



Volume 6	Issue 2	June (2026)	DOI: 10.47540/ijias.v6i2.2781	Page: 225 – 235
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Entrepreneurial development initiatives on business sustainability in small and medium enterprises (SMEs) in South West Nigeria

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ARTICLE INFO

Keywords: Business Sustainability, Entrepreneurship Development, Government Support, Innovation, Technology.

Received : 01 May 2026

Revised : 25 May 2026

Accepted : 30 June 2026

ABSTRACT

The study addresses the ongoing sustainability issues faced by agricultural SMEs in Southwest Nigeria, despite many entrepreneurial development initiatives focused on innovation, technology adoption, and governmental assistance. This study explicitly analyses the impact of innovation and technology adoption on the sustainability of agricultural SMEs and assesses the role of government policies and support measures in bolstering their resilience against the region's changing economic landscape. The research employs a quantitative survey design with a study population of 385. Data were collected from agricultural SME operators using structured questionnaires, and the gathered data were analysed using descriptive and inferential statistics. The findings revealed that, despite the perceived insufficiency of government support being relatively low, innovation and technology adoption, combined with government support and policies, exert a statistically significant collective influence on the sustainability of agricultural SMEs, accounting for a considerable portion of the variance in sustainability outcomes. This indicates that, while agricultural entrepreneurs are aggressively using technology and new techniques to enhance performance, the advantages are limited by inconsistent, inadequate, or poorly executed support mechanisms. The study recommends that improving the long-term sustainability of agricultural SMEs in Southwest Nigeria necessitates not only the dissemination of innovation and digital tools but also a purposeful redesign of government policies and programs to ensure they are more stable, accessible, and responsive to the distinct needs of agricultural enterprises.

INTRODUCTION

SMEs have been recognized as contributing to national and global economic development, innovation, and job creation. SMEs are important to stimulate economic growth in countries that are developing (Mugano, 2024). For example, in Nigeria, SMEs provide greater than 80% of all employment, while they also provide approximately 50% of the Nigerian GDP (Akinrinde et al., 2025). Additionally, it provides countless positive impacts on local economies by providing an opportunity to alleviate poverty and advance industrialization (Adeosun and Shittu, 2021; Akinrinde et al., 2025).

Southwest geopolitical zone, comprising Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti States, stands as the country's economic powerhouse and

commercial nerve centre (Kolawole, 2025). This region dominates Nigeria's informal economy, accounting for nearly one-third of all unregistered businesses across the country, with Lagos alone hosting 16% of all informal businesses nationwide (Aka, 2023). The South West is the only region with MSMEs earning above ₦100 million monthly, holding 100% of this elite category, underscoring the region's dominance as Nigeria's financial and commercial hub (Muza, 2024; Oyigebe et al., 2025). Lagos State recorded the highest internally generated revenue (IGR) at ₦815 billion in 2024, almost four times that of the Federal Capital Territory (Yagboyaju and Omotayo, 2026). The South West economy is primarily a result of trade, money lending, transportation, industrialization, and

agricultural activity. Agriculture continues to be an important source of income for many people living in the South West. Some of the most common crops grown include yams, cassava, maize, cacao, palm products, and kola nut (Ogwu et al., 2024; Ayuba Sr. et al., 2025; Edwards et al., 2026). Raising livestock such as goats, chickens, and pigs is also widespread throughout semi-urban and rural areas of the South West. Despite the fact that there are significant economic benefits associated with this region, SMEs involved in agriculture continue to experience some very serious obstacles. These include, but are not limited to, lack of access to machinery, high operational expenses, poor infrastructure, and inconsistent governmental backing.

Recent actions clearly show increasing movement toward the innovation of agricultural practices in the area. Ogun State is collaborating with Soilless Farm Lab to promote young entrepreneurs who are using technology to improve agriculture, with many of these alumni operating sustainable businesses that significantly contribute to local food availability. Additionally, the Ogun-Osun River Basin Development Authority has placed sixteen (16) tractors into eleven (11) farm communities in four states (Lagos, Ogun, Oyo, and Osun) as a way to provide technological assistance to farmers to increase food production by utilizing agricultural mechanization. This shows the potential for agricultural transformation of the area through the use of technology.

Entrepreneurial Development Initiatives provides a solution to the problems facing Agricultural SME's. The Government can support with appropriate policy to enhance business finance and infrastructure, which will also have an impact on increasing productivity and improving access to markets for all. However, the effectiveness of such schemes for supporting sustainable businesses in this ever-changing economic climate is still unexplored.

Previous studies show that an entrepreneur's orientation positively affects small and medium-sized enterprise (SME) performance in Southwest Nigeria (Onikoyi and Fetuga, 2023; Ojubanire and Idowu, 2023; Ayetigbo et al., 2025), as well as through the dimensions of entrepreneurial behavior such as risk-taking, competitive aggressiveness and innovation (Ayetigbo et al., 2025). The body of

literature related to the technology adoption of Industry 4.0 is also consistent with previous research (Karuppiah et al., 2022; Arnaldo & Jose Carrer, 2022; Adeniyi and Adeeko, 2024), which shows there is a significant relationship between adopting technology and SMEs' ability to scale their markets in the region. Wu and Tham (2023), however, indicate that government support and technological innovation will both contribute to the enhanced resilience and performance of SMEs in difficult economic conditions. In addition to this, Do et al. (2024) emphasized the significance of creativity and innovation when allowing SMEs to advance technologically.

Despite having a clear understanding of what we have learned about the development of entrepreneurship for agricultural SMEs, however, our current knowledge of how to make these types of development programs effective in terms of making them sustainable is still very limited due to an absence of direct empirical research regarding how they operate in the unique economic environment of the Southwest. Therefore, one purpose of this investigation is to provide some evidence concerning both the effect that adopting innovative technologies has on agricultural SMEs in the Southwest and whether or not there are particular roles being played by government support and policy that can contribute to increasing the resiliency and sustainability of these businesses.

Although this research is grounded in the literature, the philosophy of this study is shaped by the concept of innovation diffusion. The theory outlines the processes involved in disseminating entrepreneurial innovations, such as financial support, training, and access to technology. If you are to assess whether these initiatives have been successful and whether they impact the sustainability of your company, you need to understand the diffusion process. The theory is especially useful for studying the role of early adopters (large SMEs) in accepting new ideas in areas where market conditions, infrastructure, and access may impact the spread of innovation and sustainability.

Therefore, this study aims to examine how entrepreneurial development initiatives, innovation and technology adoption, and government support and policies influence the sustainability of agricultural SMEs in Southwest Nigeria. Using

survey data from 372 agricultural SMEs and regression analysis, the study evaluates the extent to which these factors jointly and individually explain variations in business sustainability outcomes in the region. By focusing on agricultural SMEs in a rapidly changing but under-researched regional economy, the study provides context-specific evidence on how policy support and technological innovation interact to shape long-term business sustainability.

METHODS

The impact of entrepreneurial development programmes on SME in Southwest Nigeria was investigated through a survey study. This approach provided a means to examine how government support, innovation, and adoption of technology contributed to the sustainability of companies. All SMEs engaged in farming, processing, and distribution in the six South West states of Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti were surveyed (Okolo-Obasi and Uduji, 2021).

Population and Sample

As the population count was unclear since numbers were not easily available, it comprised managers, company owners, and leaders of agricultural SMEs in the area. Cochran's method has been developed to study populations with unknown numbers, yielding a sample size of 385 with a 95% confidence level and a 5% margin of error. It employed a stratified random sample design to ensure complete coverage across the six states and agricultural sectors (Ahmed, 2024).

Data Collection Instruments

Digital surveys delivered via mobile survey apps were used to gather data. This strategy was especially successful in reaching respondents across the Southwest region's varied geographic distribution. In order to get information on

innovation adoption, technology usage, government backing, and overall company sustainability, the survey was carefully crafted with structured questions (Ahmed, 2024).

Both descriptive and inferential statistics were used to examine the quantitative data that had been gathered. While inferential statistics, such as regression analysis, evaluated entrepreneurial endeavours and company viability, descriptive statistics summarised the replies.

Model Specification

This study adapted Musa et al. (2025) model, which evaluates the impact of government entrepreneurial policies on attaining sustainable Nigeria's national development.

$$ND_t = \beta_1 TSEMP_t + \beta_2 MSMEGDP_t + \beta_3 MSMEGEXP_t$$

This model was adapted as follows:

$$SOA_t = \beta_1 EDI_t + \beta_2 IAT_t + \beta_3 GSAP_t + \varepsilon$$

Where:

SOA = Sustainability of agriculture (Proxy by business sustainability)

EDI = Entrepreneurial development initiatives

IAT = Innovation and technology

GSAP = Government support and policies

ε = Stochastic Error term

β_i = Slope coefficient of the variable

α = Intercept

RESULTS AND DISCUSSION

Test of Variance, Normality, and Dispersion

Based on a sample size of 372 respondents from South West Nigeria, the descriptive statistics table in Table 1 sheds light on three important variables: Government Support and Policies (GSP), Innovation and Technology (IAT), and Sustainability of Agriculture (SOA).

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Dev	Skewness	Kurtosis
IAT	372	2.80	5.00	4.2189	0.43588	-0.147	-0.318
GSP	372	1.00	5.00	2.2040	0.78828	0.309	-0.413
SOA	372	2.85	5.00	4.0425	0.45119	0.041	-0.530
Valid N (listwise): 372							

The average score for IAT is 4.22, meaning that most respondents agree that innovation and technology have improved their Southwest-based enterprises. The replies seem to vary quite a little, as shown by the standard deviation of 0.44. While the kurtosis (-0.318) shows a distribution with lighter tails than a normal distribution, the negative skewness (-0.147) suggests that most answers are somewhat grouped toward higher values. The mean score for GSP is much lower at 2.20, indicating that SMEs in Southwest Nigeria generally disagree or are dissatisfied with government assistance and policies. In comparison to IAT, the standard deviation is 0.79, indicating a larger range of

answers. The kurtosis of -0.413 indicates a flatter distribution than usual, indicating that replies are more scattered, while the skewness of 0.309 indicates that responses are somewhat skewed towards the lower end (closer to disagreement). The average score for SOA is 4.04, suggesting that most respondents agree that agricultural sustainability is crucial for their companies. The replies vary somewhat, as shown by the standard deviation of 0.45. While the kurtosis value of -0.530 shows that the distribution is flatter than typical, implying answers are more equally distributed, the skewness of 0.041 implies a nearly symmetrical distribution.

Table 2. Model Summary

Model	R	R Square	Adj. R Sq.	Std. Error	R Sq. Change	F Change	df1	df2	Sig. F	D-W
1	0.656	0.431	0.428	0.34135	0.431	139.591	2	369	.000	1.933

a. Predictors: (Constant), GSP, IAT

b. Dependent Variable: SOA

A substantial amount of the variation in agricultural sustainability among SMEs in Southwest Nigeria can be explained by innovation, technology, and government support taken together, as indicated by the R value of 0.656, which shows a strong positive correlation between the predictors (IAT and GSP) and the dependent variable (SOA). R Square (0.431) indicates that government support and policies (GSP) and innovation and technology (IAT) account for around 43.1% of the variation in the sustainability of agricultural SMEs. This model

in Table 2 is rather robust, suggesting that these elements have a significant impact on the region's agricultural sustainability.

The model is stable even after taking the number of predictors into account, as seen by the somewhat lower Adjusted R Square (0.428). The Durbin-Watson value (1.933) indicates that the residuals have little to no autocorrelation, indicating that the regression model's errors are uncorrelated, which improves the model's dependability.

Table 3. ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	32.530	2	16.265	139.591	.000
Residual	42.995	369	0.117		
Total	75.525	371			

a. Dependent Variable: SOA

b. Predictors: (Constant), GSP, IAT

The p-value (Sig. =.000) as shown in Table 3 shows that the whole model is statistically significant, and the F-value (139.591) is rather big. This indicates that the sustainability of agricultural

SMEs in South West Nigeria is greatly impacted by the combined effect of government support (GSP) and innovation and technology (IAT). The regression's sum of squares (32.530) and residual

(42.995) demonstrate that the independent variables account for a significant amount of the variability in agricultural sustainability.

Table 4. Coefficients

Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	3.739	0.178		20.968	.000		
IAT	0.256	0.041	0.247	6.287	.000	0.999	1.001
GSP	-0.352	0.022	-0.614	-15.631	.000	0.999	1.001

a. Dependent Variable: SOA

The constant ($B = 3.739$, $p < 0.001$) indicates that the baseline level of agricultural sustainability would be 3.739 on the scale in the absence of government assistance (GSP) and innovation and technology (IAT).

Sustainability is positively and significantly impacted by innovation and technology (IAT), with $B = 0.256$ and $p < 0.001$. This implies that sustainability rises by 0.256 units for each unit increase in innovation and technology adoption. Innovation and technology have a somewhat favourable impact on sustainability, according to the standardised beta coefficient of 0.247. This result is consistent with the situation in South West Nigeria, where SMEs are progressively embracing technology efforts including digital agricultural platforms, mobile banking apps, and precision farming technologies.

Conversely, there is a negative correlation between sustainability and Government Support and Policies (GSP), with $B = -0.352$ and $p < 0.001$. This suggests that sustainability falls by 0.352 units when government assistance and policies in their present form rise. SMEs in South West Nigeria do not believe that the existing government policies and support mechanisms are successful in enhancing sustainability, as shown by the standardised beta of -0.614, which indicates a substantial negative impact. Despite the region's economic significance, issues including bureaucratic inefficiency, delayed grant release, uneven policy implementation, and a lack of focused assistance for agricultural SMEs may be reflected in this.

Discussion of Findings

The results demonstrate that government assistance and policies, together with innovation and technology adoption, significantly but unevenly

influence the sustainability of agricultural SMEs in Southwest Nigeria. According to descriptive data, respondents strongly agreed that sustainable agricultural practices (mean ≈ 4.04) and innovation and technology (mean ≈ 4.22) are improving their businesses, while opinions of government support were generally low (mean ≈ 2.20), suggesting discontent with current interventions despite their potential significance. The results of the regression show that government support and policies (GSP) and innovation and technology (IAT) together account for approximately 43.1% of the variance in the sustainability of agricultural SMEs ($R = 0.656$; $R^2 = 0.431$; $F = 139.591$; $p < 0.001$), indicating that these initiatives have a significant impact on long-term viability in the area. The poor mean score for GSP and its substantial contribution to the model, however, point to a paradox: whereas policy and support frameworks are important statistically, they are seen as insufficient, inconsistently applied, or challenging to obtain in practice. This is consistent with other research showing that technology-driven innovation may boost SMEs' resilience and development, but its full impact is limited when government initiatives are dispersed, underfunded, or poorly targeted. Overall, the results support perspectives on adaptive systems and innovation diffusion: agricultural SMEs are able and willing to adopt innovations that improve sustainability, but their ability to do so is constrained by inconsistent, enabling public support. This highlights the urgent need for better-aligned, demand-driven policy tools in the Southwest.

Entrepreneurial Development Programmes and Sustainability

Entrepreneurial Development Programs include activities and approaches that support the

growth and stability of both new and existing business operations. Typical entrepreneurial development programs offer a variety of forms of support, including mentorship, training, access to finance, infrastructure, and potential markets (Rashid et al., 2025). The purpose of these entrepreneurial development programs is to increase the viability of businesses, stimulate innovative practices, and enhance the abilities of entrepreneurs through improved knowledge and skills (Zubair et al., 2026). By utilizing entrepreneurial development programs, entrepreneurs may be able to remove obstacles to their business operations and create jobs contributing to local economic development (Ajiva et al., 2024).

Research has provided a wealth of knowledge concerning the types of initiatives for entrepreneurial development that will have a positive effect upon Small and Medium Enterprise (SME) success. The numerous benefits associated with SMEs, as stated, are mainly based upon their contribution to economic development and sustainable growth. This is further emphasized through other research studies conducted in Southwest Nigeria, which show that there exists a direct relationship between an enterprise's orientation toward entrepreneurship and its overall performance, as well as several individual characteristics, including innovation, taking risks, and being competitively aggressive.

Innovation and Technology Adoption

Innovation and technology include the development and use of innovative concepts, methodologies, or products to address challenges or improve processes (Idrees et al., 2023). Li et al. (2024) describe technology as the tools and methods created to execute these innovations, while Agrawal et al. (2023) define innovation as the introduction of new ideas or practices. In Southwest Nigeria, SMEs use innovation via digital platforms for market access, mobile apps for financial transactions, and precision agricultural technology (Daudu et al., 2025; Upe, 2023).

Research highlights varied viewpoints on innovation and technology in small and medium-sized enterprises across different geographies and circumstances. Suki et al. (2022) elucidated the significance of governmental policies and subsidies in the adoption of sustainable technology, specifically highlighting Malaysia. This aligns with

the research of Alraja et al. (2022), which examines the influence of external circumstances and sustainable practices on performance, specifically within the context of a crisis like the COVID-19 epidemic in Oman.

Research on the implementation of Industry 4.0 technology in Southwest Nigeria indicates a substantial correlation between technology adoption and the market scalability of SMEs, positively influencing profitability (Adeniyi and Adeeko, 2024). Conversely, Yakubu et al. (2024) underscored the significance of internal characteristics, such as creativity and socio-cultural aspects, in Nigeria's technological progress and performance. Aiudi et al. (2025) offered a unique viewpoint by examining agricultural SMEs in Italy, highlighting the importance of organisational capacities and the attitudes of decision-makers in the adoption of new technologies like AI and IoT.

Government Support and Policies

Government assistance and policies are actions and regulations implemented by the government to promote and maintain an economically stable economy; these include tax incentives and improving business infrastructure (i.e., roads, utilities), which will assist businesses with the costs associated with operating a successful business and provide financial assistance such as grants and subsidies (Shan & Ji, 2024). For example, a new or small business may be eligible for a tax break on start-up expenses; a new entrepreneur may be able to secure a loan at a lower interest rate than traditional sources; research and development can also receive funding. On the other hand, policy is regulation; it ensures competitive fairness, protects intellectual property rights, and provides workforce training (Hanan et al., 2021; Khatoon & Velidandi, 2025).

Previous research provides a range of viewpoints about government support and policies that impact SMEs. According to Dempere et al. (2023), government initiatives that promote self-employment have a significant impact on national development. Despite persistent obstacles, Onileowo (2024) has shown that government support is crucial for the growth of business in Southeast Nigeria. Ogujiuba et al. (2022) highlighted the distinct advantages of government assistance depending on the location of SMEs,

leading to a variety of effects on company performance.

The Ogun-Osun River Basin Development Authority's deployment of agricultural mechanisation equipment, state-level collaborations with private organisations like Soilless Farm Laboratory, and the release of comprehensive economic blueprints for regional transformation are just a few of the government initiatives that have taken place in the Southwest region. However, research showed that 79% of businesses have seen an increase in operating expenses in recent years, and SMEs still had to deal with issues including restricted loan availability, poor infrastructure, uneven policy implementation, and insecurity (Kindström et al., 2022).

Alraja et al. (2022) underlined the need for government support for the integration of cutting-edge technology and financing, particularly in times of crisis like COVID-19, for the long-term viability of SMEs. Desalegn et al. (2024), on the other hand, found that government policies had very little impact on urban agriculture in comparison to the intermediate role of sustainable financing.

Sustainability Outcomes and Theoretical Implications

In agriculture, sustainability refers to methods that increase long-term agricultural production while protecting the environment, promoting economic viability, and improving social well-being (Olabinjo and Opatola, 2023). Enhancing the resiliency of SME's in Agriculture, especially in regions with high economic development, is important for sustainability. Sustainability refers to a balance of Social, Environmental, and Economic Sustainability (Nyamboga, 2026). For example, agroforestry and water conservation can contribute to environmentally sustainable practices, which will allow Agricultural SME's to continue producing under environmental stressors (Mishenin et al., 2024). Using Climate-Smart Farming Methods and Drought-Tolerant Crops may help farmers in the Southwest Region withstand Climatic Stress. Economic Sustainability involves increasing profit margins and decreasing reliance on external funding sources. Microfinance and Entrepreneurial ventures are key to supporting agricultural SMEs to have access to markets and to remain competitive. Government support, as an example of Social

Sustainability, can enhance Livelihoods and Community Resilience.

The investigation drew on both innovation diffusion and adaptive systems theory put forward by W. R. Ashby in 1956, and it is predicated on the notion that systems are inherently dynamic and can adjust to whatever circumstances arise. As Steffen et al. (2022) and Wang and Zhang (2025) have noted, a system will be in a constant state of flux, reacting to stimuli from within and without. Jalonen (2024) points out that the theory also puts a premium on feedback loops and self-organization; in short, systems must adapt to outside forces if they are to ensure their own long-term survival and stability. There are built-in controls for flexibility and self-regulation. This enables a system to take in what it has learned from past experience, weather disruptions, and alter its course as conditions warrant. All of this is made possible by feedback, which tells the system how well it is performing and whether its responses are effective. It is through this cycle of learning and adaptation that a system can be resilient in an uncertain environment.

As Scharte (2024) points out, adaptive systems theory may understate the complexity of real-world systems. The theory may fail to consider unpredictable or chaotic events that could upset the system. In addition, as Dooley (2022) points out, it may overstate the adaptability of the system while undervaluing other external factors that are beyond its control, such as political upheavals or natural disasters, that can affect the sustainability of the system even if it is adaptable.

Everett Rogers first proposed the innovation diffusion theory in 1962. The theory discussed the diffusion of ideas, innovations, and technologies over time in a society. The theory holds that new ideas, technologies, or innovations spread through time through specialized channels in a society (Almaiah et al., 2022). Knowledge, convincing, decision-making, execution, and confirmation are five steps in the innovation diffusion process. Early adopters of innovators, early majority, late majority, and laggards are all groups of adopters in a society, according to Rogers (Sziklai and Lengyel, 2022).

Several factors affect the heterogeneous adoption of innovations, such as perceived attributes of the innovation, communication channels, structure of the social system, and time taken to spread the idea (Chauhan et al., 2022). The

theory assumes that an individual makes a rational decision about whether they would like to adopt an invention.

In contrast, Mambile and Ishengoma (2024) argue that the theory oversimplifies the process of adoption and assumes that it happens linearly from awareness to adoption, although it is much more complex and non-linear. Coccia (2024) argues that the idea encourages innovations to succeed, but neglects the reasons why those innovations fail. Al-Zahrani and Alasmari (2025) argue that the theory does not take into account the political, cultural, and economic barriers to adoption, especially in several regional contexts.

In Southwest Nigeria, SMEs operate in a dynamic and competitive environment. Resource constraints, market instability, technological development, and rivalry make it a constantly changing environment that calls for constant adaptation. Entrepreneurial development programmes are external interventions that enable SMEs to overcome obstacles and operate sustainably by enhancing their ability to adapt (Nyamboga, 2026). Under the hypothesis, low SMEs in Southwest Nigeria adapt their strategies to remain stable in a changing environment through self-organisation and feedback.

CONCLUSION

Innovation, technology, and government backing are factors that influence the sustainability of agricultural SMEs in Southwest Nigeria. But they do not work in sync and with equal intensity. The lower perceived involvement of government supports indicates that the policy goals are far from being met, even as small-scale farmers are actively adopting new methods and digital technologies that improve their productivity and long-term sustainability. While firms' capabilities and supporting institutions are important, only one can predict longevity. Innovation and technology, together with government policies, explain a significant percentage of the variance in SME sustainability. To improve the sustainability of agricultural SMEs in Southwest Nigeria, research suggests not only more investment in innovation and technology, but also redesigning support programs, regulations, and implementation mechanisms to be more accessible, consistent, and relevant to SME needs.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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