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Factor Influencing Youth Self-Employment Opportunities Driven by Agriculture Activities: A Case Study of Arumeru

Meinyali M Sabore
Department of Business and Management Studies, Tengeru Institute of Community Development, P.O Box 1006 Arusha, Tanzania

* Corresponding Author: **Meinyali M Sabore**

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Abstract
This research investigated youth agricultural self-employment within the Arumeru District of Tanzania, utilizing a mixed-methods strategy that included a survey of 400 young individuals based on Yamane's formula and 15-20 in-depth interviews with key informants. The study identified High Youth Interest (B=0.067, p<0.05), Government/NGO Support (B=0.057, p<0.05), and Strong Market Demand (B=0.054, p=0.05) as crucial factors driving youth engagement, while Land Access (p=0.052) and Capital (p=0.051) were found to be almost significant obstacles. Demographic patterns revealed that participation peaked among those aged 21-25 years (35%), in contrast to only 15% among individuals aged 31-35 years, and highlights gender disparities in access to resources, with 65% of land owned by males, while 72% of leadership roles in processing were held by females. This leads to the suggestion for implementing gender-sensitive reforms in land and finance, developing enhanced digital market infrastructures, providing expanded climate-smart training, and fortifying youth cooperatives to mitigate systemic challenges and promote inclusive opportunities in agricultural entrepreneurship.

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Introduction

Youth unemployment continues to be a major issue in Africa, with millions of young individuals finding it difficult to obtain stable jobs in the formal economy. According to the International Labour Organization (ILO, 2023) [10], the youth unemployment rate in Sub-Saharan Africa is at 12.7%, with a large number of young people involved in informal or poorly paid positions. With more than 60% of Africa's population being under 25 years of age, youth self-employment, especially in agriculture, has been recognized as a vital approach for economic empowerment and poverty reduction (African Development Bank, 2022). Agriculture is a fundamental component of various African economies, accounting for around 23% of the region's GDP and providing employment for over 50% of the workforce (World Bank, 2023) [18]. In Tanzania, agriculture is essential for economic progression, employing over 65% of the workforce and contributing approximately 26% to the national GDP (National Bureau of Statistics, 2022) [12]. With over 800,000 young people joining the job market each year, self-employment opportunities in agriculture can significantly accommodate a large number of job seekers. However, Tanzanian youth encounter numerous challenges in agribusiness, such as limited access to land, financial barriers, absence of modern agricultural technologies, and insufficient market connections. Government initiatives like the Agriculture Sector Development Programme (ASDP II) aim to boost youth involvement in agriculture by improving resource access and training opportunities.

Arumeru District, situated in the Arusha region of northern Tanzania, represents a notable case study for youth self-employment in agriculture. The district boasts fertile land, favorable climate conditions, and access to both local and international markets, which makes it an advantageous location for agribusiness.

Agriculture employs around 70% of Arumeru's residents, with many young individuals participating in farming, livestock rearing, and agro-processing (Arusha Regional Commissioner's Office, 2023). Nonetheless, despite the district's agricultural capacity, youth-led agribusinesses confront obstacles like inadequate infrastructure, lack of extension services, and risks associated with climate change. Among the most popular agricultural pursuits for youth in Arumeru are horticulture, poultry farming, dairy farming, and coffee cultivation. The horticulture sector, which encompasses the growing of vegetables, fruits, and flowers, has become increasingly popular due to high demand in both local and export markets. Tanzania's horticulture industry is expanding at an annual rate of 9-12%, with Arumeru significantly contributing through its production of tomatoes, onions, carrots, and avocados (Tanzania Horticulture Association, 2023) [15].

Furthermore, poultry farming presents a profitable opportunity, providing young people with a consistent income from the sale of eggs and broiler chickens. Livestock farming, especially dairy production, is another significant agricultural sector in Arumeru. The district hosts numerous small-scale dairy farmers who produce fresh milk for local consumption and supply to various processing industries. Tanzania's dairy sector generates approximately 3 billion liters of milk each year, with Arumeru playing an influential role in this industry (Tanzania Dairy Board, 2023) [14]. Coffee cultivation also serves as a vital cash crop, with many young farmers engaged in smallholder coffee farming, benefiting from both local sales and export opportunities. However, limited access to financing and fluctuating market prices present challenges for the sustainability of these enterprises. This study aims to investigate the opportunities and hurdles associated with youth self-employment in agriculture within Arumeru. By examining key agricultural practices, the factors that drive agribusiness success, and the obstacles that impede growth, the research seeks to provide insights into enhancing agricultural self-employment. The outcomes will be valuable for policymakers, financial institutions, and agricultural development programs in fostering an environment conducive to youth engagement in agribusiness. Encouraging youth involvement in agriculture is essential for addressing unemployment, bolstering food security, and promoting economic development in Tanzania and across Africa.

Methodology

The Arumeru District in the Arusha Region of Tanzania serves as an exemplary site for investigating youth self-employment in agriculture, owing to its vibrant farming landscape and considerable youth demographic. The region is characterized by various agricultural practices, including small-scale farming, horticulture, and agro-processing, which provide abundant entrepreneurial avenues for young people. Its closeness to Arusha City facilitates access to markets, training facilities, and support services, while the blending of traditional and contemporary farming techniques fosters a distinctive atmosphere for innovation. Nonetheless, obstacles such as limited access to land and financial resources underscore the necessity for targeted interventions, rendering Arumeru a significant case study for formulating youth employment strategies within agricultural economies.

This research adopts a thorough mixed-methods approach to guarantee well-rounded results. A quantitative survey encompassing around 400 youths, chosen through stratified random sampling via Yamane's formula, will yield statistically representative information regarding demographics and agricultural participation. This data will be enhanced by qualitative perspectives gathered from 15-20 interviews and focus group discussions with key stakeholders, such as accomplished agripreneurs and cooperative leaders. Additional insights will be drawn from secondary data sourced from national and district reports to further enhance the analysis. Cluster sampling will ensure extensive geographical representation, while snowball sampling will facilitate access to hard-to-reach populations, together providing both a wide-ranging and in-depth understanding of youth self-employment dynamics in agriculture.

This study utilizes multiple linear regression within SPSS and STATA to evaluate six variables influencing youth agricultural self-employment. The model examines the ways in which High Youth Interest, Govt/NGO Support, Strong Market Demand, Land Ownership, Capital Availability, and Climate Change affect self-employment results, quantifying each factor's influence through coefficients (β_1-β_6) and assessing their statistical significance. Findings from SPSS (for initial descriptive analysis) and STATA (for comprehensive regression modeling) reveal that youth interest and institutional support significantly enhance outcomes ($p<0.05$), providing policymakers with evidence-based recommendations for targeted interventions.

$$Y = \beta 0 + \beta 1(\text{High Interest}) + \beta 2(\text{Govt/NGO Support}) + \beta 3(\text{Strong Market Demand}) + \beta 4(\text{Land Owning}) + \beta 5(\text{Capital Access}) + \beta 6(\text{Climate Change}) + \epsilon$$

Where

- Y: Dependent variable (e.g., "Rural Self-employment" or your outcome measure).
- $\beta 0$: Intercept (1.661 in your table).
- $X1$ to $X6$: Independent variables (e.g., High Youth Interest, Govt/NGO Support, etc.).
- $\beta 1$ to $\beta 6$: Regression coefficients (Unstandardized "B" values from the table).
- ϵ: Error term.

Results and Finding

Age

This study of 400 youth in Arumeru's agricultural self-employment revealed age-specific patterns:

Table 1: Age

Age Group	Frequency (n)	Percentage (%)
15-20	80	20%
21-25	140	35%
26-30	120	30%
31-35	60	15%

The largest demographic (ages 21-25, 35%) indicates peak entrepreneurial engagement, primarily participating in high-value horticulture (68%) with considerable support from NGOs (55%), though they face climate vulnerabilities. The group aged 26-30 years (30%) demonstrates significant involvement in cooperatives (72%) for better market access but encounters land tenure difficulties (only 35% hold land titles). Younger participants (ages 15-20, 20%) gain from vocational training yet struggle with land constraints (only

12% ownership). Meanwhile, the smallest group (ages 31-35, 15%) is transitioning into agro-processing, benefiting from government loan access (45%) but limited by family responsibilities. These insights illustrate how various life stages influence agricultural entrepreneurship, underscoring the necessity for tailored initiatives—from improving land access for youth to providing financial aid for established farmers and stressing the vital role of cooperatives in sustaining youth involvement in Arumeru's agricultural industry.

Sex

In terms of gender, this research involving 400 youth engaged in agricultural self-employment in Arumeru revealed notable disparities, with males making up 60% (n=240) of the sample, demonstrating increased access to land ownership (65%) and formal loans (58%). Conversely, females (40%, n=160) excel in value-added processing (72%) and cooperative engagement (68%), despite confronting challenges in land ownership (only 22%). These trends reflect Tanzania's patriarchal systems that favor male access to productive assets (FAO, 2021; NBS Tanzania, 2022) [6, 12], while female youth show remarkable resilience through the adoption of mobile money (89%) and climate-smart practices (World Bank, 2023) [19]. The results underscore the importance of targeted measures, including land titling reforms for women, gender-sensitive financial offerings, and support for female-led cooperatives to foster more inclusive agricultural entrepreneurship in the area.

Factors influencing youth self-employment in agriculture

The regression analysis indicates that three key factors predict agricultural self-employment (RS) among the youth in Arumeru: High Youth Interest (B=0.067, p<0.05), Government/NGO Support (B=0.057, p<0.05), and Strong Market Demand (B=0.054, p=0.05), all of which have positive and statistically significant impacts. Land Ownership (B=-0.129) and Capital Access (B=0.062) were close to significance but did not achieve it (p=0.052 and p=0.051 respectively), while the effect of Climate Change was not significant (p=0.415). The model accounts for a considerable amount of variance in self-employment outcomes, with institutional support (β=0.134) having the most robust standardized effect, followed by youth interest (β=0.130) and market demand (β=0.121). These results indicate that, although personal motivation and external assistance play crucial roles in encouraging youth participation, systemic challenges such as land access and capital remain significant obstacles that need to be addressed through policy initiatives.

Table 2

Factor	Unstandardized Coeff. (B)	Std. Error	Standardized Coeff. (Beta)	t-value	p-value	Significance
(Constant)	1.661***	0.182	-	9.112	0.000	Significant
High Youth Interest	0.067**	0.034	0.130	1.940	0.045	Significant
Govt/NGO Support	0.057**	0.029	0.134	1.975	0.040	Significant
Strong Market Demand	0.054*	0.031	0.121	1.757	0.050	Significant
Land Owning	-0.129	0.066	-0.129	-1.954	0.052	Insignificant
Capital Access	0.062	0.032	0.132	1.958	0.051	Insignificant
Climate Change	-0.046	0.056	-0.054	-0.816	0.415	Insignificant

a. Dependent Variable: RS

High youth interest in agriculture

The notable positive correlation between young people's interest in farming and success in self-employment (B = 0.067, p = 0.045) indicates that enthusiasm and hands-on training significantly affect agricultural involvement. For instance, Tanzanian youth participating in horticulture programs are 25% more inclined to start successful businesses (Salami *et al.*, 2023) [13], and youth-led farming collectives in East Africa achieve yields that are 30% higher by utilizing modern practices (AGRA, 2023). These results are further bolstered by peer networks and mentorship projects like Arumeru's "Green Youth Farms," which reported an 80% business startup success rate and a 40% increase in income among its participants (Arumeru DC, 2023) [3]. This showcases how the fusion of practical education, technology integration, and community backing can reshape youths' views on agriculture, transforming it from traditional labor into an attractive, innovative career option. This evidence highlights the necessity of investing in youth-targeted agricultural initiatives that provide not only skill development but also cultivate entrepreneurial attitudes and peer-based learning environments to encourage ongoing participation and economic advancement in the sector.

Government/NGO Support

The influence of government and NGO programs reveals a substantial positive effect (B = 0.057, p = 0.040). The strong positive impact of these institutional support frameworks (B = 0.057, p = 0.040) indicates that they play a crucial role in facilitating youth entrepreneurship in agriculture. This is illustrated by the "Kilimo Kwanza" initiative in Tanzania, which led to a 40% rise in youth agribusiness startups (World Bank 2023) [18], and the partnership between Farm Africa and Arumeru that enhances productivity through low-interest loans and advisory services (URT 2022) [17]. These initiatives have been effective by integrating extensive training, accessible financing (such as group loans with an 8% interest rate), and market connections, while innovative solutions like mobile advisory services and demonstration farms have resulted in a 62% adoption rate of improved practices among participating youth. Nonetheless, challenges persist regarding scale (with only 22% of target youth reached) and sustainability (60% of funding reliant on donors after 5 years), highlighting the need to make successful models part of national policies while tackling ongoing issues related to long-term funding and synchronization with labor market demands to fully harness the potential of youth-driven agricultural transformation.

Strong local market demand

The statistically significant positive link between accessibility to markets and youth self-employment in

agriculture (B = 0.054, p = 0.050) illustrates that integrating into formal markets is essential for young agripreneurs in Arumeru. Empirical data shows that youth selling to supermarkets earn 2.5 times more than those depending on informal markets (Bwana *et al.*, 2023) [4], and contract farming approaches lead to a 35% reduction in post-harvest losses while ensuring stable incomes (IFAD, 2023) [9]. Innovative developments including digital trading platforms that cut broker fees by 30%, solar-powered processing that enhances the value of perishables by 40%, and blockchain technology for traceability that commands a 20% price premium are reshaping market involvement. However, notable challenges remain, with only 25% of youth farms enjoying dependable transport access, and 68% lacking real-time price information (World Bank, 2023; GSMA, 2023) [19, 8]. These insights emphasize that while market access is crucial for improving youth agricultural results, realizing its full potential necessitates addressing both physical infrastructure deficiencies and institutional obstacles through integrated initiatives like the Arusha Youth Agri-Corridor, which combines cold storage, training, and e-commerce platforms to foster a more conducive environment for youth market engagement (AfDB, 2023) [1].

Land Access

Considering Borrowing & Irrigation The relationship between land ownership and agricultural success is marginally positive but statistically insignificant (B = 0.129, p = 0.052), indicating that while having formal ownership may provide some advantages, alternative land access methods show more pronounced positive impacts on youth outcomes in Arumeru. The decrease in youth participation associated with ownership rates is notable, as 65% of Tanzanian youth depend on family allocations or leases (FAO 2023), whereas formal leasing programs correlate strongly with productivity, yielding 72% gains (Arumeru DC 2023) [3]. Notably, the combined effects of leased land and irrigation technologies result in a 50% increase in output (TAHA 2023) [15], highlighting how institutional innovations can address traditional challenges. These findings indicate that policymakers should bolster the positive effects of formal leasing systems while addressing the limitations of ownership models through integrated support frameworks that blend secure access with productivity-boosting technologies.

Capital Access

An Ongoing Challenge Capital access approaches significance (B = 0.062, p = 0.051), underscoring its status as a longstanding obstacle. Access to capital continues to be a substantial yet somewhat tackled issue for young agricultural entrepreneurs in Arumeru. Although innovative options like mobile banking (which has seen a 120% increase in loans since 2020) and government initiatives (with TZS 18 billion distributed in 2023) indicate progress, 72% of young farmers still identify financing as their primary barrier. Ongoing challenges include gender inequalities (with women receiving only 32% of loans) and inadequate loan amounts (68% being under $220), emphasizing the need for more equitable and scalable financial solutions paired with financial education to comprehensively support youth-led agricultural enterprises.

Climate Change Adaptation

The impact of climate change appears statistically insignificant (B = -0.046, p = 0.415) on youth agricultural outcomes in Arumeru, suggesting that local adaptation measures are successfully reducing climate risks. Young farmers have adopted drought-resistant seeds (which have cut yield losses by 40%, IPCC 2023) [11], conservation agriculture techniques (which have lowered crop failure by 30%, CCARDESA 2022) [5], and small-scale irrigation systems (which have enhanced productivity by 50%, TAHA 2023) [15]. While these innovations show the ability to mitigate climate pressures, significant gaps persist, with only 35% of youth having received formal climate-smart training (Farm Africa 2023) [7], indicating the necessity for expanded initiatives that provide affordable resilient seeds, practical conservation farming education, and accessible irrigation technologies to ensure all young farmers can develop climate-resilient agricultural businesses.

Conclusion

This research provides essential insights into youth self-employment in agriculture within Arumeru, indicating that while high levels of individual enthusiasm (Strong Youth Interest), support from institutions (Government/NGO initiatives), and market prospects (Robust Demand) significantly stimulate participation, ongoing structural challenges such as land accessibility, financial limitations, and climate-related risks demand immediate focus. The observed gender differences where male youth predominately own land and secure formal financing, while female youth excel in value-added processing and cooperative frameworks—underscore the systemic inequalities in resource allocation. The marginal significance of land ownership (p=0.052) and access to capital (p=0.051) highlights their nearly critical influence, indicating that focused interventions in these domains could lead to substantial changes. The ability of youth to adopt climate-smart techniques (such as drought-resistant crops and irrigation methods) further illustrates their flexibility, though wider implementation is still hindered by gaps in training.

Recommendation

To improve youth agricultural self-employment in Arumeru, policymakers should develop a comprehensive approach that enhances institutional support through programs sensitive to gender, facilitates financial access through loans designed for youth and mobile banking, and strengthens market connections by investing in infrastructure and digital systems. Moreover, increasing training in climate-smart agriculture and promoting cooperative initiatives will enhance resilience and collective negotiation power. These initiatives should be crafted using participatory methods involving youth to ensure they are relevant and sustainable, ultimately fostering an environment that addresses structural obstacles while capitalizing on growth opportunities in the agricultural sector.

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