

Demographic Factors Influencing The Adoption Of Agripreneurship Practices Among Smallholder Maize Farmers In Niger State, Nigeria

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Abstract

The adoption of agripreneurship practices has emerged as an important pathway for enhancing agricultural productivity, profitability, and livelihood outcomes among smallholder farmers. However, adoption levels remain uneven, partly due to variations in farmers' demographic characteristics. This study explored the demographic factors influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State, Nigeria. Specifically, the study examined the influence of age, gender, marital status, household size, educational level, and farming experience on farmers' adoption behaviour. The study adopted a qualitative research design using Focus Group Discussions (FGDs) to obtain in-depth insights into farmers' experiences and perceptions. A total of 50 smallholder maize farmers were purposively selected from the three senatorial districts of Niger State. Data were collected during the 2024 farming season and analyzed using reflexive thematic analysis. To ensure the credibility and dependability of the findings, inter-coder reliability was assessed using Percentage Agreement and Cohen's Kappa statistics. The findings revealed that demographic characteristics play a significant role in shaping agripreneurship adoption. Younger farmers were generally more receptive to innovation and risk-taking, while older farmers relied more on established farming practices. Gender influenced access to land, finance, and productive resources. Marital status affected household decision-making and investment behaviour, while household size influenced labour availability for farm operations. Educational attainment enhanced innovation awareness, entrepreneurial orientation, and managerial competence, whereas farming experience strengthened adaptive capacity, problem-solving ability, and risk management. The study concludes that agripreneurship adoption is strongly influenced by demographic factors that shape farmers' access to resources, knowledge, labour, and decision-making opportunities. The study recommends that agripreneurship interventions, extension programmes, and agricultural policies should be tailored to farmers' demographic characteristics to promote inclusive and sustainable adoption among smallholder maize farmers in Nigeria.

Keywords: agripreneurship, adoption, demographic factors, smallholder maize farmers, qualitative study, Niger State, Nigeria.

Introduction

Agriculture remains a critical sector for economic development, employment generation, food security, and poverty reduction across Sub-Saharan Africa. Within the agricultural sector, smallholder farmers account for the majority of food production and play a significant role in sustaining rural livelihoods and national food systems (FAO, 2023). In Nigeria, maize is one of the most important staple and commercial crops, contributing substantially to household income, livestock feed supply, industrial raw materials, and national food security. Despite its importance, maize productivity among smallholder farmers remains below attainable levels due to persistent challenges relating to limited access to technology, finance, markets, extension services, and entrepreneurial capabilities (Ayanwale et al., 2024;

FAO, 2023). In response to these challenges, agripreneurship has emerged as an important strategy for enhancing agricultural transformation and improving farmers' livelihoods. Agripreneurship extends beyond conventional farming by integrating innovation, opportunity recognition, value addition, market orientation, risk management, and business-oriented decision-making into agricultural production systems (Adelekan et al., 2025; Nwankwo & Chisom, 2025). Through agripreneurship, farmers are better positioned to improve productivity, profitability, sustainability, and food security while enhancing their resilience to changing economic and environmental conditions. Consequently, governments, development agencies, and agricultural institutions increasingly promote agripreneurship as a pathway

for rural development and agricultural modernization across developing economies (World Bank, 2024).

Although agripreneurship offers significant opportunities for agricultural transformation, evidence suggests that farmers do not adopt agripreneurial practices uniformly. Adoption decisions are influenced by a combination of socioeconomic, institutional, technological, behavioural, and environmental factors. Among these determinants, demographic characteristics have consistently emerged as important influences on innovation adoption and entrepreneurial behaviour in agriculture (Kassem et al., 2025; Rahman et al., 2025). Demographic attributes shape farmers' access to resources, exposure to information, decision-making processes, risk perceptions, labour availability, entrepreneurial orientation, and adaptive capacity, thereby influencing their willingness and ability to adopt agripreneurship practices. For instance, age has been widely recognized as an important determinant of innovation adoption. Younger farmers are often associated with greater openness to innovation, stronger entrepreneurial aspirations, and higher willingness to experiment with new technologies, while older farmers may rely more heavily on established farming practices and accumulated experience (Abdul-Rahman et al., 2025; Kassem et al., 2025). Gender also plays a significant role in shaping access to productive resources, agricultural information, extension services, land ownership, and financial opportunities. Across many developing countries, women farmers frequently encounter structural barriers that limit their participation in entrepreneurial agricultural activities despite their substantial contribution to agricultural production (FAO, 2024; Doss et al., 2025). Similarly, marital status influences household decision-making structures, resource allocation, labour mobilization, and risk-sharing arrangements that affect agripreneurship adoption. Household size has also been linked to labour availability and production capacity, particularly among smallholder farming households where family labour remains a major source of agricultural manpower (Mugonola et al., 2025). Education enhances farmers' ability to access, interpret, and utilize information, thereby strengthening innovation adoption capacity, managerial competence, and entrepreneurial orientation (Rahman et al., 2025). Farming experience equally contributes to adaptive capacity,

practical knowledge, and enterprise management skills, although excessive reliance on traditional knowledge may sometimes discourage the adoption of unfamiliar innovations (Danso-Abbeam & Baiyegunhi, 2017; Abdul-Rahman et al., 2025).

However, existing empirical studies have largely examined demographic determinants of agricultural innovation adoption using quantitative approaches and statistical modelling techniques (Kassem et al., 2025; Rahman et al., 2025). While such studies provide valuable insights into the relationships between demographic variables and adoption behaviour, they often offer limited understanding of how farmers themselves perceive and experience these demographic influences within their specific social and agricultural contexts. Consequently, there remains a need for qualitative evidence capable of explaining the mechanisms through which demographic factors shape agripreneurship adoption among smallholder farmers. This need is particularly important in Niger State, Nigeria, where maize production constitutes a major agricultural activity and where smallholder farmers operate under diverse socioeconomic, institutional, and environmental conditions. Also, despite the strategic importance of maize farming within the state, empirical evidence examining farmers' lived experiences regarding the demographic factors influencing agripreneurship adoption remains limited.

Against this background, this study explores the demographic factors influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State, Nigeria. Specifically, the study examines how age, gender, marital status, household size, educational attainment, and farming experience shape farmers' adoption decisions and entrepreneurial behaviour. Understanding these experiences is essential for designing context-specific interventions aimed at enhancing agripreneurship adoption and agricultural transformation. By providing qualitative insights into these demographic influences, the study contributes to the growing literature on agripreneurship adoption and offers evidence-based recommendations for promoting inclusive and sustainable agricultural transformation among smallholder maize farmers.

DEMOGRAPHIC FACTORS AND THEORY OF PLANNED BEHAVIOR (TPB)

Age and Agripreneurship Adoption

Age is widely recognized as one of the most influential demographic factors affecting farmers' adoption of agricultural innovations and entrepreneurial practices. The relationship between age and innovation adoption is often explained through differences in risk perception, entrepreneurial orientation, information-seeking behaviour, and adaptive capacity. Younger farmers are generally considered more willing to experiment with new technologies, explore market opportunities, and invest in innovative farming practices because they tend to possess greater risk tolerance and stronger entrepreneurial aspirations (Anzum et al., 2023; Abdul-Rahman et al., 2025; Kassem et al., 2025). Their greater exposure to information and communication technologies further enhances their ability to access knowledge relating to improved production methods, market opportunities, and agribusiness innovations.

Recent studies have shown that younger farmers are more likely to adopt digital agricultural technologies, climate-smart farming practices, precision agriculture tools, and market-oriented production systems than their older counterparts (Rahman et al., 2025; Adekunle & Ibrahim, 2025). This tendency is often attributed to their willingness to embrace change and their longer planning horizon for recovering investments associated with innovation adoption. Younger farmers are therefore frequently viewed as key drivers of agricultural modernization and agripreneurship development. Conversely, older farmers often possess extensive farming experience, accumulated indigenous knowledge, and a deep understanding of local production systems. These attributes can enhance decision-making and improve farm management outcomes. However, several studies have reported that older farmers may demonstrate greater resistance to innovation because of their attachment to traditional farming practices and concerns about the risks associated with unfamiliar technologies (Serebrennikov et al., 2020; Haruna et al., 2023). Such conservatism may reduce their willingness to adopt agripreneurial innovations, particularly where the benefits are uncertain or require substantial financial investment.

Nevertheless, the relationship between age and agripreneurship adoption is not always straightforward. Some studies have found that older

farmers are more likely to adopt innovations when they perceive clear economic benefits, possess adequate financial resources, or receive strong institutional support through extension services and training programmes (Khan et al., 2025; Abdul-Rahman et al., 2025). This suggests that age may influence adoption indirectly through factors such as access to information, experience, resource ownership, and social networks.

Within the agripreneurship context, age therefore represents a critical determinant of entrepreneurial behaviour, influencing farmers' willingness to innovate, invest, and transform agricultural production into commercially viable enterprises. Understanding age-related differences in adoption behaviour is important for designing targeted interventions that address the specific needs and capacities of different farmer categories.

Gender and Agripreneurship Adoption

Gender is a critical determinant of agripreneurship adoption because it influences access to productive resources, decision-making power, agricultural information, financial services, and institutional support. Across many developing countries, agricultural production systems are characterized by gender inequalities that shape farmers' ability to participate in entrepreneurial and innovation-driven agricultural activities. Consequently, male and female farmers often experience different opportunities and constraints in adopting agripreneurship practices. Studies have consistently shown that male farmers generally enjoy greater access to land ownership, agricultural credit, extension services, productive inputs, and market opportunities than female farmers (Balana et al., 2022; Shahbaz et al., 2023; FAO, 2024). These advantages often place men in a better position to invest in improved technologies, commercial farming activities, and agribusiness ventures. In contrast, women frequently face institutional and socio-cultural barriers that limit their access to resources necessary for entrepreneurial agricultural development.

Recent evidence suggests that gender disparities continue to affect innovation adoption across Africa and other developing regions. Neway and Zegeye (2022) reported significant differences in agricultural technology adoption between male-headed and female-headed households, while Breitenbach and Foguesatto (2023) found that female farmers often encounter greater challenges in accessing agricultural support services and entrepreneurial opportunities.

Similarly, Rola-Rubzen et al. (2020) argued that targeted interventions aimed at reducing gender inequalities can significantly enhance women's participation in agricultural entrepreneurship. However, emerging studies indicate that women are increasingly playing important roles in agribusiness and entrepreneurial agriculture. For example, Chijindu et al. (2021) found that female entrepreneurs constituted the majority of agripreneurs among small-scale farmers in Anambra State, Nigeria, suggesting that women can actively engage in entrepreneurial agriculture when supportive conditions exist. These findings challenge traditional assumptions regarding gender roles and highlight the growing contribution of women to agricultural transformation. Within the agripreneurship context, gender influences farmers' ability to acquire resources, access opportunities, and implement innovations effectively. Understanding these gender-based differences is therefore essential for promoting inclusive agripreneurship adoption and ensuring that both male and female farmers benefit from agricultural transformation initiatives.

Marital Status and Agripreneurship Adoption

Marital status is an important household-level factor that influences agripreneurship adoption through its effects on labour availability, resource mobilization, household decision-making, and risk-sharing arrangements. Farmers' marital circumstances often shape their economic responsibilities, social support systems, and capacity to undertake entrepreneurial investments within agricultural enterprises. Married farmers generally benefit from shared labour contributions, pooled financial resources, and collective decision-making structures that may facilitate the adoption of agripreneurship practices (Haruna et al., 2023; Afolabi et al., 2025). The presence of a spouse often provides additional support for farm operations, enterprise management, and household welfare, thereby reducing some of the risks associated with innovation adoption. Consequently, married farmers may be more willing to invest in improved technologies and market-oriented agricultural activities.

Furthermore, marriage can enhance access to social networks and community support systems that provide information, labour assistance, and financial opportunities. These social and economic advantages may strengthen farmers' capacity to engage in entrepreneurial farming activities and improve their ability to withstand production and market

uncertainties. However, marital status may also introduce additional household obligations that compete for limited financial resources. Larger family responsibilities, educational expenses, healthcare needs, and household consumption demands can reduce the funds available for agricultural investments. As a result, the influence of marital status on agripreneurship adoption is often shaped by the balance between household support mechanisms and competing resource demands. Within the agripreneurship context, marital status therefore influences how farmers allocate resources, manage risks, and make investment decisions. Understanding these household dynamics is important for explaining variations in adoption behaviour among smallholder farming households.

Household Size and Agripreneurship Adoption

Household size has long been recognized as an important determinant of agricultural innovation adoption because it influences labour availability, resource allocation, production capacity, and household consumption requirements. In many rural farming communities, family labour remains a major source of agricultural manpower, making household size particularly relevant to agripreneurship adoption. Several studies have reported that larger households often possess greater labour resources that can support labour-intensive agricultural activities and facilitate the implementation of innovative farming practices (Anzum et al., 2023; Genet & Feyso, 2020; Oyetunde et al., 2025). Family members may contribute to planting, weeding, harvesting, processing, marketing, and record-keeping activities, thereby reducing production costs and increasing operational efficiency. This labour advantage can enhance farmers' ability to adopt and sustain agripreneurship practices. Larger households also create opportunities for knowledge sharing and intergenerational learning. Family members may introduce new ideas, provide entrepreneurial support, and contribute diverse skills that strengthen farm management and enterprise development. Such interactions can facilitate innovation adoption and improve the performance of agricultural enterprises. However, household size may also impose significant economic pressures. Larger families often require greater expenditures on food, education, healthcare, and other household needs, which may reduce the financial resources available for agricultural investments. Consequently, while larger households may provide labour advantages, they may simultaneously increase resource constraints. The

relationship between household size and agripreneurship adoption is therefore complex and context-dependent. Its influence depends largely on whether the benefits derived from additional labour outweigh the financial demands associated with maintaining larger households.

Educational Attainment and Agripreneurship Adoption

Education is widely regarded as one of the most important human capital factors influencing agricultural innovation adoption and entrepreneurial development. Educational attainment enhances farmers' ability to acquire, interpret, and apply information relating to production technologies, market opportunities, enterprise management, and innovation adoption. Studies have consistently shown that farmers with higher levels of formal education are more likely to adopt improved agricultural technologies and entrepreneurial farming practices than less educated farmers (Anzum et al., 2023; Haruna et al., 2023; Ibrahim et al., 2025). Education improves literacy, analytical skills, communication abilities, and decision-making competence, thereby strengthening farmers' capacity to evaluate innovation benefits and risks effectively. Furthermore, education facilitates access to extension information, training programmes, digital technologies, and market intelligence. Educated farmers are generally better positioned to understand technical recommendations, maintain farm records, conduct financial analysis, and participate in value-chain activities (Foguesatto & Machado, 2022; Chukwu & Okeke, 2025). These competencies are fundamental to successful agripreneurship implementation.

Research has also shown that education strengthens entrepreneurial orientation by encouraging creativity, innovation, opportunity recognition, and strategic planning (Yoganandan et al., 2022; Bannor et al., 2021). Through these mechanisms, education contributes not only to technology adoption but also to the development of sustainable agribusiness enterprises. Despite these advantages, many rural farmers possess limited formal education. Consequently, practical demonstrations, farmer field schools, extension programmes, and peer-learning approaches remain important mechanisms for bridging knowledge gaps and promoting agripreneurship adoption among less educated farming populations.

Farming Experience and Agripreneurship Adoption

Farming experience represents an important experiential resource that influences farmers' knowledge, adaptive capacity, risk management skills, and innovation adoption behaviour. Through years of farming practice, farmers accumulate valuable knowledge regarding crop production, environmental conditions, market dynamics, and resource management. Several studies have demonstrated that experienced farmers possess deeper understanding of local farming systems and are often better equipped to evaluate agricultural innovations and adapt them to specific production environments (Haruna et al., 2023; Anzum et al., 2023; Usman et al., 2025). This accumulated knowledge enhances farmers' confidence in making production decisions and managing agricultural risks. Experience also strengthens adaptive capacity by enabling farmers to respond effectively to challenges such as climate variability, pest outbreaks, market fluctuations, and resource constraints. Experienced farmers often draw upon lessons learned from previous farming seasons to improve decision-making and enterprise performance (Yoganandan et al., 2022; Dias et al., 2019). However, farming experience does not always translate into greater innovation adoption. Some studies have reported that highly experienced farmers may be reluctant to abandon traditional practices that have proven successful over time (Serebrennikov et al., 2020). Such attachment to established methods can sometimes reduce openness to new technologies and entrepreneurial approaches. Consequently, farming experience exerts both positive and negative influences on agripreneurship adoption. While experience enhances knowledge, resilience, and adaptive capacity, it may also encourage conservatism depending on farmers' perceptions of innovation benefits and risks. Understanding this dual influence is important for designing interventions that leverage farmers' experience while encouraging openness to entrepreneurial innovation.

Theory of Planned Behavior (TPB) – Icek Ajzen (1991)

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), is one of the most widely applied behavioural theories for explaining individuals' intentions and decisions regarding the adoption of innovations and entrepreneurial activities. The theory posits that behaviour is primarily determined by behavioural intention, which is influenced by three key constructs: attitude toward the behaviour, subjective norms, and perceived behavioural control.

Attitude toward the behaviour refers to an individual's positive or negative evaluation of performing a particular behaviour. In the context of agripreneurship, attitude reflects farmers' perceptions regarding the benefits, risks, profitability, and usefulness of agripreneurship practices. Farmers who perceive agripreneurship as beneficial are more likely to develop favourable intentions toward adoption. *Subjective norms* refer to the perceived social influence exerted by family members, peers, community leaders, farmer groups, and other significant actors. These social influences shape farmers' decisions by creating expectations regarding acceptable or desirable farming practices. In rural communities, social approval or disapproval often plays an important role in determining whether farmers adopt new innovations. *Perceived behavioural control* refers to an individual's

perception of their ability to perform a particular behaviour successfully. It reflects the extent to which individuals believe they possess the knowledge, skills, confidence, and capacity necessary to undertake an activity. Farmers who believe they can successfully implement agripreneurship practices are more likely to develop stronger intentions to adopt them.

The Theory of Planned Behavior has been widely applied in agricultural innovation and entrepreneurship studies because it provides a useful framework for understanding why individuals choose to adopt or reject innovations. Studies have demonstrated its effectiveness in explaining entrepreneurial intentions, technology adoption, and agribusiness participation among farmers and rural youth (Adekunle et al., 2021; Quadri et al., 2024; Oyelakin et al., 2026).

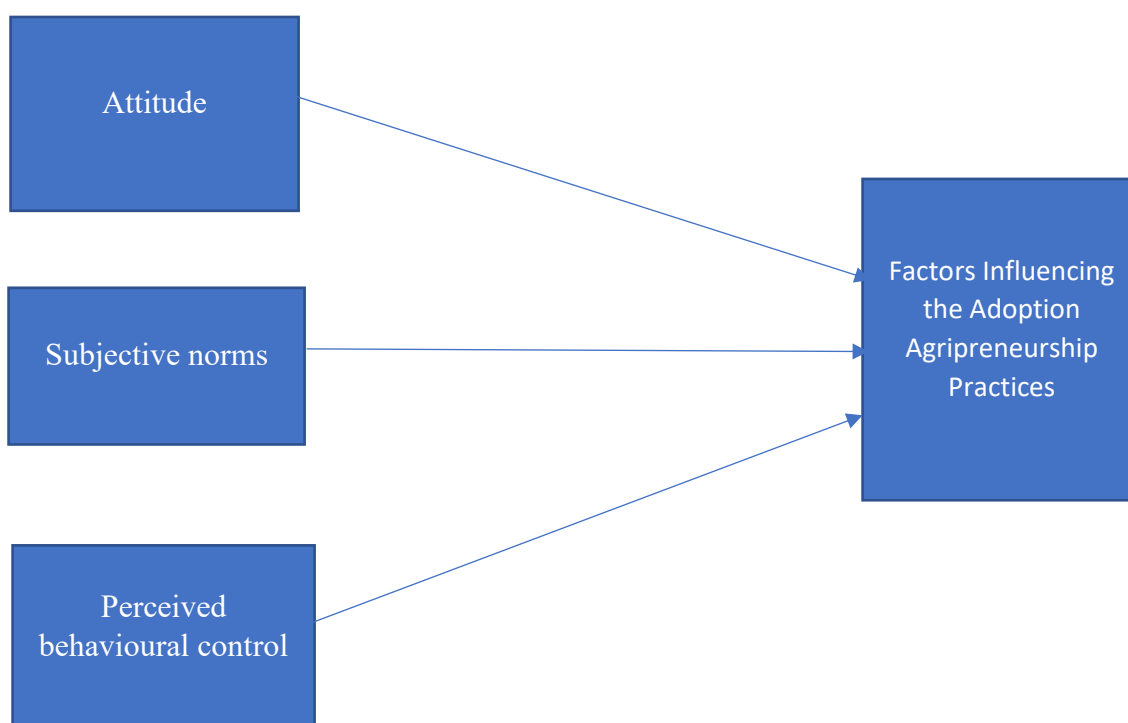


Figure 1. Conceptual Framework

The relevance of TPB in this study lies in its ability to explain how demographic characteristics shape farmers' adoption behavior as conceptualized in Figure 1. *Age* may influence farmers' attitudes toward innovation and risk-taking. *Gender* may affect access to opportunities and shape perceptions regarding entrepreneurial participation. Marital status can

influence household decision-making and social support structures. Household size may affect labour availability and perceived capacity to implement innovations. Educational attainment can enhance knowledge, information processing, and confidence in adopting new practices, while farming experience may strengthen or weaken farmers' perceptions of

innovation depending on previous experiences. These demographic characteristics do not directly determine adoption behaviour; rather, they influence the attitudes, social influences, and perceived behavioural control that ultimately shape farmers' intentions to adopt agripreneurship practices as seen in Figure 1. Although the theory has been criticized for emphasizing individual intentions while paying limited attention to broader contextual factors, it remains highly suitable for this study because the focus is specifically on demographic characteristics

METHODOLOGY

This study adopted a qualitative research approach to explore the demographic factors influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State, Nigeria. The study formed part of a broader mixed-methods investigation but focused specifically on farmers' experiences, perceptions, and adoption behaviour. Data were collected through Focus Group Discussions (FGDs) and analyzed using thematic analysis.

The study was conducted in Niger State, located in North Central Nigeria. The state is one of the leading maize-producing areas in the country, characterized by extensive agricultural land, favourable climatic conditions, and a high concentration of smallholder maize farmers. These characteristics make it an appropriate setting for examining agripreneurship adoption among rural farming households. The study population comprised registered smallholder maize farmers who were active members of the Maize Growers, Processors and Marketers Association of Nigeria (MAGPAMAN), Niger State Chapter. Participants were drawn from the twenty-five Local Government Areas of the state.

Qualitative data were collected through three Focus Group Discussions conducted across the three senatorial districts of Niger State: Niger East (Minna), Niger South (Bida), and Niger North (Kontagora). A

that influence farmers' behavioural dispositions toward agripreneurship adoption. TPB provides an appropriate theoretical lens for understanding how demographic factors influence agripreneurship adoption among smallholder maize farmers in Niger State, and provides a robust foundation for explaining how age, gender, marital status, household size, educational level, and farming experience shape farmers' willingness and readiness to engage in agripreneurial activities.

total of 50 farmers participated in the discussions, comprising two farmers selected from each of the 25 Local Government Areas. The FGDs were conducted in Hausa and English using a semi-structured discussion guide. All sessions were audio-recorded, transcribed verbatim, and translated where necessary. Data collection took place during the 2024 maize harvesting season to ensure that participants' responses reflected recent farming experiences. The study focused on demographic factors influencing the adoption of agripreneurship practices, including age, gender, marital status, household size, educational level, and farming experience.

Data Analysis

Data were examined and interpreted with theoretical concepts of TPB using the thematic analysis. During the coding process the researchers identified the underlying ideas, assumptions and conceptualization (Braun and Clarke, 2006) rather than of concentrating at the semantic level that examine the surface meaning of the data. This process was vital in this work because it allows the application of codes to the raw data. The process of the data analysis is depicted in Figure 2 below. In stage one to three of the data analysis process, codes created in the initial interviews were applied on the raw data to check how creditable they are. In stage four of the data analysis model, all the transcribed data was imported into NVivo.

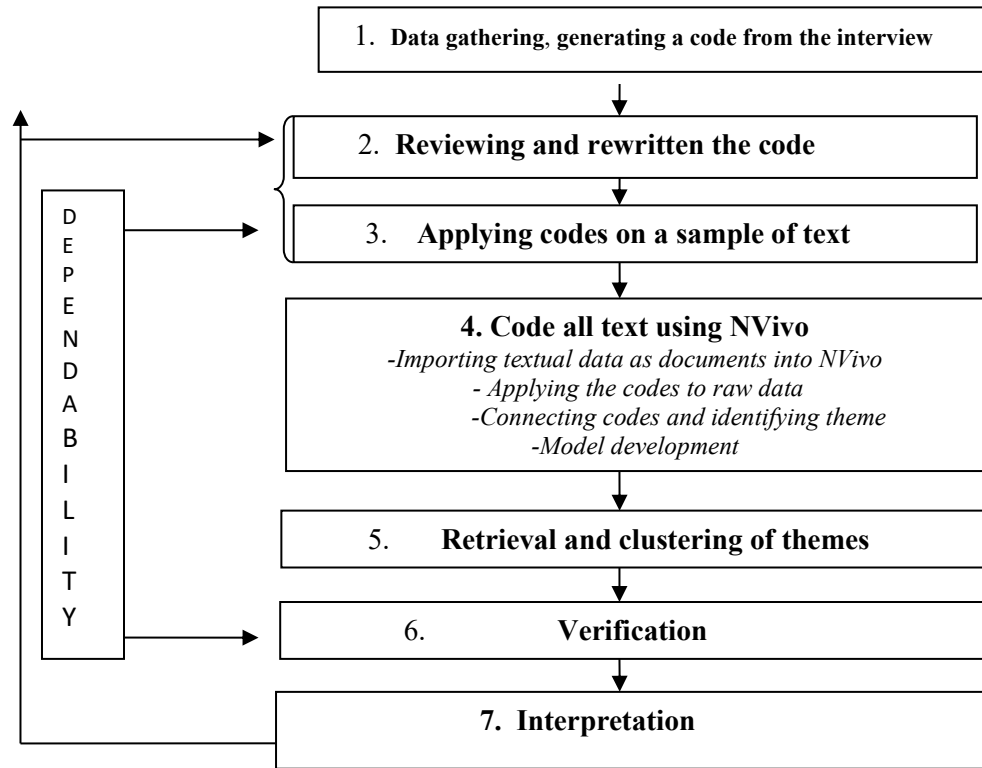


Fig 1: Data analysis process

Sources: Eze at al 2018

In stage four Nvivo software assisted in the process which helped in the categorization of data into appropriate classes. Further consistencies were considered between the categories and the extracted sample quotes from the interview transcript which enhanced the credibility and dependability of the thematic analysis. Inter-coder reliability was assessed using two independent coders in Table 1.1. Coding consistency was evaluated using Percentage

Agreement and Cohen's Kappa (k). Percentage Agreement was calculated as the proportion of coding agreements relative to the total number of coded segments, while Cohen's Kappa was used to account for agreement occurring by chance. The resulting values indicated a high level of coding consistency, confirming and the reliability of the identified themes.

Table 1.1: Inter-Coder Reliability Table

Theme	Number of Segments	Agreement	Disagreement	Agreement (%)	Cohen's Kappa (k)
Age and Innovation and Orientation	22	20	2	90.90	0.82
Gender Roles and Access to Resources	14	13	1	92.86	0.86
Marital Status and Household decision making	12	11	1	91.67	0.83
Household size and Labour contribution	15	14	1	93.33	0.87

Educational Level and Entrepreneurial Orientation	18	17	1	94.44	0.89
Farming Experience and Adaptive Capacity	16	15	1	93.75	0.88
Overall Agreement	97	90	7	92.78	0.86

The inter-coder reliability assessment demonstrated a high level of coding consistency across all themes. Percentage agreement ranged from 90.90% to 94.44%, while Cohen's Kappa values ranged from 0.82 to 0.89. The overall percentage agreement of 92.78% and overall Cohen's Kappa of 0.86 indicate almost perfect agreement among the coders according to the benchmark proposed by Landis and Koch (1977).

These results confirm that the coding process was reliable and that the identified themes accurately reflect participants' views regarding the demographic factors influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State, Nigeria.

PRESENTATION OF FINDINGS

Participants' Characteristics

The study involved 50 smallholder maize farmers drawn from the three senatorial districts of Niger State. The participants comprised 40 males (80%) and 10 females (20%), ensuring representation of both male and female farming experiences. Participants ranged from 25 years to over 59 years of age, with most belonging to the economically active farming population. Educational attainment varied across participants, including farmers with no formal education, primary, secondary, tertiary, and

postgraduate qualifications. Most participants were married (80%), reflecting the family-oriented nature of smallholder farming systems. Household sizes ranged from 3 to 12 or more members, while farming experience ranged from 5 to over 20 years. The diversity of participants in terms of age, gender, education, marital status, household size, and farming experience provided a broad range of perspectives and enhanced the richness and credibility of the qualitative findings.

Table 1.2: Detailed Socio-Demographic Profile of FGD Participants (n= 500)

ID	Gender	Age	Education	Marital Status	Household Size	Farming Experience (Years)
P1	Male	25	No Formal Education	Single	2	3
P2	Male	27	No Formal Education	Single	3	4
P3	Male	28	No Formal Education	Single	1	2
P4	Male	29	No Formal Education	Single	3	4
P5	Male	31	No Formal Education	Married	4	6
P6	Male	32	No Formal Education	Married	5	7
P7	Male	33	No Formal Education	Married	6	8
P8	Female	34	No Formal Education	Married	4	9
P9	Male	35	No Formal Education	Married	5	10
P10	Male	36	No Formal Education	Married	6	8
P11	Male	37	Primary Education	Married	4	6
P12	Female	38	Primary Education	Married	5	7
P13	Male	30	Primary Education	Married	6	9
P14	Male	31	Primary Education	Married	4	10
P15	Male	39	Primary Education	Married	5	8
P16	Male	40	Primary Education	Married	6	11
P17	Male	41	Primary Education	Married	4	12
P18	Female	42	Primary Education	Married	5	13
P19	Male	43	Primary Education	Married	6	14
P20	Male	44	Primary Education	Married	4	15

P21	Male	45	Secondary Education	Married	7	16
P22	Male	46	Secondary Education	Married	8	17
P23	Male	47	Secondary Education	Married	9	18
P24	Female	48	Secondary Education	Married	7	19
P25	Male	49	Secondary Education	Married	8	20
P26	Male	40	Secondary Education	Married	9	11
P27	Male	41	Secondary Education	Married	7	12
P28	Male	42	Secondary Education	Married	8	13
P29	Female	43	Secondary Education	Married	9	14
P30	Male	44	Secondary Education	Married	7	15
P31	Male	45	Secondary Education	Married	8	16
P32	Male	46	Secondary Education	Married	9	17
P33	Male	47	Secondary Education	Married	7	18
P34	Female	48	Secondary Education	Married	8	19
P35	Male	49	Secondary Education	Married	9	20
P36	Male	40	Secondary Education	Married	7	11
P37	Male	52	Secondary Education	Married	10	21
P38	Male	54	Secondary Education	Married	12	22
P39	Male	55	Tertiary Education	Married	11	23
P40	Male	56	Tertiary Education	Married	10	24
P41	Female	57	Tertiary Education	Married	12	25
P42	Male	58	Tertiary Education	Married	13	26
P43	Male	50	Tertiary Education	Married	10	27
P44	Male	51	Tertiary Education	Married	11	28
P45	Female	52	Tertiary Education	Widowed	12	29
P46	Male	59	Tertiary Education	Widowed	13	30
P47	Male	61	Tertiary Education	Widowed	10	31
P48	Female	63	Post Graduate Education	Widowed	11	32
P49	Male	65	Post Graduate Education	Divorced/ Separated	12	35
P50	Female	68	Post Graduate Education	Divorced/ Separated	13	40

Table 1.3: Summary of Socio-Demographic Characteristics of FGD Participants (n = 500)

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	40	80.0
	Female	10	20.0
Age (Years)	Below 30	4	8.0
	30–39	12	24.0
	40–49	20	40.0
	50–59	10	20.0
	60 and Above	4	8.0
Marital Status	Single	4	8.0

	Married	40	80.0
	Widowed	4	8.0
	Divorced/Separated	2	4.0
Educational Level	No Formal Education	10	20.0
	Primary Education	10	20.0
	Secondary Education	18	36.0
	Tertiary Education	9	18.0
	Post Graduate Education	3	6.0
Household Size	1–3 Members	4	8.0
	4–6 Members	16	32.0
	7–9 Members	18	36.0
	10 and Above	12	24.0
Farming Experience	Less than 5 Years	4	8.0
	5–10 Years	11	22.0
	11–20 Years	21	42.0
	Above 20 Years	14	28.0

Themes on Demographic Factors Influencing Adoption

The first category of themes explored demographic and socio-economic factors influencing the adoption of agripreneurship practices among smallholder maize farmers. Six major themes emerged from the

interviews, namely age and innovation orientation, education and awareness, gender and decision-making, marital status and household decision-making, household size and labour dynamics, and farming experience and exposure.

Table 1.4 Thematic Analysis Matrix for Factors Influencing Adoption of Agripreneurship Practices

Theme	Sub-theme	Supporting Evidences	Interpretation
Age and Innovation Inclination	Innovation receptiveness; Risk-taking behaviour	<i>"Young farmers are usually eager to test new ideas before others." (P12)</i> <i>"Many older farmers prefer methods that have worked for them over the years." (P27)</i> <i>"The younger generation is more comfortable using improved technologies and modern farming techniques." (P43)</i>	The findings suggest that age influences farmers' willingness to embrace innovation, with younger farmers generally displaying greater openness to experimentation and entrepreneurial farming practices.
Gender Roles and Access to Resources	Land ownership; Finance; Decision-making	<i>"Men often have more control over farmland and production resources." (P10)</i> <i>"Women find it difficult to access credit facilities compared to men." (P26)</i> <i>"Access to farm resources is not the same for men and women in many communities." (P45)</i>	The findings indicate that gender affects access to productive resources, financial opportunities, and decision-making processes, which subsequently influence agripreneurship adoption.

Marital Status and Household Decision-Making	Family support; Joint decisions	<i>"My husband and I discuss important farming investments together." (P15)</i> <i>"Support from family members encourages me to adopt new farming practices." (P31)</i> <i>"Household decisions often determine whether a new idea is implemented on the farm." (P47)</i>	The findings suggest that marital status and household relationships shape decision-making processes, resource allocation, and farmers' willingness to adopt agripreneurship practices.
Household Size and Labour Contribution	Family labour; Labour allocation	<i>"Members of my household assist with planting and harvesting activities." (P13)</i> <i>"Having many family members reduces the need to hire labour." (P28)</i> <i>"Family support provides the workforce needed for farm operations." (P48)</i>	The findings indicate that household size influences labour availability and the capacity to implement agripreneurship practices effectively.
Education Level and Entrepreneurial Orientation	Knowledge acquisition; Business mindset	<i>"Education makes it easier to understand new farming information." (P17)</i> <i>"Farmers who can read and write tend to keep better farm records." (P33)</i> <i>"Schooling helps farmers think more about farming as a business." (P49)</i>	The findings suggest that education enhances knowledge acquisition, managerial skills, and entrepreneurial orientation, thereby supporting agripreneurship adoption.
Farming Experience and Adaptive Capacity	Problem-solving; Risk management	<i>"Years of farming have taught me how to respond to challenges on the farm." (P18)</i> <i>"Experience helps farmers adjust when conditions change." (P35)</i> <i>"Farmers with long experience are better at managing production risks." (P50)</i>	The findings indicate that farming experience strengthens adaptive capacity, practical knowledge, and risk-management skills, thereby facilitating agripreneurship adoption and implementation.

Note. Source: Computation from field data using SEM in Stata v.15.1 output (2025)

Table 1.4 Thematic Analysis Matrix for Factors Influencing Adoption of Agripreneurship Practices

Theme	Overall Cases	Male Cases	Female Cases	Supporting Cases
Age and Innovation Inclination	22/50 (44%)	19	3	P2, P4, P9, P7, P8, P10, P12, P15, P17, P19, P22, P25, P26, P28, P31, P34, P37, P39, P43, P44, P46, P49
Gender Roles and Access to Resources	14/50 (28%)	10	4	P18, P3, P6, P9, P13, P16, P20, P23, P29, P30, P35, P40, P45, P50
Marital Status and Household Decision-Making	12/50 (24%)	9	3	P2, P5, P8, P11, P14, P18, P22, P25, P29, P33, P48, P43
Household Size and Labour Contribution	15/50 (30%)	12	3	P3, P6, P9, P12, P15, P19, P23, P26, P30, P34, P37, P41, P44, P47, P50
Education Level and Entrepreneurial Orientation	18/50 (36%)	14	4	P1, P4, P7, P10, P13, P16, P20, P24, P27, P31, P35, P39, P42, P45, P46, P47, P48, P50
Farming Experience and Adaptive Capacity	16/50 (32%)	13	3	P2, P5, P8, P11, P14, P17, P21, P25, P28, P32, P36, P40, P43, P44, P48, P50

DISCUSSION OF FINDINGS

Age and Innovation Inclination and Orientation

The qualitative findings revealed that Age and Innovation Inclination emerged as an important demographic factor influencing the adoption of

agriprenurship practices among smallholder maize farmers in Niger State. The theme was generated from 22 coded segments identified across the interview transcripts and was supported by responses from 22 out of the 50 participants (44.0%), comprising 19 male and 3 female respondents. The inter-coder reliability assessment recorded 20 coding agreements and 2 disagreements, resulting in a percentage agreement of 90.9% and a Cohen's Kappa coefficient ($\kappa = 0.82$), indicating a high level of coding consistency and reliability as shown in **Table 1.1**. Participants generally perceived younger farmers as being more willing to experiment with innovative farming practices, while older farmers were often more cautious in adopting new technologies and business-oriented approaches to agriculture. Many respondents associated younger farmers with greater openness to change, stronger entrepreneurial aspirations, and a higher willingness to take risks in pursuit of improved productivity and income opportunities. In contrast, older farmers were perceived as being more comfortable with traditional farming methods and less willing to depart from established practices. The following excerpts illustrate participants' views:

"Young farmers are usually eager to test new ideas before others." (P12)

"Many older farmers prefer methods that have worked for them over the years." (P27)

"The younger generation is more comfortable using improved technologies and modern farming techniques." (P43)

These responses indicate that age influences farmers' perceptions of innovation and may shape their willingness to adopt agriprenurship practices aimed at improving agricultural and livelihood outcomes. The study found that age significantly shapes innovation orientation among smallholder maize farmers. Younger farmers demonstrated a higher level of openness toward adopting agriprenurship practices such as improved seed use, market-oriented farming, record keeping, and modern farm management techniques compared to older farmers who were generally more conservative in their approach to innovation. The finding that younger farmers demonstrated greater willingness to adopt agriprenurship practices supports previous studies which reported that younger farmers are generally more receptive to technological innovations and entrepreneurial agriculture because of their greater exposure to information and stronger risk-taking

orientation (Bang & Han, 2025; Idisi et al., 2025). Similarly, Affoukou et al. (2025) observed that age remains an important factor shaping farmers' responses to agricultural innovations and learning interventions.

However, the finding also supports evidence from previous studies (Bang & Han, 2025; Idisi et al., 2025) indicating that older farmers may benefit from accumulated farming experience, which can enhance their ability to evaluate innovations before adoption. Their experience may enable them to distinguish between beneficial and unsuitable innovations, thereby reducing the likelihood of making costly adoption mistakes. This suggests that age may influence agriprenurship adoption both positively and negatively depending on the characteristics of the innovation, the level of perceived risk, and the prevailing farming environment.

Gender Roles and Access to Resources

The qualitative findings revealed that Gender Roles and Access to Resources constituted a significant demographic factor influencing the adoption of agriprenurship practices among smallholder maize farmers in Niger State. The theme emerged from 14 coded segments generated from the interview data and was supported by responses from 14 out of the 50 participants (28.0%), comprising 10 male and 4 female respondents. The inter-coder reliability assessment recorded 13 coding agreements and 1 disagreement, resulting in a percentage agreement of 92.86% and a Cohen's Kappa coefficient ($\kappa = 0.86$), indicating a high level of coding consistency and reliability as shown in **Table 1.1**. Participants consistently indicated that differences in access to productive resources, decision-making authority, financial capital, land ownership, training opportunities, and market participation shape the extent to which men and women engage in agriprenurial activities. The findings suggest that gender-related disparities continue to affect the capacity of farmers to adopt and effectively implement agriprenurship practices. The following excerpts illustrate participants' perspectives:

"Men often have more control over farmland and production resources." (P10)

"Women find it difficult to access credit facilities compared to men." (P26)

"Access to farm resources is not the same for men and women in many communities." (P45)

These responses demonstrate that gender-related differences in resource ownership, financial capacity, and decision-making authority significantly influence farmers' ability to adopt agripreneurship practices and participate effectively in agricultural value chains.

The findings are also consistent with the Theory of Planned Behaviour, which suggests that individuals are more likely to engage in a behaviour when they possess the resources and perceived control necessary for its execution. Farmers with greater access to land, finance, information, and support services are more likely to adopt agripreneurship practices than those facing resource constraints. Thus, differences in resource accessibility contribute significantly to variations in adoption behaviour among male and female farmers. The finding corroborates recent evidence showing that gender disparities continue to affect access to agricultural resources, markets, technologies, and entrepreneurial opportunities. Daudu et al. (2025) reported that male agripreneurs achieved higher food security outcomes partly because of better access to productive resources. Similarly, Kamara et al. (2025) found significant gender differences in the adoption of improved management practices among Nigerian farmers, while Daudu et al. (2025) demonstrated that women face greater constraints in accessing digital agricultural services and logistics platforms.

Marital Status and Household Decision-Making

The qualitative findings identified Marital Status and Household Decision-Making as an important demographic factor influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State. The theme emerged from the interview narratives and was supported by responses from 12 out of the 50 participants (24.0%), comprising both male and female farmers. The inter-coder reliability assessment recorded 11 coding agreements and 1 disagreement, resulting in a percentage agreement of 91.67% and a Cohen's Kappa coefficient ($\kappa = 0.83$), indicating a high level of coding consistency and reliability as shown in **Table 1.1** Participants indicated that marital status affects household decision-making, resource allocation, labour availability, financial commitments, and the overall capacity to implement agripreneurial innovations. The findings suggest that family structure and household responsibilities play a significant role in shaping farmers' adoption behaviour and entrepreneurial decisions. Participants explained that

agricultural decisions, particularly those involving financial investments and adoption of new technologies, are often influenced by household relationships and responsibilities. Married farmers frequently emphasized the importance of consultation and consensus-building before committing resources to new farming practices.

The following excerpts illustrate participants' perspectives:

"My husband and I discuss important farming investments together." (P15)

"Support from family members encourages me to adopt new farming practices." (P31)

"Household decisions often determine whether a new idea is implemented on the farm." (P47)

These responses indicate that marital status influences not only the decision-making process but also the availability of labour, financial resources, and support systems required for agripreneurship adoption. The findings align with the propositions of the Theory of Planned Behaviour (TPB), which suggests that behavioural decisions are influenced by social factors, subjective norms, and perceived control over available resources. Household members, particularly spouses, often influence farming decisions through advice, support, encouragement, and participation in farm management activities. Consequently, adoption decisions are not always made individually but are frequently embedded within household social structures (Ajzen, 1991).

The findings suggest that household responsibilities and family welfare considerations influence innovation decisions among smallholder farmers. This supports studies which indicate that household characteristics significantly shape agricultural investment behaviour and commercialization decisions (Li et al., 2025; Idisi et al., 2025). Married farmers often possess stronger social support systems and greater motivation to improve household welfare through entrepreneurial farming activities.

Household Size and Labour Contribution

The qualitative findings revealed that Household Size and Labour Contribution is an important factor influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State. The theme emerged from 15 coded segments generated

from the interview data and was supported by responses from 15 out of the 50 participants (30.0%), comprising 12 male and 3 female respondents. The inter-coder reliability assessment recorded 14 coding agreements and 1 disagreement, resulting in a percentage agreement of 93.33% and a Cohen's Kappa coefficient ($\kappa = 0.87$), indicating a high degree of coding reliability and consistency.

Participants emphasized that the number of household members affects labour availability, farm operations, resource allocation, and the capacity to implement entrepreneurial farming practices. The findings indicate that household size can serve as both an asset and a constraint in the adoption and implementation of agripreneurship practices. The following excerpts illustrate participants' views:

"Members of my household assist with planting and harvesting activities." (P13)

"Having many family members reduces the need to hire labour." (P28)

"Family support provides the workforce needed for farm operations." (P48)

These responses suggest that household size affects both the labour resources available for agricultural production and the financial demands placed on farm households. Consequently, household size influences the ability of farmers to adopt and sustain agripreneurship practices. The findings are also consistent with the Theory of Planned Behaviour (TPB), which suggests that individuals are more likely to engage in a behaviour when they possess the resources and capabilities required to perform it (Ajzen, 1991). The availability of family labour increases farmers' perceived behavioural control and confidence in their ability to implement agripreneurship practices, thereby encouraging adoption.

The finding aligns with studies showing that household labour remains an important determinant of agricultural innovation adoption among smallholder farmers. Larger households often provide family labour that reduces production costs and facilitates the implementation of improved farming practices (Kanu & Przezbórska-Skobiej, 2025; Taye, 2025). However, studies have also noted that larger households may experience increased financial pressure due to higher dependency burdens and consumption requirements, which can limit investment in agricultural innovations. This finding is

further supported by Ojo et al. (2022), who observed that household size can either facilitate or constrain innovation adoption depending on the household's income structure, dependency ratio, and resource base.

Education Level and Entrepreneurial Orientation

The qualitative findings identified Education Level and Entrepreneurial Orientation as a critical factor influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State. The theme emerged from 18 coded segments contributed by 18 participants (36.0% of the interview sample), comprising 15 male and 3 female farmers. The inter-coder reliability assessment recorded 17 coding agreements and 1 disagreement, resulting in a percentage agreement of 94.44% and a Cohen's Kappa coefficient ($\kappa = 0.89$), indicating a high level of coding reliability and consistency.

Participants consistently indicated that education enhances farmers' ability to access, understand, evaluate, and apply agricultural innovations and business-oriented farming practices. The findings suggest that educational attainment plays a significant role in shaping entrepreneurial orientation, decision-making capacity, and the willingness to adopt agripreneurship practices. The following participant statements illustrate this perception:

"Education makes it easier to understand new farming information." (P17)

"Farmers who can read and write tend to keep better farm records." (P33)

"Schooling helps farmers think more about farming as a business." (P49)

These responses indicate that education serves as an important mechanism for enhancing farmers' knowledge, confidence, and managerial capacity, thereby facilitating the adoption of agripreneurship practices.

The findings are also consistent with the Theory of Planned Behaviour (TPB), which suggests that individuals are more likely to engage in a behaviour when they possess the knowledge, confidence, and perceived capability required to perform it successfully (Ajzen, 1991). Educated farmers generally exhibit higher levels of self-efficacy and are therefore more willing to adopt innovative and entrepreneurial farming practices. The findings

support previous research indicating that education strengthens farmers' innovation capacity by improving information processing, entrepreneurial orientation, and decision-making abilities. Affoukou et al. (2025) reported significant educational effects on farmers' comprehension and adoption of agricultural innovations. Similarly, Bang and Han (2025) found that higher educational attainment significantly increased farmers' willingness to adopt smart farming technologies.

Farming Experience and Adaptive Capacity

The qualitative findings identified Farming Experience and Adaptive Capacity as a significant factor influencing the adoption of agripreneurship practices among smallholder maize farmers in Niger State. The theme emerged from 16 coded segments contributed by 16 participants (32.0% of the interview sample), comprising 13 male and 3 female farmers. The inter-coder reliability assessment recorded 15 coding agreements and 1 disagreement, resulting in a percentage agreement of 93.75% and a Cohen's Kappa coefficient ($\kappa = 0.88$), indicating substantial agreement and acceptable coding reliability as shown in **Table 1.1**

Participants emphasized that years of farming experience shape farmers' knowledge, skills, risk perceptions, and ability to respond to changing agricultural conditions. The findings suggest that farming experience enhances farmers' adaptive capacity by enabling them to make informed decisions regarding the adoption and implementation of agripreneurship practices. The following excerpts illustrate participants' perspectives:

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"Years of farming have taught me how to respond to challenges on the farm." (P18)

"Experience helps farmers adjust when conditions change." (P35)

"Farmers with long experience are better at managing production risks." (P50)

These responses indicate that farming experience provides farmers with practical knowledge and adaptive skills that enhance their capacity to manage uncertainties and implement agripreneurship practices effectively. Furthermore, the findings are consistent with the Theory of Planned Behaviour (TPB), which suggests that individuals are more likely to engage in a behaviour when they possess the confidence and capability required to perform it successfully (Ajzen, 1991). Experienced farmers often demonstrate greater self-efficacy because they have previously encountered and overcome production challenges, thereby strengthening their willingness to implement agripreneurship practices.

The findings are consistent with studies showing that farming experience contributes to adaptive capacity, resilience, and technology evaluation skills. However, excessive reliance on traditional practices may reduce openness to innovation. For example, Good Intentions, Limited Action (2025) found that previous farming experience strongly influences actual adoption behaviour, while Idisi et al. (2025) identified experience as an important determinant of technology adoption among Nigerian farmers.

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