



ACCESS AND UTILIZATION OF INPUTS FOR MAIZE PRODUCTION: EVIDENCE FROM OBAFEMI OWODE LOCAL GOVERNMENT AREA, OGUN STATE, NIGERIA

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ABSTRACT

The study investigates types, sources, levels, and intensity of input use among maize farmers in Obafemi Owode Local Government Area (LGA), Ogun State. A cross-sectional survey was conducted with 107 randomly selected farmers across four maize-producing communities. Data were collected using structured questionnaires and analyzed with descriptive statistics and the Input Utilization Index (IUI). Findings reveal that farmers predominantly rely on herbicides (99.1%), crude implements (96.3%), inorganic fertilizers (73.8%), and improved seeds (61.7%), while long-term productivity-enhancing inputs such as mechanization (38.3%), irrigation (22.4%), and storage facilities (25.2%) are underutilized. Input acquisition is dominated by personal savings and agro-shops, whereas institutional sources like ADP, research institutes, and NGOs play marginal roles. The IUI distribution shows a near balance between lower-moderate (50.5%) and higher (49.5%) users, with no significant gender differences ($p = 0.599$). These results underscore the systemic constraints of credit access, land tenure insecurity, and weak institutional support, which limit sustainable input use. Strengthening cooperatives, embedding extension services within agro-dealer networks, and revitalizing institutional delivery channels are critical to enhancing maize productivity and farmer welfare in Southwestern Nigeria.

Keywords: Maize, Production, Input, Utilization, Access, Smallholder

INTRODUCTION

Maize (*Zea mays*) remains one of Nigeria's most indispensable staple crops, sustaining rural livelihoods, feeding urban markets, and supplying raw materials to agro-industries, most especially in both human and livestock feed industry. Its versatility, as food, feed, and industrial input, underpins its strategic role in national food security and economic development, especially across Nigeria. In practice, production systems in Nigeria span traditional to increasingly modernized operations; yet widespread constraints in soil fertility, climate variability, and access to quality inputs continue to suppress productivity (e.g., improved seed, fertilizers, mechanization, and irrigation). Nigerian studies document both the gradual uptake of improved technologies and the persistent hurdles that prevent optimal yields (Olagunju *et al.*, 2021; Kosemani & Bamgboye, 2021; Alabi & Safugha, 2022).

Policy interventions such as input subsidies, improved seed distribution, and credit schemes such as the Anchor Borrowers' Programme have been designed to close the yield gap. Evidence from Nigeria shows these efforts can raise productivity, but implementation bottlenecks, weak infrastructure, and corruption frequently blunt their impact (Shehu *et al.*, 2017; Olagunju *et al.*, 2021). Within the value chain, post-harvest inefficiencies and low mechanization further erode farm incomes, reinforcing the need to pair input access with supportive services and storage solutions (Ibrahim *et al.*, 2017; Shehu *et al.*, 2017). Ogun State's Obafemi Owode Local Government Area (LGA) is emblematic of these dynamics. Proximate to major markets in Abeokuta and Lagos, the LGA features a mosaic of smallholder and commercial farms where maize is prominent, yet many producers rely on traditional methods and under-utilize yield-enhancing inputs (high-quality seeds, fertilizers, pesticides, irrigation). The local economy is agriculture-led, with maize among its key crops—a context that makes input access a direct lever for household welfare and regional food supplies.



Across Nigerian settings comparable to Obafemi Owode, scholars consistently highlight the central barriers to input use: high and volatile prices, thin and uneven distribution networks, and prohibitive transaction costs for smallholders (Ammani & Alamu, 2009; Liverpool-Tasie *et al.*, 2017). Financing remains pivotal: when farmers cannot mobilize capital, they forgo improved seeds and balanced fertilization, dampening yield responses (Oluwatayo, 2010; Idi *et al.*, 2019). Moreover, last-mile advisory capacity shapes whether inputs are used efficiently; yet the advisory role of agro-input dealers and public extension is uneven, calling for targeted training and better outreach (Ladele & Omotayo, 2018). Socioeconomic conditions also matter: larger operational scales, social capital, and cooperative membership tend to lift adoption and technical efficiency, whereas poverty and insecure land tenure constrain on-farm investment (Omotilewa *et al.*, 2018; Kehinde *et al.*, 2024; Oladeebo *et al.*, 2017).

Against this backdrop, the present study investigates access to—and utilization of—maize production inputs in Obafemi Owode LGA, Ogun State. It situates local production realities within Nigeria's broader policy and market environment, examining (i) the types and sources of inputs farmers use, (ii) level of access to inputs, (iii) the intensity of input utilization, and (iv) the constraints that impede efficient use. The study provides actionable insights for state and local stakeholders seeking to enhance maize productivity and farmer incomes in the Southwest.

METHODOLOGY

The study was carried out in Obafemi-Owode Local Government Area (LGA) of Ogun State.; Obafemi-Owode is one of the 20 LGAs in Ogun State, Nigeria. It is located in the southwestern region of Nigeria and is one of the prominent LGAs due to its proximity to Lagos state as a major source of market for agricultural produce. A community-based, cross-sectional survey was conducted using a structured questionnaire to quantify farmers' access to and utilization of inputs for maize production. The design captures point-in-time patterns of input use and associated factors and supports both descriptive profiling and multivariate inference. The population comprised active maize farmers that are resident in the LGA during the 2024/2025 production season. Eligibility criteria were: (i) ≥ 18 years; (ii) cultivated maize in the last season; (iii) provided informed consent. Farmers who were only landowners/absentee landlords were excluded.

Minimum sample size was estimated for proportions using Yamane's formula $n = N/1+Ne^2$ (assumed precision $e = 0.09$ when N is large/unknown), and inflated by 10% for non-response and a design effect of 1.3 for clustering at community level, yielding a target of about 110 – 120 respondents. A total of 107 complete interviews were obtained, which provides $>80\%$ power to detect medium effect sizes (Cohen's $h \approx 0.35$) in subgroup comparisons at $\alpha=0.05$. Therefore, a two-stage sampling procedure was used to select 107 maize farmers in the study area. This includes stage 1 (community selection). This involved the selection of four maize-producing communities where Owode, Ofada, Mokoloki, and Mowe) were selected purposively based on concentration of maize farmers and market access due to their proximity to Lagos State. Stage 2 (farmer selection), which involved a selection of farmers within each community, farmer lists were compiled with the help of extension agents and systematic random sampling (interval 10^{th} derived from list size \div quota) selected eligible farmers until community quotas were met, proportionate to farmer counts.

A structured questionnaire (English/Yoruba) covered socio-economic profile (age, sex, education in years, household size, farm size, experience, income, land tenure); input access (availability, distance, usual source, prices, credit access, extension contact); input utilization (types, frequency/intensity, application practices); constraints (cost, distribution, transport, credit, extension, irrigation, storage, pests/diseases); outcomes (self-reported yield/ha, perceived profitability). The tool was pre-tested among 10 farmers in Supare in Ondo State; a non-sample community and internal consistency for multi-item scales was assessed with Cronbach's $\alpha \geq 0.70$ as acceptable.

Dependent variable for this study is the Input Utilization Index (IUI). It is a composite score built from standardized items on use of key inputs (improved seed, inorganic fertilizer, organic fertilizer, herbicides/pesticides, mechanization, irrigation, storage). Items are (1) min-max (5) scaled, then averaged (equal weights) and rescaled into high or low intensity/diversity of use. The independent



variables are the demographics like age (years), sex (male=1), education (years), household size, farm/production characteristics like farm size (ha), experience (years), land tenure (owned/rented/family), primary occupation (farming=1), access to credit access (yes/no), cooperative membership (yes/no), extension contact (number in last 12 months), distance to nearest agro-dealer (km), market access (minutes to market), and input sources such as dominant source (personal savings, agro-shop, cooperative, ADP/research/NGO, open market), coded as dummies. Data collected from both questionnaires and interviews were subjected to descriptive statistics analysis such as frequency distribution, standard deviation percentage, and mean score, while binary logistic regression analysis, and regression analysis were used to analyse relationships between the variables

RESULTS AND DISCUSSION

Type of Inputs Used for Maize Production

The results in Table 1 reveal a distinct pattern in the types of inputs utilized by maize farmers in the study area. The overwhelming reliance on herbicides (99.1%) and crude implements (96.3%) reveal the two important realities of smallholder farmers and the nature of agriculture in Nigeria. While farmers are embracing chemical weed control, they remain tied to traditional, labor-intensive tools the discourages commercialization. This mirrors the observation of Liverpool-Tasie *et al.* (2017), who reported that herbicide adoption is rising rapidly in Nigeria as farmers seek to reduce labour costs and overcome shortages, even as the persistence of crude implements reflects entrenched structural barriers to mechanization.

The moderate uptake of inorganic fertilizers (73.8%) and improved seeds (61.7%) signals partial progress toward modern input use, though far below potential. Olagunju *et al.* (2021) and Kosemani and Bamgboye (2021) have shown that despite government subsidy and distribution programs, high costs, weak supply chains, and poor extension services continue to limit farmers' ability to fully adopt these yield-enhancing technologies. The relatively low use of organic fertilizers (14%) further reflects a knowledge and advisory gap in sustainable soil fertility management, consistent with Kehinde *et al.* (2024), who highlighted limited farmer awareness and poor promotion of integrated soil fertility practices.

Labour patterns also reflect the labour-intensive nature of maize production in the area. With 66.4% hiring labour and only 25.2% relying on family labour, the findings suggest a gradual shift away from unpaid household labour toward wage-based arrangements. This is consistent with Ibrahim *et al.* (2017), who noted that rising rural–urban migration has increased labour scarcity and costs, pushing farmers toward herbicide use and hired labour as substitutes.

Access to land emerges as another critical constraint. A majority of farmers depend on leased/rented land (52.3%), compared to 34.6% with personal land and 19.6% with family-inherited plots. Insecure land tenure discourages long-term investments in capital-intensive technologies such as mechanization (38.3%), irrigation (22.4%), and storage facilities (25.2%). This finding supports Omotilewa *et al.* (2018), who established that tenure insecurity reduces farmers' willingness to invest in sustainable practices and infrastructure, thereby perpetuating low productivity.

The credit dimension highlights another structural barrier. Farmers primarily finance inputs through personal savings (70.1%) and friends/family networks (68.2%), while only 29% access commercial bank loans. Cooperative-based credit is moderately used (55.1%), but its reach remains limited relative to need. These patterns confirm Idi *et al.* (2019) and Oluwatayo (2010), who emphasized that smallholders face exclusion from formal credit markets due to stringent collateral requirements, high interest rates, and weak financial literacy. As a result, farmers depend on informal and personal financing, which constrains their capacity to invest in capital-intensive inputs with long-term benefits. In summary, Table 1 paints a picture of input use that is immediate but unsustainable. Farmers prioritize affordable, short-term yield enhancers—herbicides, inorganic fertilizers, pesticides, and improved seeds—while underutilizing inputs that build long-term resilience and productivity, such as mechanization, irrigation, organic fertilizers, and storage facilities. This reflects a broader challenge documented across Nigeria's agricultural sector: structural limitations in finance, land tenure, extension,



and infrastructure hinder the transition from subsistence-oriented production to more commercially viable, resilient farming systems (Shehu *et al.*, 2017; Alabi & Safugha, 2022).

Table 1: Inputs Used by the Respondents

Input (examples)	Freq	%
Credit from personal savings	75	70.1
Crude implements	103	96.3
Pesticides	45	42.1
Hired labour	71	66.4
Improved seeds	66	61.7
Inorganic fertilizers	79	73.8
Organic fertilizers	15	14.0
Land (lease/rented)	56	52.3
Herbicides	106	99.1
Family labour	27	25.2
Mechanization implements	41	38.3
Land (personal)	37	34.6
Land (family/inheritance)	21	19.6
Credit (cooperative)	59	55.1
Credit (friends/family)	73	68.2
Credit (commercial bank)	31	29.0
Irrigation systems	24	22.4
Storage facilities	27	25.2

Source: Field Survey, 2025.

Sources of Inputs used for Maize Production

Table 2 reveals the sources from which maize farmers in the study area obtain agricultural inputs. The findings show a clear dominance of personal sources (mean = 4.58; SD = 0.77) and agro-shops (mean = 3.95; SD = 1.06) as the most frequent and accessible channels. This underscores the individualized and market-based nature of input acquisition in Nigeria’s maize sector. Farmers’ reliance on personal funds reflects widespread exclusion from institutional financing, consistent with the findings of Idi *et al.* (2019) and Oluwatayo (2010), who emphasized that smallholders often fall back on personal savings when formal credit mechanisms are inaccessible due to collateral requirements and high interest rates.

The relatively strong role of agro-shops aligns with the growing privatization of input distribution in Nigeria. Liverpool-Tasie *et al.* (2017) observed that private dealers increasingly fill gaps left by public distribution systems, particularly for fertilizers and agrochemicals. However, while agro-shops provide reliable access, their services are often limited to commercially profitable inputs like fertilizers and herbicides, with less emphasis on advisory support.

Cooperatives (mean = 2.6; SD = 1.73) offer moderate access, indicating their emerging but still limited role in collective procurement and credit provision. This finding echoes Omotilewa *et al.* (2018), who noted that cooperative membership improves farmers’ access to inputs and enhances bargaining power, but uneven governance and low financial capacity constrain their reach. Similarly, reliance on the open market (2.46) and family (2.45) reflects informal mechanisms that, while accessible, are often unregulated and associated with inconsistent input quality.

Institutional channels such as research institutes (1.92), ADP (1.59), and NGOs (1.50) rank low as sources of inputs, highlighting the weakness of public-sector and development-driven input delivery. This finding corroborates Shehu *et al.* (2017) and Olagunju *et al.* (2021), who argued that institutional input support in Nigeria is hampered by poor logistics, weak extension services, and corruption in subsidy programs. Similarly, the low role of NGOs suggests fragmented and short-term interventions that fail to create sustainable supply chains (Alabi & Safugha, 2022).

Interestingly, the role of co-farmers (1.99) and friends (1.67) as input sources remains low, suggesting that peer-to-peer or social capital-based exchanges are less significant compared to direct



market transactions. This contrasts with findings from Kehinde *et al.* (2024), who reported that social networks often facilitate knowledge and input sharing in rural communities, though the strength of such networks varies across regions.

It was generally shown that evidence in Table 2 reflects a highly individualized system of input acquisition dominated by personal savings and agro-dealer shops in open market, with weak institutional presence and limited cooperative effectiveness. This structure perpetuates uneven access, high costs, and limited advisory support.

Table 2: Source of Inputs among Farmers

Source	Mean	SD	Interpretation*
Personal sources	4.58	0.77	Frequent
Agro-shops	3.95	1.06	Frequent
Cooperative	2.6	1.73	Moderate
Open market	2.46	1.6	Moderate
Family	2.45	1.11	Moderate
Co-farmers	1.99	1.17	Low
Research institutes	1.92	1.52	Low
ADP	1.59	1.27	Low
Friends	1.67	0.98	Low
NGOs	1.5	0.89	Low

Source: Field Survey, 2025

Farmers Access to Inputs

Access to inputs is strongest via personal funds and agro-shops (means 4.58 ± 0.77 and 3.95 ± 1.06), while institutional channels—ADP, research institutes, NGOs—show low access (means 1.50 – 1.92), indicating weak public/institutional last-mile delivery. Cooperatives provide moderate access (2.60 ± 1.73), suggesting room to strengthen group-based procurement and credit linkages. Overall, the mean–SD profile points to highly individualized sourcing with sizeable variability (wide SDs for co-ops/open markets), reinforcing the need to (i) tighten dealer networks, (ii) expand cooperative/credit pathways, and (iii) embed extension/advisory at point-of-sale to improve both the frequency and quality of access

Table 3 presents the degree of farmers’ access to different sources of agricultural inputs. The results indicate that personal sources (mean = 4.58; SD = 0.77) and agro-shops (mean = 3.95; SD = 1.06) are the dominant channels of access, rated as very frequent or frequent. This demonstrates that maize farmers in study area rely heavily on self-financing and private dealers for their input needs. Such patterns are consistent with findings by Liverpool-Tasie *et al.* (2017), who highlighted the central role of agro-dealer networks in Nigeria’s fertilizer and pesticide markets, particularly as public distribution programs have weakened. However, while agro-shops provide consistent access, they often lack embedded extension services, limiting the efficiency of input use.

Cooperatives (mean = 2.6; SD = 1.73) provide moderate access, suggesting their potential as a platform for group-based procurement and credit support, although their variability (high standard deviation) indicates uneven performance across communities. Omotilewa *et al.* (2018) observed that cooperative membership can significantly improve access to inputs and bargaining power, but institutional weaknesses often restrict their effectiveness.

Access through open markets (2.46 ; SD = 1.6) and family networks (2.45 ; SD = 1.11) is low to moderate, underscoring farmers’ continued dependence on informal channels where quality is often uncertain. This finding aligns with Olagunju *et al.* (2021), who noted that informal markets remain important but expose farmers to adulterated or substandard inputs due to weak regulatory oversight.

Institutional and developmental sources—research institutes (1.92), ADP (1.59), and NGOs (1.50)—are rated very low. This highlights the persistent failure of public and non-governmental organizations to serve as effective last-mile distributors of agricultural technologies. Shehu *et al.* (2017) emphasized that bureaucratic inefficiencies, corruption, and inadequate logistics weaken the effectiveness of state-led input delivery. Similarly, Alabi and Safugha (2022) argued that the marginal



role of NGOs in input distribution reflects fragmented interventions that do not scale to broader farmer populations.

Interestingly, friends (1.67) and co-farmers (1.99) also score low as sources of inputs, indicating that peer-to-peer resource sharing plays a minimal role in the study area. While Kehinde *et al.* (2024) found that social networks can enhance access to knowledge and inputs in rural communities, the present results suggest that commercialization and individualized financing dominate in Obafemi Owode, reducing reliance on communal arrangements.

This means that results in Table 3 reveal a skewed access structure dominated by private and personal financing, with weak institutional engagement and limited cooperative efficiency. This pattern perpetuates inequities in input access, as resource-rich farmers can sustain purchases while poorer households face exclusion.

Table 3: Respondents' Access to Inputs

Source of inputs	Mean (1–5)	SD	Access interpretation*
Personal sources	4.58	0.77	Very frequent / high access
Agro-shops	3.95	1.06	Frequent / high access
Cooperative	2.6	1.73	Moderate access
Open market	2.46	1.6	Low–moderate access
Family	2.45	1.11	Low–moderate access
Co-farmers	1.99	1.17	Low access
Research institutes	1.92	1.52	Low access
Friends	1.67	0.98	Low access
ADP (public extension)	1.59	1.27	Low access
NGOs	1.5	0.89	Very low access

Source: Field Survey, 2025.

Inputs Utilization

Table 4 provides insights into the utilization patterns of agricultural inputs among maize farmers in the study area. The results show that farmers rely heavily on inputs that are either low-cost, immediately impactful, or traditionally embedded in production practices. For example, credit from personal savings (mean = 4.69; SD = 0.67), crude implements (4.57; SD = 0.84), pesticides (4.30; SD = 1.03), and hired labour (4.05; SD = 1.22) recorded the highest levels of utilization. This reflects a farming system sustained by personal financing, labour-intensive methods, and quick-return inputs. Such dependence on personal savings for financing aligns with the findings of Idi *et al.* (2019), who observed that Nigerian smallholders often self-finance due to limited access to affordable institutional credit.

The relatively high use of improved seeds (3.82; SD = 0.98) and inorganic fertilizers (3.42; SD = 1.30) indicates partial adoption of modern technologies. This confirms Olagunju *et al.* (2021), who emphasized that while improved inputs are valued for their yield-enhancing potential, high costs and weak distribution systems constrain their universal adoption. Similarly, organic fertilizers (3.09) are moderately used, though still below optimal levels, consistent with Kehinde *et al.* (2024), who identified limited advisory support and weak promotion of sustainable soil fertility practices as barriers.

Land tenure patterns also influence utilization. Farmers recorded higher use of leased/rented land (3.24; SD = 1.96) compared to personal (2.29) and inherited land (2.03). This suggests that short-term access to land through rental dominates in the area, a trend that discourages long-term investments in capital-intensive inputs. Omotilewa *et al.* (2018) similarly noted that insecure land tenure arrangements reduce farmers' willingness to adopt technologies like irrigation and mechanization.

Inputs that support long-term productivity and resilience—mechanization (2.04; SD = 1.47), irrigation (1.30; SD = 0.86), and storage facilities (1.35; SD = 0.92)—are poorly utilized. This finding echoes Alabi and Safugha (2022), who argued that high costs, weak infrastructure, and limited access to credit impede the adoption of capital-intensive technologies among Nigerian smallholders. The low uptake of storage facilities also reflects the persistence of post-harvest losses, reinforcing Ibrahim *et al.* (2017)'s assertion that inadequate storage undermines farm-level profitability and food security.



With respect to credit, only moderate use of cooperative loans (2.79; SD = 1.72) was reported, while loans from friends/family (1.54) and commercial banks (1.45) were rarely used. This highlights farmers' reliance on informal financial mechanisms and the limited reach of formal banking institutions, consistent with Oluwatayo (2010), who found that structural barriers—such as collateral demands and high interest rates—exclude most rural farmers from commercial credit systems.

In summary, Table 4 reveals a system characterized by high utilization of easily accessible, immediate-return inputs and low utilization of capital-intensive or resilience-building technologies. While this strategy helps farmers meet short-term production needs, it undermines long-term productivity growth and resilience to shocks.

It was revealed that farmers heavily utilize private, immediately productive inputs—personal savings (mean = 4.69), crude implements (4.57), pesticides (4.30), hired labour (4.05), and improved seeds (3.82)—while capital-intensive and resilience-enhancing inputs such as mechanization (2.04), irrigation (1.30), and storage (1.35) are under-used. Input sourcing is dominated by personal funds and agro-shops (means = 4.58 and 3.95, respectively), with low engagement of institutional channels (ADP, NGOs, research institutes ≤ 1.92). This pattern indicates a system where farmers prioritize inputs with immediate effects on crop growth and pest control but face financial, distributional, and advisory bottlenecks for longer-term productivity assets. Programmatically, the evidence supports (i) lowering effective prices at agro-dealer last-mile nodes, (ii) cooperative-mediated credit to shift reliance away from personal savings, and (iii) bundling extension/advisory with input delivery—especially for fertilizer calibration, seed choice, IPM, and small-scale irrigation and storage options—to close the gap between routine input use and sustained productivity gains.

Table 4: Inputs Utilization Status among Maize Farmers

Input (examples)	Mean	SD	Interpretation*
Credit from personal savings	4.69	0.67	High use
Crude implements	4.57	0.84	High use
Pesticides	4.3	1.03	High use
Hired labour	4.05	1.22	High use
Improved seeds	3.82	0.98	High use
Inorganic fertilizers	3.42	1.3	High use
Organic fertilizers	3.09	1.18	High use
Land (lease/rented)	3.24	1.96	High use
Herbicides	2.97	1.3	Moderate use
Family labour	2.54	1.32	Moderate use
Mechanization implements	2.04	1.47	Low use
Land (personal)	2.29	1.59	Low use
Land (family/inheritance)	2.03	1.54	Low use
Credit (cooperative)	2.79	1.72	Moderate use
Credit (friends/family)	1.54	1.08	Low use
Credit (commercial bank)	1.45	1.05	Low use
Irrigation systems	1.3	0.86	Low use
Storage facilities	1.35	0.92	Low use

Source: Field Survey, 2025.

Level of Inputs Use among Farmers

Table 4 presents the distribution of farmers across different levels of input utilization, measured by the Input Utilization Index (IUI). The results show a near-even split between farmers in the lower–moderate utilization band (20–54 points; 50.5%) and those in the higher utilization band (55–88 points; 49.5%). This narrow gap suggests that input use intensity is broadly similar across the farming population, with no dominant cluster either in low or high use categories.

The slightly larger proportion of farmers in the lower–moderate category indicates that structural and financial constraints still limit optimal input utilization. This aligns with findings by Shehu *et al.* (2017), who emphasized that high input costs, weak distribution networks, and limited



extension support continue to suppress farmers’ ability to intensify production. Olagunju *et al.* (2021) further observed that even when improved seeds and fertilizers are available, inconsistent access to credit prevents farmers from sustaining high levels of use.

The presence of nearly half the farmers in the higher utilization band reflects gradual adoption of productivity-enhancing technologies, particularly herbicides, inorganic fertilizers, and improved seeds. This observation supports Liverpool-Tasie *et al.* (2017), who documented the increasing uptake of modern inputs among Nigerian smallholders, particularly where agro-dealer networks are strong. However, the fact that the distribution is almost evenly split highlights persistent inequality in access, where resource-rich farmers can maintain higher input intensity while resource-poor farmers remain constrained.

The even distribution also suggests that input utilization may be influenced less by gender or individual characteristics and more by shared structural challenges. This interpretation is consistent with Kehinde *et al.* (2024), who noted that socioeconomic conditions such as land tenure security, cooperative membership, and access to markets are stronger determinants of input use than gender differences alone.

This finding reflects a balanced but constrained utilization profile, where roughly half of the farmers achieve high input intensity while the other half remain in lower bands due to cost, credit, and access barriers. The level of input utilization is almost evenly split between lower–moderate (20–54) and higher (55–88) users (50.5% vs. 49.5%), indicating a balanced intensity profile across the farmer population. This narrow gap suggests broadly similar access conditions and constraints—consistent with the report’s narrative that farmers face shared market channels and advisory environments. The absence of a significant gender difference in IUI ($p=0.599$) implies that interventions should remain gender-responsive but not assume systematic gender gaps in overall input intensity; instead, programs can focus on structural levers (credit timing, last-mile dealer reliability, fertilizer calibration support, and small-scale irrigation/storage options) that raise intensity for both groups.

Table 4: Level of Inputs Use among Farmers

Utilization band (IUI score)	N = 107	% of farmers	Interpretation
20–54 (lower–moderate use)	54	50.50	Slightly larger share of farmers in the lower–moderate band
55–88 (higher use)	53	49.50	Nearly as many farmers operate at a higher utilization intensity

Source: Field Survey, 2025

Gender Differences in Input Utilization

Table 5 examines gender differences in the intensity of input utilization among maize farmers using the Input Utilization Index (IUI). The results show that male farmers recorded a slightly higher mean IUI score (54.22 ± 8.55) compared to female farmers (53.31 ± 7.91). However, the difference is statistically insignificant ($t(105) = 0.53$; $p = 0.599$), suggesting that gender does not play a major role in determining overall input utilization in the study area.

This finding contrasts with common narratives in African agriculture that emphasize a gender gap in access to inputs, often to the disadvantage of women (Doss & Morris, 2001; Peterman *et al.*, 2014). In many contexts, female farmers face barriers in land ownership, credit access, and extension services, which depress their input use relative to men. However, the absence of significant gender differences in this study indicates that both male and female farmers in the study area share broadly similar structural conditions that influence their farming practices.

One explanation for this pattern is the predominance of informal and individualized sources of input financing, such as personal savings and agro-shops, which dominate across the farmer population (as shown in Tables 2 and 3). Since these channels are not strongly gender-discriminatory, men and women alike rely on similar mechanisms, leading to comparable utilization outcomes. Kehinde *et al.* (2024) similarly observed that in some Nigerian farming communities, constraints such as input costs,



land tenure insecurity, and weak institutional support affect both genders equally, thereby minimizing gender gaps.

Nevertheless, the insignificant gender difference should not obscure the need for gender-sensitive agricultural policies. Even when overall input intensity is similar, women may still face unique constraints in decision-making power, labour allocation, and access to productive assets (FAO, 2011). Programs that strengthen women’s cooperative participation, enhance access to formal credit, and provide targeted extension support can help ensure that gender parity in input utilization translates into equitable productivity outcomes.

The finding indicates that gender is not a statistically significant determinant of input utilization intensity in the study area. Instead, broader systemic barriers—such as credit constraints, high input costs, and limited institutional support—affect both male and female farmers alike.

Table 5: Gender Differential in Inputs Utilization

Group	Mean IUI	SD	t(df)	p-value	Interpretation
Male	54.22	8.55	0.53 (105)	0.599	No significant difference
Female	53.31	7.91	—	—	—

Source: Field Survey, 2025

CONCLUSION AND RECOMMENDATION

The study demonstrates that maize production in Obafemi Owode LGA is characterized by partial modernization within structurally constrained farming systems. Evidence shows that farmers predominantly utilize short-term, immediately effective inputs—particularly herbicides, crude implements, inorganic fertilizers, hired labour, and improved seeds—while long-term productivity-enhancing technologies such as mechanization, irrigation, organic fertilizers, and storage facilities remain significantly underutilized. Access to production inputs is largely individualized and market-driven, with personal savings and agro-dealer shops serving as the principal acquisition channels, whereas institutional sources such as ADPs, research institutes, NGOs, and formal credit systems play marginal roles.

This pattern reflects systemic barriers, which include limited access to affordable credit, weak institutional delivery mechanisms, and insecure land tenure that restrict farmers’ ability to invest in capital-intensive technologies and adopt sustainable production practices. The Input Utilization Index further reveals a nearly equal distribution between lower–moderate and higher utilization groups, indicating that while adoption of some modern inputs is occurring, intensity of use remains constrained by shared structural limitations rather than individual characteristics. Notably, gender was not found to significantly influence input utilization, suggesting that both male and female farmers operate under similar systemic conditions that shape production decisions. The findings thus, portray a maize production system that is adaptive but not yet transformation-ready: farmers prioritize inputs that address immediate production needs but lack the institutional, financial, and infrastructural support required to transition toward resilient, commercially oriented, and sustainable agricultural systems. Based on the study’s empirical findings, the following recommendations are proposed to enhance access to and utilization of agricultural inputs for maize production in the study area:

1. Public agencies such as Agricultural Development Programmes (ADPs), research institutes, and government-supported initiatives should be revitalized to improve last-mile delivery of inputs. Their currently minimal role in farmers’ input acquisition indicates the need for better logistics, transparency, and farmer targeting mechanisms.
2. Financial institutions and agricultural credit schemes should design farmer-friendly loan products with reduced collateral requirements, flexible repayment schedules, and lower interest rates. Since most farmers rely on personal savings for input purchase, expanding accessible credit would enable investment in productivity-enhancing technologies.
3. Strengthening farmer cooperatives can improve bargaining power, reduce transaction costs, and facilitate collective access to inputs and credit. Capacity-building programs should focus on



cooperative governance, financial management, and linkage with input suppliers and financial institutions.

4. Since agro-shops constitute a major input source, embedding extension advisory services within agro-dealer outlets would ensure farmers receive technical guidance on proper input selection, calibration, and application. This integration would enhance both efficiency and sustainability of input use.

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