal starch in Mozambique, it can be stored unharvested for up to 30 months, but fresh cassava lasts only 3 days once harvested. Most processing in Mozambique is artisanal with a view to eliminate cyanogenic glycosides in the 90% of production from pest resistant bitter varieties. Low levels of productivity for cassava compared to elsewhere and poor transportation are the main barriers to the development of a processing industry. The document recommends: adoption of a ‘master plan’, time-limited subsidies for industrial High Quality Cassava Flour, ethanol, and starch; a network of service providers to operate in smallholder areas to deliver improved inputs and extension; promotion of farmers’ associations for better access to service providers; research on pest control in sweet varieties; greater availability of global market intelligence; capacity-building for processing and introduction of legal norms to prevent processors from polluting.

Cassava Value Chains in Western Kenya

Cassava is a staple root crop in Western Kenya, playing a critical role in food security and household income. Despite its potential, production, processing, and marketing of cassava remain underdeveloped. Observations and interviews in Migori and Siaya counties reveal low production levels, limited value addition, and minimal technological adoption,

despite the presence of research institutions such as KALRO and NGOs supporting cassava initiatives (Mulu-Mutuku, 2013; Costa, 2021; Opondo, 2022). Value addition is largely artisanal, involving basic processing steps such as washing, peeling, chipping, and solar drying, with minimal mechanization. This limits the quality and marketability of cassava products, including high-value derivatives such as flour, ethanol, and starch (Inegbedion, Obadiaru & Obasaju, 2020; Apichaya, 2023).

Marketing of cassava in Western Kenya is dominated by small-scale traders and individual consumers, with limited market access and competition from substitute crops like maize and potatoes (Ngenoh, 2021; Opondo, 2022). Marketing margins are influenced positively by factors such as experience, access to extension services, and quantity sold, whereas transport and storage costs and distance to markets negatively affect profitability. Strategic marketing interventions are therefore important to enhance returns for both farmers and traders (Ngenoh, 2021).

The policy environment for cassava remains underdeveloped. While national and county-level policies exist, including the Crops Act, KEPHIS regulations, and the Migori County Roots and Tubers Crop Development Strategy (2022–2028), local policy implementation and stakeholder engagement are limited (Hauser, Ochieng, & Muthoni, 2020; Lutta, Ochieng & Muwonge, 2024). Empirical studies underscore the importance of active stakeholder involvement in policy formulation to ensure relevance, adoption, and effective implementation (Lutta, Ochieng & Muwonge, 2024).

Comparative evidence from Mozambique and Nigeria highlights similar challenges in cassava value chains, including limited mechanization, inadequate market access, and low productivity (Costa, 2021; Oruonye, Adamu & Suleiman, 2021). Interventions such as master plans, time-limited subsidies, capacity-building, and improved extension services have been recommended to improve productivity and value addition (Costa, 2021; Inegbedion, Obadiaru & Obasaju, 2020). In Western Kenya, such interventions could empower farmers to adopt more efficient practices, enhance processing and marketing, and ultimately improve food security and household income.

Overall, the literature and empirical findings indicate that cassava value chains in Western Kenya face challenges in production, processing, marketing, and policy. Addressing these gaps through coordinated policy, technological support, and stakeholder engagement is essential to harness the full potential of cassava as a food security and income-generating crop (Gaffney, Smith & Jones, 2012; Hauser, Ochieng & Muthoni, 2020).

Cassava is a key staple crop in Western Kenya, contributing to food security and household income, yet its production, processing, and marketing remain underdeveloped and

geographically limited (KALRO, 2020; Mulu-Mutuku, 2013; Costa, 2021). Farmers face low productivity, limited access to improved varieties, minimal value addition, high transport and storage costs, and competition from alternative crops such as maize and potatoes (Opondo, 2022; Ngenoh, 2021; Inegbedion, Obadiaru & Obasaju, 2020). The policy and regulatory environment is also weak, with existing national and county policies insufficiently implemented and limited stakeholder engagement reducing effectiveness (Hauser, Ochieng & Muthoni, 2020; Lutta, Ochieng & Muwonge, 2024). Similar challenges in Mozambique and Nigeria, including poor mechanization, low market access, and weak institutional support, reinforce the global relevance of these constraints (Costa, 2021; Oruonye, Adamu & Suleiman, 2021). Enhancing policy, technology, value addition, and market linkages is essential to transform Western Kenya's cassava value chain into a driver of productivity, food security, and household income in Western Kenya (Gaffney, Smith & Jones, 2012; Apichaya, 2023).

METHODOLOGY

The study employed qualitative research design. The study used Key Informant Interviews. Stakeholders interviewed along the value chain were cassava producers, cassava processors, cassava marketers, cassava policy makers and county government officials in charge of the agriculture department.

Analytical Approach Adopted

The study adopted a thematic analysis. Data collected from interviews were transcribed, coded, and categorized into major themes. Repetitive patterns and emerging issues were identified through content analysis, allowing for triangulation across different respondents. This approach enabled the researchers to capture both structural and experiential dimensions of cassava marketing, policy framework and cassava value chains, ensuring that findings reflect the lived realities of farmers, traders, and other stakeholders while remaining grounded in broader policy and market contexts.

Study Area

Migori County is one of the devolved administrative units in Kenya. The County is unique in the sense that it is a home of many ethnic communities such as the Luo, Kisii, Luhya, and Kuria. Due to this diversity, the county has a variety of economic activities with the main activity being agriculture. Geographically, Migori County is bordered by Homabay County to the North, Kisii County to the Northeast, Narok County to the Southeast, The

Republic of Tanzania to the West and South and Lake Victoria to the West as shown in Figure 1. Administratively, Migori County is demarcated into eight Sub counties which are Rongo Sub County, Awendo Sub County, Uriri Sub County, Suna East Sub County, Suna West Sub County, Nyatike Sub County, Kuria West Sub County and Kuria East Sub County. Cassava cultivation is concentrated mainly in Suna West Sub County, Uriri Sub County, Kuria West Sub County and Nyatike Sub County.

Figure 1: Map of Migori County in Kemya. Source: Google Maps

Siaya county is one of the 15 counties forming the Lake Region Economic Block (LREB) and one of the devolved administrative units in Kenya. Formerly Siaya district and fondly referred to as Central Nyanza. Siaya County is divided into six sub counties which are: Alego Usonga Sub County, Gem Sub County, Bondo Sub County, Rarieda Sub County, Rarieda Sub County, Ugunja Sub County and Ugenya Sub County. Siaya is between latitude 0^0 26´ to 0^0 18´ north and longitude 33^0 58 ' east and 34^0 33´. Siaya county is bordered by Kisumu to the Southeast, Kakamega and Vihiga to the Northeastern, Busia to the North and Lake Victoria to the South. Siaya is well known as a conservative area in the former Nyanza province. From the foregoing, it can be noted that traditional crops such as cassava, finger millet and sorghum still form part of the resident's dietary.

Figure 2: Map of Siaya County. Source: Google Maps

Target Population and Sampling Technique

The target population were cassava farmers, traders, and millers in Migori and Siaya counties in Kenya. Key Informant Interviews (KII) were used to collect qualitative data from 24 key informants. In Migori, we interviewed a total of 11 informants. The informants included producers, processors, marketers and value chain participants. In Siaya, we interviewed a total of 10 informants. The informants included producers, processors, marketers and value chain participants. KII provides a greater opportunity to explore the personal experiences of farmers and other actors in the cassava value chain regarding their needs, preferences, challenges, on-farm experience, and possible solutions to these problems. The interviews allow a good understanding of their feelings regarding value-addition mechanisms for food security. The small size of a qualitative sample (20-30) represents the in-depth inquiry involved and the longer contact with the interviewees (Morse, 1995; Creswell, 2003).

Table 1: Respondents Distribution

Day	Thematic Areas	County	No
1	Production, Processing, marketing, policy and Value Chain	Migori	11
1	Production, Processing, marketing, policy and Value Chain	Siaya	10
1	Production, Processing, Marketing, policy and value chain.	Kakamega and Siaya	3

RESULTS

Cassava Marketing

The repetitive patterns reveal that cassava sales have the highest mention at 24% followed by challenges faced when selling cassava, competition and selling strategies. Buyers of cassava products and sources of cassava then follow and finally market share of cassava products. The study revealed limited market share, most buyers are individual consumers, markets are small retailers sourcing the products from individual farmers, low sales, competition from other products like maize and lack of proper selling strategies. Migori County Director of Agriculture stated that:

> *"Issues with bulking and transportation, poor market access, weather variability, limited utilization for agro-processing, and the use of brokers who exploit farmers".*

Florence Owino, a market trader from Siaya County said that,

> *"Main customers are local households, schools, cassava products to the markets are raw cassava and dry cassava, we purchase and sell cassava every day, people purchase cassava for making porridge and ugali, the daily average cassava sales ranges between KES. 1,000 to KES. 3,000, competition and believe that cassava is bitter are some of the main challenges facing cassava marketing, to increase sales, we advocate for reduction in stiff competition, and processing of clean and bright cassava by thorough washing, we meet marketing costs from business; County government charges KES 20 shillings daily and we don't use technology in marketing".*

Veronica Anyango, a market trader in Siaya Said that

> *"Both men and women purchase cassava, we provide dry and raw cassava to the market, the reason why people buy cassava is for ugali flour, the average sales of cassava per week is KES4,800, the key obstacles in selling cassava is bargaining by customers, colour; customers' needs bright cassava, competition from other traders, some customers like potatoes than cassava, lack of knowledge to differentiate between bitter and sweet cassava, one way to increase sales is selling brighter cassava and we meet marketing cost from our daily sales; the government charges KES 20 daily".*

In Migori, Linet Atieno said that

> *"Customers are mostly walk in consumers and retailers, frequency of the purchase depends on the usage of cassava product, most of the walk in customers are consumers, average sales per day depends, at times we sell ten sacks per day, challenges of selling are few customers and low sales, we recommend introduction of cassava processing and packaging factories, we don't incur marketing costs because we don't market and we don't do promotional activities we just convince customers by word of mouth".*

The results of the study indicate clear and repetitive patterns in cassava marketing dynamics across Migori and Siaya counties. Cassava sales emerged as the most frequently mentioned theme (24%), followed by challenges in selling cassava, competition within the market, and selling strategies. Issues related to cassava buyers, sources of cassava, and finally the limited market share of cassava products were also highlighted. These findings align with previous research showing that smallholder cassava markets in East Africa are often characterized by fragmented supply chains, inconsistent market access, and limited value addition (Food and Agriculture Organization [FAO], 2021; Reardon et al., 2019).

Across the counties, the study revealed that cassava producers and traders operate within a constrained market environment. Most buyers are individual consumers, with small retailers sourcing their products directly from farmers. This structure reflects informal, thin markets that have been widely documented in root-and-tuber crop value chains in Africa (Abdoulaye, Wossen & Manyong, 2014). Participants consistently reported low sales volumes, strong competition from substitute products such as maize, and a lack of appropriate marketing strategies. These are challenges that mirror broader constraints in agricultural commercialization (Barrett, 2019).

The Migori County Director of Agriculture underscored structural limitations such as poor bulking systems, transportation constraints, weak market access, weather variability, underutilization of cassava for agro-processing, and exploitation by brokers. These challenges resonate with literature identifying aggregation inefficiencies, transportation costs, and dependence on intermediaries as major barriers to the profitability of smallholder root crop markets (Liverpool-Tasie et al., 2020).

Market traders in Siaya further illustrated micro-level experiences within the cassava value chain. Florence Owino highlighted that her primary customers are households and schools, with daily sales averaging around KES 1,000, and that cassava is mainly bought for

porridge and *ugali*. She emphasized problems such as competition, consumer beliefs about cassava bitterness, and the importance of providing clean, bright cassava to increase sales. Consumer preference for visual quality, especially colour, has similarly been identified as a key determinant of marketability in cassava markets (Morris et al., 2020).

Another trader, Veronica Anyango, reported that customers often bargain heavily, prefer bright cassava, and sometimes substitute cassava with potatoes. She also noted challenges in distinguishing between bitter and sweet cassava varieties, a critical knowledge gap that has been recognized as a safety and marketing issue in smallholder systems (Nweke, 2018). Her recommendation to improve sales through better presentation and customer education aligns with studies showing that improved grading and sorting practices significantly boost root crop market value (Hernandez & Reardon, 2021).

In Migori, Linet Atieno explained that her customers include walk-in consumers and retailers, with sales fluctuating depending on demand, sometimes reaching ten sacks per day. She cited low customer turnout and limited sales as key challenges. Her call for cassava processing and packaging factories echoes national and regional strategies advocating for agro-industrialization and value addition to stabilize cassava markets and increase farmer incomes (Government of Kenya, 2020; FAO, 2021). She also noted the absence of marketing or promotional activities, relying instead on word-of-mouth, a common trend in informal agricultural markets with limited digital integration (World Bank, 2019).

Overall, the findings reveal that cassava marketing in the study areas remains heavily informal, constrained by supply chain inefficiencies, quality concerns, limited value addition, and competition from alternative staples. Addressing these constraints will require targeted interventions such as improved post-harvest handling, investment in agro-processing facilities, market linkage programs, and extension services focused on product differentiation and consumer education.

The foregoing statement makes us understand why commercialization of cassava is a challenge; there is no market for large production.These results confirm results by previous studies such as Opondo (2022) who asserted that transport and storage costs reduce marketing margins of the actors and Ngenoh (2021) who opined that micro entrepreneurs should be strategic in marketing products to achieve marketing margins. From the foregoing, it is evidenced that cassava marketing is not structured hence limiting production and affecting cassava prices. Stakeholders should therefore come in and find a way for finding new markets and means of delivery so that a viable profit margin can be realised.

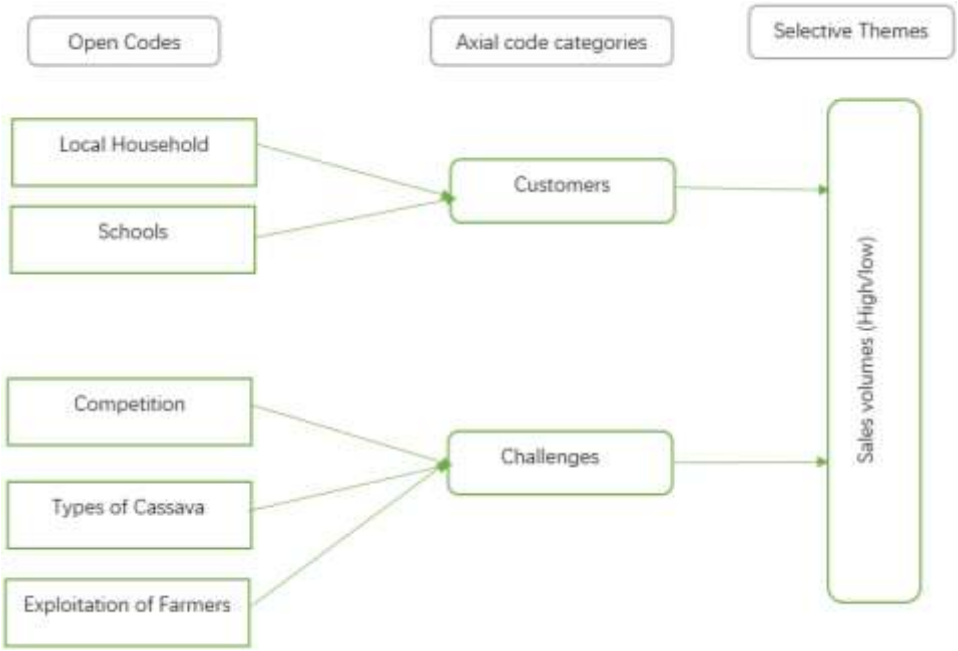

Figure 3: Cassava Marketing Structure

Cassava Policies

In Migori County, Kanyasa ward administrator Michaiel Odhiambo said that

> *"There is no cassava policy currently in place which county agriculture department is promoting about cassava production, all stakeholders should be involved in policy development about cassava production, cassava policy should be developed as cassava production becomes more relevant, policy should be developed about cassava quality and market access, there is no policy gaps currently because there is no policy, however, there exist external policy dialogues, especially by NGOs trying to fill in policy gaps"*

The Migori County Director of Agriculture said that:

> *"We have National and County policies, including the Crops Act, the Kenya Plant Health Inspectorate Service Act (KEPHIS), KARLO, the Migori County Roots and Tubers Crop Development Strategy 2022-2028, and the County Integrated Development Plan (CIDP) promotion"; about stakeholders' involvement, he stated that " stakeholders include Self Help Africa (SHA), KARLO, KEPHIS, Cassava Seed Entrepreneur Farmers, MEDA (a Canadian company promoting virus-free cassava), producers, aggregators, transporters, extensionists, and traders and that they are always involved in policy development".*

In Migori, Director in charge of Agriculture, Billy Nyang'aya said that

> *"National and County level policies exist, at national level, there is Kenya Plant Act and KALRO Act, at county level, there is Migori County Roots and Tuber Crops Development Strategy 2022-2028 and CIDP 2022- 2027 County Development Plan, Self Help Africa (SHA) group, KALRO, KEFIS and MEDA; Canadian Company, promotes virus free cassava, policy gaps include: value chain; varieties promotion, high yield varieties, climate, pest and diseases".*

In Migori, Director in charge of Agriculture, Billy Nyang'aya further said that

> *"National policy on roots and tubers was domesticated to Migori cassava conference in 2023, however, local policies are yet to be exploited, policies which should be in place are seed and system policy, pest and diseases policy, food safety policy, marketing; aggregation and post-harvest handling policy and export market policies"*

Findings from Migori County reveal significant policy gaps in the cassava sector, particularly the absence of a dedicated cassava policy. According to Kanyasa Ward Administrator Michaiel Odhiambo, *"There is no cassava policy currently in place… all stakeholders should be involved in policy development… cassava policy should be developed as cassava production becomes more relevant… there is no policy gap currently because there is no policy"*. His reflections highlight the need for a structured policy framework addressing cassava quality, production, and market access. This aligns with literature emphasizing that policy voids often hinder the development of root and tuber value chains in sub-Saharan Africa (Inegbedion, Obadiaru & Obasaju, 2020; Zhang et al., 2017).

The Migori County Director of Agriculture explained that although several national and county-level policies exist; including the Crops Act, the Kenya Plant Health Inspectorate Service (KEPHIS) Act, the Kenya Agricultural and Livestock Research Organization (KALRO) Act, the Migori County Roots and Tubers Crop Development Strategy (2022–2028), and the County Integrated Development Plan. These do not amount to a comprehensive cassava policy. He noted that diverse stakeholders such as Self Help Africa, KALRO, KEPHIS, MEDA, cassava seed entrepreneur farmers, producers, aggregators, and traders are "always involved in policy development," underscoring the collaborative nature of existing processes. Study consistently highlights that stakeholder involvement improves policy relevance, implementation and acceptance, especially in decentralized agricultural systems (Lutta, Ochieng & Muwonge, 2024; Hansson, 1996b).

Similarly, Migori County's Director in charge of Agriculture, Billy Nyang'aya, reiterated the existence of national and county policies, including the Kenya Plant Act and KALRO Act, as

well as the Migori County Roots and Tuber Crops Development Strategy (2022–2028) and CIDP (2022–2027). However, he noted persistent policy gaps in value chain development, climate adaptation, pest and disease control, and varietal improvement. These are challenges that have been widely documented across East Africa's cassava sector (Republic of Kenya, 2010b; Inegbedion, Obadiaru & Obasaju, 2020). Nyang'aya further stated that while the national roots and tubers policy was domesticated during the 2023 Migori Cassava Conference, local policies on seeds, pest and disease management, food safety, post-harvest handling, and export markets remain undeveloped. These gaps point to an urgent need for localized, implementable policies that address county-specific production and market realities.

Thematic results confirm results by empirical studies such as Lutta, Ochieng & Muwonge (2024) who recognised the importance of collaboration. The study emphasised cross border and transnational innovation which it observed to be improving the value chain; policy should be in place to drive the mentioned initiatives (Hansson, 1996a; Republic of Kenya, 2010a). Furthermore, Inegbedion, Obadiaru & Obasaju (2020), Jickson (2021) and Zhang *et al.,* (2017) provided policy recommendations about cassava production. It is concluded that there should be active stakeholder involvement so that new and effective policies governing cassava production, processing and marketing can be seamless hence contributing in averting food security in Western Kenya.

Overall, the findings underscore the necessity of active and continuous stakeholder engagement in policy formulation. A coherent and comprehensive cassava policy, co-developed through collaboration among government agencies, researchers, NGOs, producers, and traders, would enhance cassava production, processing, and marketing. Strengthening policy frameworks in this way is essential for improving food security and supporting sustainable livelihoods in Western Kenya.

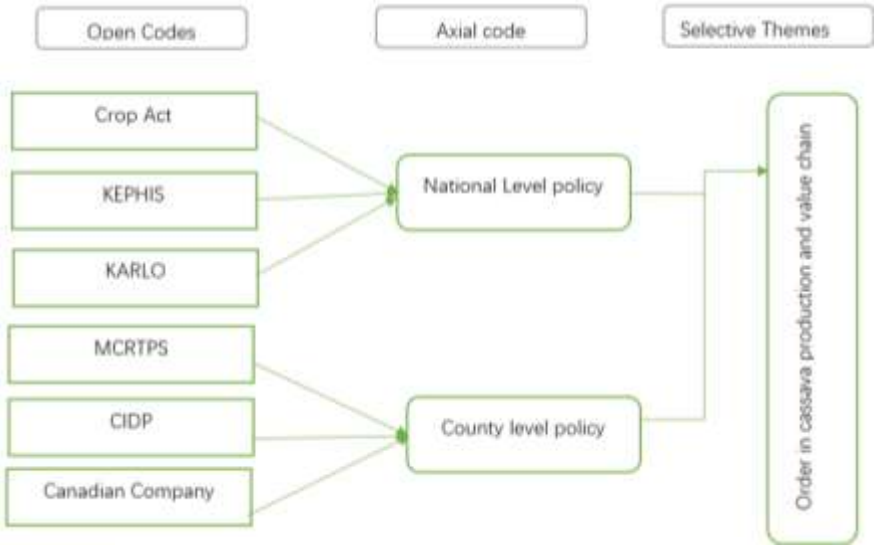

Figure 4: Cassava Policy Structure

Cassava Value Chain

Siaya County has some evidence of technology and value addition such as evidence of sun dyers and improved cassava seeds such as Nase, MH95, MH96 among others. During an interview with the Migori County Director of Agriculture said that;

> *"We operate within the county. Cassava projects cover Migori and Homa Bay County. KARLO is in the Kisii Centre for Research, and KEPHIS has an office in Isebania. KARLO also operates in Kakamega specifically for cassava, and there is another KARLO in Mtwapa".*

Maureen Awuor from Siaya said that

> *"Those who are involved in cassava value chain in Siaya are marketers, retailers in the street and farmers, product types are washed cassava and incomplete processed cassava for home use, adding value include harvesting, peeling, chipping, drying and selling, raw materials are from farmers, solar is used for drying cassava, value chain challenges include lack of market for value added products, poor road networks and lack of money for transportation in the process of value addition".*

An informant from Migori said that

> *"The main cassava value chain actors are consumers and traders. The type of products along the cassava value chain are chapatis, cake, samosa, ugali, porridge and chips and value added in cassava is just washing and processing, we are subsistence farmers, we don't involve ourselves with value addition and we would like to be involved in value addition, we would want to be provided with a cassava peeling machine".*

Findings from Siaya and Migori counties highlight early but limited adoption of technology and value addition in the cassava sector. In Siaya County, there is evidence of technology uptake, including solar dryers and the use of improved cassava varieties such as Nase, MH95, and MH96. These improvements reflect attempts to increase productivity and post-harvest handling efficiency, consistent with studies demonstrating that adoption of improved varieties and solar drying technology enhances cassava quality and shelf life (Okello et al., 2018; Oduor et al., 2020).

The Migori County Director of Agriculture indicated that cassava interventions span multiple counties, including Migori, Homa Bay, Kisii, and Kakamega, with operational support

from institutions such as KARLO and KEPHIS. Such multi-county and institutional involvement is critical for knowledge dissemination, access to improved germplasm, and capacity building, which are essential components for effective value chain development (Adenle, Ogunleye & Kwenin, 2019; FAO, 2021).

Maureen Awuor, a participant from Siaya, outlined the primary actors in the cassava value chain as marketers, retailers, and farmers. The main products include washed cassava and partially processed cassava for home use. Value addition is carried out through harvesting, peeling, chipping, drying, and selling, with solar energy being used for drying. However, participants identified major challenges in value addition, including limited markets for processed products, poor road networks, and inadequate financial resources for transportation. These findings align with broader evidence showing that infrastructural constraints and lack of market access significantly limit value addition in root and tuber crops in sub-Saharan Africa (Reardon et al., 2019; Nweke, 2018).

An informant from Migori highlighted that, while subsistence farmers engage in minimal processing (washing and basic preparation), there is strong interest in deeper value addition activities such as making chapati, cakes, samosas, ugali, porridge, and chips. The request for equipment such as cassava peeling machines indicates that access to appropriate technology is a critical enabler for expanding value addition and moving from subsistence-oriented production to commercial cassava enterprises. This observation is consistent with studies emphasizing that mechanization and processing infrastructure are central to scaling cassava-based value chains and enhancing income generation (Onyango et al., 2020; Liverpool-Tasie et al., 2020).

Overall, the findings suggest that while there is some evidence of technological adoption and value addition in Siaya and Migori counties, significant gaps remain. These gaps include limited market access for processed products, minimal mechanization, financial constraints, and inadequate infrastructure. Addressing these challenges through targeted interventions, such as provision of processing equipment, improvement of road networks, access to credit, and training in value addition, could significantly enhance cassava productivity and profitability, contributing to food security and livelihood improvement in Western Kenya.

However, through observations and interviews conducted in the field, the impact of these research centres as far as value addition is concerned is not felt at all. It can therefore be concluded that much still needs to be done about value addition. Results in this study are consistent with results by Wongpit et al., (2024) and Tirra *et al*., (2019), Lubinga at al., (2024) Lutta, Ochieng & Muwonge, (2024) and Nabahungu *et al.* (2025) who underscored the importance of cassava production and value chain and Apichaya (2023) who analysed the value added to different applications of cassava products and investigated the consumer acceptance

of bioplastic from cassava using a two-step cluster analysis. It recommended that main actors in the Cassava value chain should actively play their roles so that cassava may take its role as a food security crop.

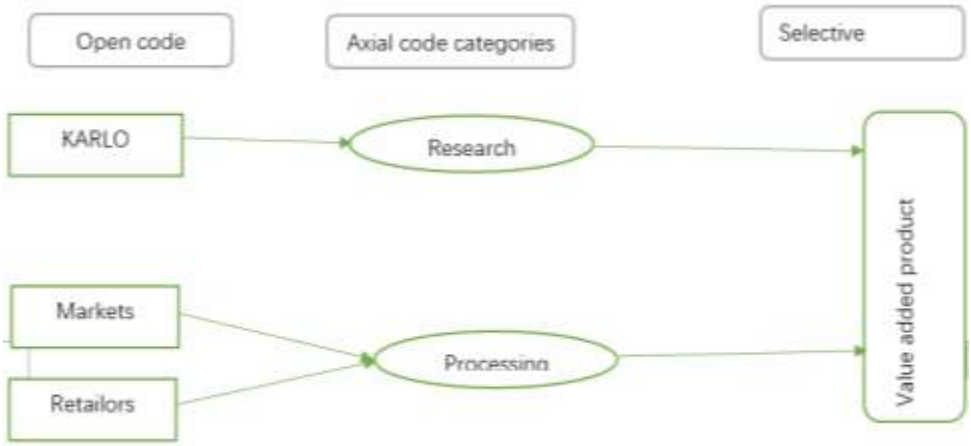

Figure 5: Cassava value chains in western Kenya from the respondents' point of view

DISCUSSIONS

The findings from Migori and Siaya counties highlight significant constraints across the cassava sector, encompassing policy, production, marketing, and value addition. In both counties, the cassava policy environment remains underdeveloped, with limited institutional support and inadequate research infrastructure. Kanyasa Ward Administrator Michaiel Odhiambo noted the absence of a dedicated cassava policy and emphasized the need for stakeholder involvement in policy development, particularly to address quality and market access issues. While national and county policies exist, including the Kenya Plant Health Inspectorate Service (KEPHIS) Act, Kenya Agricultural and Livestock Research Organization (KALRO) Act, Migori County Roots and Tubers Crop Development Strategy (2022–2028), and the County Integrated Development Plan (CIDP 2022–2027), informants reported that these policies are insufficiently localized and fail to cover critical areas such as seeds, pest and disease management, food safety, post-harvest handling, marketing, and export promotion. This aligns with prior studies showing that underdeveloped policies hinder smallholder participation and limit innovation in root crop value chains (Inegbedion, Obadiaru & Obasaju, 2020; Zhang et al., 2017; Jickson, 2021).

Stakeholder involvement in policy development emerged as a key theme, with participants emphasizing that collaboration among farmers, traders, NGOs, research institutions, and government agencies is crucial for effective policy formulation. Empirical studies support this finding, highlighting that participatory approaches enhance policy relevance

and implementation, particularly in decentralized agricultural systems (Lutta, Ochieng & Muwonge, 2024; Hansson, 1996b). The Migori County Director of Agriculture and other key informants stressed that institutions such as KALRO, KEPHIS, MEDA, and Self Help Africa (SHA) are actively engaged in policy dialogues, but localized cassava-specific policies remain largely underdeveloped.

Marketing and sales of cassava products are constrained by several factors. Repetitive patterns in participant responses revealed that cassava sales, competition, selling challenges, and marketing strategies are major concerns. Traders and farmers reported low sales, limited market access, high competition from substitute products like maize, and minimal use of formal promotional channels. Most buyers are individual consumers, and markets are dominated by small retailers sourcing directly from farmers. These findings are consistent with existing literature showing that informal and fragmented markets, coupled with limited commercialization strategies, inhibit value chain growth and income generation for smallholder cassava producers (Reardon et al., 2019; Barrett, 2019; Nweke, 2018).

Value addition in cassava remains nascent. In Siaya County, Maureen Awuor highlighted the use of solar dryers and partially processed products for home consumption. The main value addition activities—harvesting, peeling, chipping, drying, and selling. These are constrained by poor infrastructure, limited market demand for processed products, and lack of capital for transportation. In Migori, subsistence farmers reported minimal processing, with interest in mechanization such as peeling machines to expand value addition. These observations underscore the importance of improving mechanization, processing infrastructure, and market linkages to enhance profitability and sustainability in cassava value chains (Onyango et al., 2020; Liverpool-Tasie et al., 2020; Oduor et al., 2020).

The study's findings indicate that, despite the presence of improved cassava varieties such as Nase, MH95, and MH96, uptake remains limited, partly due to the absence of active regional research hubs and inadequate dissemination of modern farming techniques. This restricts productivity and contributes to the sector's underdevelopment. Multi-county interventions by research and regulatory institutions, including KALRO and KEPHIS, have shown potential to improve access to improved germplasm and promote innovation, but more localized and systematic engagement is required (Adenle, Ogunleye & Kwenin, 2019; FAO, 2021).

CONCLUSION

The policy and regulatory environment surrounding cassava cultivation in Western Kenya remains underdeveloped, with gaps in institutional support and research. The absence of the Kenya Agricultural and Livestock Research Organization (KALRO) in the region limits

innovation in cassava farming, leaving farmers with little access to improved varieties or advanced techniques. The government's initiatives to promote cassava processing and market integration are minimal, contributing to the underdevelopment of the sector. A dedicated policy framework focused on cassava could address these challenges by allocating research funds, supporting value chain development, and facilitating market access for farmers. Such interventions would empower farmers to adopt more efficient farming practices and enhance the overall productivity of the cassava sector in Western Kenya. Therefore, based on the objective of the study which is to assess the potential of value-added cassava products for improving food security and household income in western Kenya, the study concludes that production, processing, marketing of cassava products, policy development about cassava and value addition in cassava in Siaya and Migori (Western Kenya) is underdeveloped. These results are consistent with prior studies highlighting similar gaps in root and tuber crop value chains (Gaffney, Smith, & Jones, 2012; Hauser, Ochieng & Muthoni, 2020; Hauser, Müller & Weber, 2020).

RECOMMENDATIONS

i. Policy Development: Formulate a dedicated cassava policy at both national and county levels, addressing production, processing, marketing, post-harvest handling, export promotion, and pest and disease management. Policy development should actively involve stakeholders, including farmers, traders, NGOs, research institutions, and government agencies.
ii. Research and Innovation: Strengthen the presence and operations of KALRO and other research institutions in Western Kenya to provide farmers with access to improved varieties, pest and disease management strategies, and modern cultivation techniques.
iii. Value Chain and Mechanization Support: Invest in processing infrastructure, including peeling machines, solar dryers, and small-scale processing equipment, to enhance value addition and product quality.
iv. Market Integration: Facilitate linkages between farmers and formal markets, cooperatives, and agro-processing firms to reduce dependency on intermediaries and increase income generation.
v. Capacity Building: Provide targeted extension services and training on modern farming, value addition, post-harvest handling, and marketing strategies to improve efficiency and product quality.
vi. Financial and Infrastructure Support: Enhance access to credit and improve road networks to enable timely transportation and commercialization of value-added cassava products.

Funding: This work is supported by the Center of Excellence at 1890 Institutions, Center of Excellence for Global Food Security and Defense (CEGFSD), project award # 2021-38427-34838, from the U.S. Department of Agriculture's National Institute of Food and Agriculture.

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