



Entrepreneurial Skills and Sustainable Food Business Practices Among Small and Medium-Sized Food Enterprises in Nigeria

Okoye Maryvian Chinyere¹, Veronica Akandu Kulo² and Atah Cletus Akpo^{3*}

¹Department of Business Education, Ebonyi State University, Abakaliki, Nigeria

²Department of Business Education, Federal College of Education Obudu, Nigeria

³Department of Business Education, University of Calabar, Nigeria



Abstract

This study examined the relationship between entrepreneurial skills and sustainable food business practices among Small and Medium-sized food Enterprises (SMEs) in Nigeria. The study specifically investigated the relationships between opportunity recognition skills, innovation skills, and sustainable food business practices. A correlational research design was adopted. The population consisted of 9,502 small and medium-sized food enterprises across Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States in Nigeria's South-South geopolitical zone. A sample of 384 enterprises was determined using the Taro Yamane formula and selected through a multistage sampling procedure. Data were collected using a researcher-developed Entrepreneurial Skills and Sustainable Food Business Practices Questionnaire (ES-SFBPQ), structured on a four-point rating scale. The instrument was validated by three experts, while its reliability was established using Cronbach's alpha. Data were analysed using means, standard deviations and Pearson Product Moment Correlation. The findings revealed that opportunity recognition skills had a positive and significant relationship with sustainable food business practices ($r = 0.556, p < 0.001$). Similarly, innovation skills had a positive and significant relationship with sustainable food business practices ($r = 0.642, p < 0.001$). The study concluded that entrepreneurial skills, particularly the ability to recognise opportunities and develop innovative solutions, play an important role in promoting sustainable practices among food SMEs. It was recommended that food SME owners should continually strengthen their opportunity recognition and innovation skills, while government agencies and entrepreneurship development institutions should provide practical training, technical support and incentives to promote sustainable innovation and efficient resource utilisation in the food business sector.

Keywords: Entrepreneurial Skills; Opportunity Recognition Skills; Innovation Skills; Sustainable Food Business Practices; Food Enterprises and Entrepreneurship

Introduction

Small and Medium-sized Enterprises (SMEs) have remained important contributors to economic development through employment creation, income generation, innovation and the provision of goods and services. Their contribution has been particularly relevant in developing economies such as Nigeria, where small businesses provide opportunities for self-employment and support the livelihoods of many households. Despite their importance, however, running an SME has become increasingly challenging. Changes in consumer preferences, technology, competition, availability of resources and environmental expectations have required entrepreneurs to make timely decisions and continually adjust the way their businesses operate. Consequently, entrepreneurial skills have become increasingly important for helping SMEs remain competitive, resilient and sustainable.

The food sector represents an important part of Nigeria's SME environment. Small and medium-sized food enterprises operate across food processing, baking, catering, restaurants, snacks and beverage production, packaging and retailing. These businesses provide employment and income while making food products readily available to consumers. At the same time, their operations generate challenges that have economic and environmental implications. Food spoilage, poor storage, inefficient use of raw materials, high energy and water consumption, excessive

OPEN ACCESS

*Correspondence:

Atah Cletus Akpo, Department of
Business Education, University of
Calabar, Nigeria,
E-mail: cleatah4real@yahoo.com

Received Date: 31 Aug 2026

Accepted Date: 26 Sep 2026

Published Date: 28 Sep 2026

Citation:

Chinyere OM, Kulo VA, Akpo AC.
Entrepreneurial Skills and Sustainable
Food Business Practices Among Small
and Medium-Sized Food Enterprises
in Nigeria. WebLog J Nutr Food
Sci. wjnfs.2026.i2804. <https://doi.org/10.5281/zenodo.23299607>

Copyright© 2026 Atah Cletus Akpo. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

packaging and inappropriate waste disposal can increase operating costs and reduce business efficiency. Sustainable food business practices therefore have become increasingly relevant. Such practices include reducing food waste, conserving water and energy, recycling and reusing materials, using environmentally friendly packaging, sourcing materials responsibly, maintaining food-safety standards and disposing of waste appropriately. These practices are consistent with Sustainable Development Goal 12, which promotes responsible consumption and production and encourages the reduction of food losses and waste and the increased reuse and recycling of materials [1].

Sustainability in food businesses is not solely an environmental concern; it also has direct economic implications. When raw materials spoil or are unnecessarily discarded, the financial resources invested in purchasing, transporting, storing and processing them are lost. Similarly, excessive consumption of electricity, water, fuel and packaging materials can raise operating costs. By using resources more efficiently and reducing avoidable waste, food enterprises may improve their financial efficiency and strengthen their capacity to survive in a competitive market. The extent to which entrepreneurs can achieve these outcomes may, however, depend partly on the skills they possess [2, 3]. Entrepreneurial skills encompass the abilities required to identify opportunities, generate and implement new ideas, mobilise resources, manage risks, make financial and strategic decisions, and respond effectively to changes in the business environment. Pissareva *et al.*, [4] emphasised that SMEs increasingly require combinations of entrepreneurial, green and digital skills to remain competitive and respond to the transition towards more sustainable and digitally enabled economies. This position suggests that entrepreneurial capability can provide an important foundation for incorporating sustainability into routine business decisions.

Among the entrepreneurial skills that may influence sustainable business practices, opportunity recognition is particularly important. Entrepreneurs who actively observe changes in customer preferences, market conditions and the availability of resources may identify new ways of improving their operations. For example, a food entrepreneur may recognise an opportunity to reduce waste through improved inventory control, use environmentally friendly packaging, develop products from food by-products or respond to growing consumer demand for sustainable products. Innovation skills may similarly enable entrepreneurs to turn such opportunities into practical solutions through improved production processes, new products, alternative packaging and resource-efficient technologies. Financial, strategic and risk-management skills may further help entrepreneurs assess the costs and benefits of sustainability initiatives and incorporate them into business decisions [5].

Evidence from Nigeria supports the importance of entrepreneurial competencies in SME development. Ibidunni *et al.*, [6], in their study of 296 informal SME entrepreneurs in Nigeria, found that organising, conceptual, learning, strategic, opportunity and risk-taking competencies contributed to innovation performance. Their findings suggested that entrepreneurial competencies could help business owners respond to operational pressures and changes in the business environment. In the food-products sector, Amadi and Thom-Otuya [7] also found significant relationships between entrepreneurial mindset, strategic resource management, innovation and sustainable business growth among SMEs in Rivers State. These findings indicated that entrepreneurial capabilities were relevant to

the growth and sustainability of food-related businesses. However, sustainable business growth is a broader outcome than the actual adoption of specific sustainability practices, leaving questions about how entrepreneurial skills influence day-to-day activities such as waste reduction, resource conservation, sustainable packaging and responsible waste management.

The importance of entrepreneurial capability is further demonstrated by research on resilience and environmental sustainability. Amadi and Thom-Otuya [8] found that adaptive capability, resourcefulness and optimism were significantly related to business survival indicators among food and beverage manufacturing SMEs in Rivers State. Similarly, Adesua-Lincoln [9] identified challenges associated with environmental sustainability and circular-economy practices among Nigerian SMEs and stressed the need for appropriate skills and knowledge. These findings are important because sustainable practices often require entrepreneurs to change established ways of purchasing, producing, storing, packaging and disposing of materials. An entrepreneur may recognise the importance of reducing food waste but still struggle to implement an effective waste-reduction system without the necessary planning, financial, technical and managerial capabilities. Entrepreneurial skills may therefore influence not only whether sustainability opportunities are recognised but also whether practical solutions are successfully implemented.

Research on opportunity recognition provides further support for this argument. Amadi and Nuel-Mark [10] found that active search, personal alertness and prior knowledge significantly influenced the performance of food and beverage SMEs in Rivers State. Sambasivan *et al.*, [11] similarly established that opportunity recognition mediated the relationship between entrepreneurs' personal and management qualities and venture performance in Malaysia. Anwar *et al.*, [12] found that business experience and financial literacy influenced opportunity recognition and SME performance in Pakistan, while Anwar *et al.*, [13] reported that opportunity recognition mediated the relationship between entrepreneurial orientation and new venture performance in emerging markets. Alim *et al.*, [14] also found a significant influence of opportunity recognition on entrepreneurial performance among SMEs in Bangladesh. More recently, Chikere and Renner [15] established a positive relationship between innovative behaviour and opportunity recognition among food and beverage firms in Port Harcourt, Nigeria. Collectively, these studies showed that entrepreneurs who were able to identify and respond to opportunities tended to achieve more favourable business outcomes. Nevertheless, most of the studies concentrated on performance, profitability, innovation, market share or venture outcomes rather than sustainable food business practices.

Innovation provides another important pathway through which entrepreneurial skills may influence sustainability. Ibidunni *et al.*, [6] linked entrepreneurial competencies with innovation performance among Nigerian SMEs, while Otache and Usang [16] found that innovation capability positively influenced SME performance during periods of economic crisis in Nigeria. Jalil *et al.*, [17] similarly reported that innovation capability improved SME performance in Malaysia, partly through technology adoption. Maldonado-Guzmán *et al.*, [18] found that product, process, marketing and management innovation influenced SME business returns in Mexico. In Colombia, Quintero Sepúlveda and Zúñiga Collazos [19] reported positive relationships among innovation capabilities,

innovation strategies and SME performance. Otache [20] found that innovation capability influenced SME performance in Nigeria through competitive advantage, while Shomoye-Olusi *et al.*, [21] established that innovation competency contributed significantly to SME performance in Lagos State. Although these studies consistently highlighted the value of innovation, their emphasis was mainly on performance, competitiveness and financial outcomes rather than on sustainable food business practices.

The gap in the literature is therefore clear. Existing studies have established that entrepreneurial competencies, opportunity recognition, innovation, resource management and resilience can improve different aspects of SME performance and sustainability. However, relatively little empirical attention has been given to the direct relationship between entrepreneurial skills and specific sustainable practices among food SMEs in Nigeria. This is important because food enterprises face distinctive sustainability challenges arising from food spoilage, resource consumption, packaging, food safety and waste generation. Understanding whether entrepreneurs' ability to recognise opportunities and innovate is associated with their adoption of sustainable practices could provide a more practical understanding of how sustainability can be strengthened within the sector.

Against this background, the present study examined the relationship between entrepreneurial skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria, with particular attention to opportunity recognition and innovation skills. The study was intended to provide evidence on whether entrepreneurs who were better able to identify opportunities and develop innovative solutions were also more likely to adopt practices that promoted efficient resource use, reduced food waste and supported environmental responsibility. The findings could be useful to food business owners, policymakers, entrepreneurship educators, SME development agencies and industry associations in designing interventions that strengthen entrepreneurial capabilities while promoting more sustainable and resilient food enterprises.

Statement of the Problem

Small and medium-sized food enterprises played an important role in Nigeria's economy by creating employment, generating income and supporting the availability and distribution of food products. Despite their contributions, many of these enterprises experienced difficulties that affected their ability to survive and operate sustainably. Rising costs of inputs, poor infrastructure, unreliable electricity, limited access to finance, strong competition, changing customer preferences, food waste and growing environmental concerns continued to create pressure on food business owners. These challenges made it increasingly important for entrepreneurs to possess the skills needed to recognise emerging opportunities, develop new ideas, use resources wisely and make business decisions that supported long-term sustainability.

Sustainable food business practices, such as reducing food waste, conserving water and energy, recycling materials, using sustainable packaging, sourcing responsibly and managing waste properly, could help food enterprises reduce unnecessary costs and minimise their environmental impact. Previous studies provided evidence that entrepreneurial competencies, innovation and resource management were important to SME performance and sustainability-related outcomes. For example, Ibidunni *et al.*, [6]

found that entrepreneurial competencies contributed to innovation performance among Nigerian SMEs, while Amadi and Thom-Otuya [7] reported significant relationships among entrepreneurial mindset, strategic resource management, innovation and sustainable business growth among food-product SMEs in Rivers State. Adesua-Lincoln [9] also highlighted the challenges Nigerian SMEs faced in adopting environmental sustainability and circular-economy practices. However, these studies did not sufficiently explain whether entrepreneurs' skills were directly related to the practical adoption of sustainable food business practices.

The problem, therefore, was not simply that food enterprises faced sustainability challenges, but that limited empirical evidence existed on how entrepreneurial skills related to the way these enterprises responded to such challenges. In particular, little was known about the relationship between opportunity recognition and innovation skills and practical activities such as reducing food waste, conserving resources, recycling, adopting sustainable packaging and managing waste responsibly. This gap provided the basis for the present study, which examined the relationship between opportunity recognition skills, innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria. The findings were expected to provide useful evidence for food business owners, policymakers, entrepreneurship educators and SME development agencies in designing interventions that could strengthen entrepreneurial capabilities, encourage sustainable practices and improve the long-term viability and competitiveness of food enterprises.

Objectives of the Study

The main objective of the study was to examine how entrepreneurial skills related to sustainable food business practices among small and medium-sized food enterprises in Nigeria. Specifically, the study sought to:

1. Determine the relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria; and
2. Determine the relationship between innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria.

Research questions

The study was guided by the following research questions:

1. What was the relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria?
2. What was the relationship between innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria?

Research hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01} : There was no significant relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria.

H_{02} : There was no significant relationship between innovation skills and sustainable food business practices among small and

medium-sized food enterprises in Nigeria.

Methodology

The study adopted a correlational research design to examine the relationship between entrepreneurial skills and sustainable food business practices among small and medium-sized food enterprises in the South-South geopolitical zone of Nigeria. The design was appropriate because the study was concerned with understanding whether differences in entrepreneurial skills were associated with differences in the way food businesses adopted sustainable practices. The study did not involve the manipulation of any variable. Instead, data were collected from food business operators as the variables naturally existed and were subsequently analysed to determine the direction and strength of the relationships among them. The entrepreneurial skills considered in the study were opportunity recognition skills and innovation skills, while the dependent variable was sustainable food business practices.

The study was conducted in the South-South geopolitical zone of Nigeria, comprising Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. The zone was considered suitable for the study because of its active commercial environment and the considerable number of small and medium-sized businesses engaged in food production, processing, distribution and retail activities. Food businesses in the region operate under conditions that require owners and managers to respond continually to changing customer needs, increasing competition, rising operating costs and limited business resources. At the same time, issues such as food waste, energy consumption, packaging and efficient use of resources have become increasingly important to business sustainability. These conditions provided an appropriate setting for examining how entrepreneurial skills were related to sustainable practices among food enterprises.

The population frame for the study was obtained from enterprise figures reported in the National Survey of Micro, Small, and Medium Enterprises, conducted by the National Bureau of Statistics (NBS) in collaboration with the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN). The study covered enterprises across the six states of Nigeria's South-South geopolitical zone, namely Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States. The population comprised a total of 9,502 enterprises, with the distribution across the six states presented in Table 1.

The study was conducted with 384 respondents drawn from a population of 9,502 food-related enterprises. This sample was considered sufficient to provide a reliable representation of the enterprises included in the study. A multistage sampling technique was used to select the respondents. First, the six states that make up the South-South geopolitical zone were treated as distinct geographical areas. Food-related enterprises were then identified from available business registers and other relevant records. The 384 respondents were distributed among the six states based on the number of enterprises in each state to ensure fair representation. After the allocation, eligible enterprises and respondents were selected from each state using simple random sampling. This procedure gave enterprises an equal opportunity of being selected and helped to reduce the possibility of selection bias. It also made it easier to obtain respondents from the different states, considering the wide geographical spread of the study area. The distribution of the 384 respondents across the six states is presented in Table 2.

Data were collected using a researcher-developed questionnaire

Table 1: Distribution of enterprises in the South-South geopolitical zone.

S/N	State	Population of Enterprises
1	Akwa Ibom	1,887
2	Bayelsa	300
3	Cross River	1,456
4	Delta	1,524
5	Edo	2,677
6	Rivers	1,658
	Total	9,502

Source: National Bureau of Statistics (NBS) and Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), National Survey of Micro, Small and Medium Enterprises.

Table 2: Proportional allocation of the sample.

S/N	State	Population	Proportion (%)	Sample
1	Akwa Ibom	1,887	19.86	76
2	Bayelsa	300	3.16	12
3	Cross River	1,456	15.32	59
4	Delta	1,524	16.04	62
5	Edo	2,677	28.17	108
6	Rivers	1,658	17.45	67
	Total	9,502	100	384

titled Entrepreneurial Skills and Sustainable Food Business Practices Questionnaire (ES-SFBPQ). The instrument was developed based on the objectives of the study and a review of relevant literature on entrepreneurial skills and sustainable food business practices. The questionnaire was divided into three sections. Section A obtained information on the demographic and business characteristics of the respondents. Section B measured entrepreneurial skills and comprised two dimensions: opportunity recognition skills and innovation skills. Ten items were used to assess opportunity recognition skills, while another ten items assessed innovation skills. Section C consisted of ten items designed to measure sustainable food business practices. Thus, the substantive sections of the questionnaire contained a total of 30 items. Response Scale. The questionnaire items were measured using a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), assigned values of 4, 3, 2, and 1, respectively. The four-point response scale was adopted to encourage respondents to take a definite position on each statement and to avoid the tendency to select a neutral response.

The questionnaire was subjected to face and content validation by three experts at the University of Calabar, Cross River State, Nigeria. One expert was from the Department of Vocational Education, while two experts were from the Department of Home Economics and Food and Nutrition. The experts were selected based on their knowledge and experience in the relevant areas of the study. Copies of the questionnaire, together with the study objectives, research questions, and hypotheses, were presented to the experts for review. They examined the instrument for the relevance and adequacy of the items, clarity of expression, appropriateness of the wording, coverage of the study variables, and suitability for the intended respondents. Their suggestions and observations were carefully considered, and the necessary modifications were made before the final version of the questionnaire was administered to the respondents.

The reliability of the questionnaire was established through a

Table 3: Item by item analysis of respondents' responses to items on opportunity recognition skills (N = 384).

S/N	Questionnaire Item	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Decision
1	I can identify new business opportunities that arise from changes in customers' food preferences.	158	142	54	30	3.11	0.91	Agree
2	I regularly look for new opportunities to improve the products and services offered by my food enterprise.	171	137	48	28	3.17	0.87	Agree
3	I can recognise profitable opportunities in the food business before many of my competitors do.	139	146	65	34	3.02	0.94	Agree
4	I use information about market trends to identify new opportunities for my food enterprise.	164	143	51	26	3.16	0.86	Agree
5	I can identify opportunities to reduce food waste while improving the performance of my business.	151	148	57	28	3.1	0.88	Agree
6	I can identify ways of using locally available materials and resources to improve my food business.	162	141	54	27	3.14	0.87	Agree
7	I recognise business opportunities created by the growing demand for environmentally friendly food products and services.	144	143	66	31	3.04	0.91	Agree
8	I can identify new markets for food products that can contribute to the long-term growth of my enterprise.	157	145	55	27	3.13	0.88	Agree
9	I quickly notice changes in the business environment that may create new opportunities for my food enterprise.	149	151	57	27	3.1	0.88	Agree
10	I carefully assess new business opportunities that could make my food enterprise more sustainable.	155	147	54	28	3.12	0.89	Agree
	Grand Mean					3.1	0.89	Agree

Note: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. Criterion mean = 2.50.

pilot study involving owners, managers, and operators of food-related enterprises outside the study area. The pilot responses were analysed using Cronbach's alpha, with a coefficient of 0.70 or above considered acceptable. Reliability coefficients were determined for the major scales and the questionnaire as a whole. A total of 384 copies of the questionnaire were administered to selected owners, managers, and operators of food-related enterprises across the six states through both online and physical distribution. All 384 copies were successfully retrieved, giving a 100% return rate. The respondents were informed about the purpose of the study, assured of confidentiality, and informed that participation was voluntary. The retrieved questionnaires were checked, coded, and prepared for statistical analysis.

The data collected from the completed questionnaires were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Frequencies and percentages were used to summarise the demographic and business characteristics of the respondents, while means and standard deviations were used to describe their responses to the questionnaire items. The Pearson Product Moment Correlation (PPMC) was used to answer the research questions and determine the strength and direction of the relationships among opportunity recognition skills, innovation skills, and sustainable food business practices.

The hypotheses were tested at the 0.05 level of significance. A p-value less than 0.05 was considered statistically significant and led to the rejection of the null hypothesis, whereas a p-value greater than 0.05 resulted in the non-rejection of the null hypothesis. For the interpretation of the four-point Likert scale, a criterion mean of 2.50 was adopted. Thus, mean scores of 2.50 and above were interpreted as agreement, while mean scores below 2.50 were interpreted as disagreement. The results were presented in tables and interpreted in line with the research questions and hypotheses.

Ethical principles were carefully observed throughout the study. The respondents were informed about the purpose of the study and were encouraged to participate voluntarily. They were assured that the information provided would be treated as confidential and used strictly for academic purposes. The questionnaire did not request unnecessary personal information or sensitive financial details about the enterprises. During the processing, analysis, and presentation of

the data, appropriate measures were taken to protect the identity of the respondents and their businesses.

Results of the Findings

Research question 1

What was the relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria?

Table 3 presents the responses of the 384 respondents to the ten items measuring opportunity recognition skills. The item mean scores ranged from 3.02 to 3.17, with a grand mean of 3.10 and an average standard deviation of approximately 0.89. The highest mean score of 3.17 was recorded for regularly looking for new opportunities to improve the products and services offered by their food enterprises, followed by using market trends to identify new opportunities (M = 3.16). The lowest mean score of 3.02 was recorded for recognising profitable food business opportunities before competitors. Since all the item mean scores were above the criterion mean of 2.50, the respondents generally agreed that they possessed opportunity recognition skills. This indicates that the food business operators were able to identify changing customer needs, monitor market trends, explore new markets and recognise opportunities to improve their business operations. They also appeared to recognise opportunities to use resources more efficiently and reduce food waste.

Research question 2

What was the relationship between innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria?

Table 4 presents the responses of the 384 respondents to the ten items measuring innovation skills. The item mean scores ranged from 3.04 to 3.19, with a grand mean of 3.13. Since all the item means were above the criterion mean of 2.50, the items were accepted, indicating a generally positive level of innovation skills among the respondents. The highest mean score of 3.19 was recorded for the respondents' willingness to adopt new technologies that could improve the efficiency of their food businesses. The lowest mean score of 3.04 was recorded for introducing improved packaging methods that could reduce environmental impact. Overall, the findings suggest that

Table 4: Analysis of respondents' responses to items on innovation skills (N = 384).

S/N	Questionnaire Item	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Decision
11	I can develop new ideas for improving the products offered by my food enterprise.	166	143	50	25	3.17	0.85	Agree
12	I introduce new or improved food products to meet changing customer needs.	153	149	54	28	3.11	0.89	Agree
13	I can develop better and more efficient ways of producing or preparing food products.	159	145	53	27	3.14	0.87	Agree
14	I use new ideas and methods to reduce food waste in my enterprise.	147	151	58	28	3.09	0.88	Agree
15	I am willing to adopt new technologies that can improve the efficiency of my food business.	171	139	49	25	3.19	0.84	Agree
16	I can develop creative solutions to problems that arise in the operation of my food enterprise.	164	145	50	25	3.17	0.85	Agree
17	I introduce improved packaging methods that help to reduce the environmental impact of my business.	142	146	65	31	3.04	0.92	Agree
18	I try new ways of saving water, energy and other resources in my food enterprise.	149	147	61	27	3.09	0.88	Agree
19	I change existing business practices when better and more effective methods become available.	158	148	53	25	3.14	0.85	Agree
20	I encourage and put innovative ideas into practice to improve the long-term sustainability of my food enterprise.	161	146	51	26	3.15	0.86	Agree
	Grand Mean					3.13	0.87	Agree

Table 5: Pearson product moment correlation between opportunity recognition skills and sustainable food business practices (N = 384).

Variables	N	Pearson r	p-value	Decision
Opportunity Recognition Skills	384			
		0.556	<0.001	Reject H ₀₁
Sustainable Food Business Practices	384			

Note: Significant at 0.05 level of significance

the respondents demonstrated innovation skills by developing new ideas, improving products and production processes, adopting useful technologies, reducing waste, conserving resources and making changes to existing business practices.

Test of hypothesis one

H₀₁: There was no significant relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria.

The result in Table 5 indicates that opportunity recognition skills were positively related to sustainable food business practices among the food enterprises studied. The Pearson correlation coefficient of $r = 0.556$ shows a moderate positive relationship, suggesting that enterprises with stronger opportunity recognition skills tended to report better sustainable food business practices. The relationship was statistically significant, as the p-value of <0.001 was below the 0.05 significance level. Based on this result, the null hypothesis was rejected. This means that there was a significant relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria.

Test of hypothesis two

H₀₂: There was no significant relationship between innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria.

As presented in Table 6, innovation skills showed a positive relationship with sustainable food business practices. The Pearson correlation coefficient of $r = 0.642$ indicates a relatively strong positive relationship between the two variables. This means that food enterprises with higher levels of innovation skills tended to demonstrate better sustainable business practices. Since the p-value was less than 0.001, which is below the 0.05 significance level,

Table 6: Pearson product moment correlation between innovation skills and sustainable food business practices (N = 384).

Variables	N	Pearson r	p-value	Decision
Innovation Skills	384			
		0.642	<0.001	Reject H ₀₂
Sustainable Food Business Practices	384			

Note: Significant at 0.05 level of significance

the relationship was statistically significant. Therefore, the null hypothesis was rejected. The finding suggests that innovation skills are significantly associated with sustainable food business practices among small and medium-sized food enterprises in Nigeria.

Discussion of Findings

Opportunity recognition skills and sustainable food business practices

The study revealed a positive and statistically significant relationship between opportunity recognition skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria. The Pearson correlation coefficient of $r = 0.556$, with a p-value of less than 0.001, indicates a moderate positive relationship between the two variables. Since the p-value was below the 0.05 level of significance, the null hypothesis was rejected. This finding suggests that food enterprise owners and managers who are better able to identify emerging opportunities, understand changing customer preferences, recognise market trends and respond to changes in the business environment tend to demonstrate stronger sustainable business practices.

The finding is consistent with the study of Amadi and Nuel-Mark [10], which reported that active search, personal alertness and prior knowledge significantly influenced the performance of food and beverage SMEs in Rivers State. The similarity between the two studies suggests that entrepreneurs who actively seek information and remain attentive to changes in their business environment are better positioned to identify opportunities for improving their enterprises. Although Amadi and Nuel-Mark focused on business performance, the present study extends this perspective by showing that opportunity recognition is also associated with sustainable business practices. For food SMEs, recognising emerging opportunities may encourage

entrepreneurs to explore ways of reducing food waste, improving resource utilisation and responding to increasing consumer interest in environmentally responsible products.

The finding also agrees with Sambasivan *et al.*, [11], who found that opportunity recognition mediated the relationship between entrepreneurs' personal and management qualities and venture performance in Malaysia. Their finding highlights opportunity recognition as an important mechanism through which entrepreneurial capabilities can translate into favourable business outcomes. The present study supports this position while placing greater emphasis on sustainability. For instance, an entrepreneur who identifies increasing consumer demand for environmentally friendly products may recognise opportunities to introduce sustainable packaging, locally sourced inputs or waste-reduction practices into the business.

Similarly, the result is consistent with Anwar *et al.*, [12], who found that business experience and financial literacy significantly influenced opportunity recognition and SME performance in Pakistan. This agreement indicates that entrepreneurs' knowledge and experience can assist them in interpreting changes in the business environment and making informed decisions about emerging opportunities. In the Nigerian food business environment, such capabilities may enable enterprise owners to identify opportunities for improving production efficiency, conserving resources and reducing unnecessary costs without compromising product quality. The finding further supports Anwar *et al.*, [13], who reported that opportunity recognition mediated the relationship between entrepreneurial orientation and new venture performance in emerging markets. Their study demonstrated that recognising opportunities is an important process through which entrepreneurial orientation can be translated into favourable venture outcomes. The present study extends this argument by demonstrating that opportunity recognition is also significantly associated with sustainable food business practices. This suggests that the relevance of opportunity recognition goes beyond business growth and performance and may also extend to responsible and sustainable business decision-making.

The result is also in agreement with Alim *et al.*, [14], who found that opportunity recognition significantly influenced entrepreneurs' performance among SMEs in Bangladesh. Both studies emphasise the importance of identifying and responding to opportunities in achieving desirable business outcomes. However, while Alim *et al.* focused primarily on entrepreneurial performance, the present study examined sustainability-oriented practices. The finding therefore suggests that opportunity recognition may help food SMEs remain economically viable while also encouraging practices that reduce waste and promote efficient utilisation of resources. The finding further agrees with Chikere and Renner [15], who reported a significant positive relationship between innovative behaviour and opportunity recognition among food and beverage firms in Port Harcourt, Nigeria. This finding is particularly relevant to the present study because it was conducted within the Nigerian food and beverage sector. The agreement suggests that entrepreneurs who are attentive to emerging opportunities may also be more responsive and creative in addressing changes within their business environment. Such responsiveness may be reflected in improved production methods, better packaging, food-waste reduction and other practices that support sustainable business operations.

Overall, the reviewed studies generally support the present

finding that opportunity recognition is an important entrepreneurial capability. However, the present study contributes a distinct perspective by linking opportunity recognition directly with sustainable food business practices. While much of the previous literature has concentrated on performance, profitability, innovation and venture outcomes, the current finding demonstrates that the ability to recognise opportunities may also be relevant to the long-term economic and environmental sustainability of food SMEs in Nigeria.

Innovation skills and sustainable food business practices

The study also found a positive and statistically significant relationship between innovation skills and sustainable food business practices among small and medium-sized food enterprises in Nigeria. The Pearson correlation coefficient of $r = 0.642$, together with a p-value of less than 0.001, indicates a relatively strong positive relationship between the two variables. Since the p-value was lower than the 0.05 significance level, the null hypothesis was rejected. The result suggests that food enterprise owners and managers with stronger innovation skills tend to report higher levels of sustainable business practices.

This finding is consistent with Ibidunni *et al.*, [6], who found that entrepreneurial competencies significantly contributed to innovation performance among informal SMEs in Nigeria. Their study emphasised the importance of entrepreneurial competencies in promoting innovation within small businesses. The present finding reinforces this position by demonstrating that innovation skills are associated not only with innovation performance but also with sustainable business practices. Entrepreneurs who can generate and implement new ideas may therefore be better positioned to identify practical responses to challenges involving waste management, energy consumption, packaging and resource utilisation.

The finding also agrees with Otache and Usang [16], who established that innovation capability positively influenced SME performance in Nigeria during periods of economic crisis. The agreement suggests that innovation is particularly relevant when businesses operate in challenging economic environments. For food SMEs, innovative approaches may involve modifying production processes, reducing operating costs, minimising waste and improving the use of scarce resources. These practices may enhance the ability of enterprises to remain viable while responding to sustainability concerns.

Similarly, the finding is consistent with Jalil *et al.*, [17], who found that innovation capability significantly improved SME performance in Malaysia, partly through technology adoption. Their study demonstrated the importance of innovation and technology in improving business operations. The present finding extends this perspective by showing that innovation capability is also associated with sustainable food business practices. Appropriate technologies and innovative processes may assist food enterprises in improving production efficiency, reducing waste, monitoring resource consumption and adopting more environmentally responsible methods of operation.

The result is also in agreement with Maldonado-Guzmán *et al.*, [18], who established that product, process, marketing and management innovation significantly influenced the business returns of SMEs in Mexico. Their finding indicates that innovation can influence several dimensions of business activity rather than being restricted to the development of new products. This is particularly

relevant to food SMEs because sustainability-oriented improvements can occur through innovations in production, packaging, marketing, storage, resource management and waste disposal.

The finding further supports Quintero Sepúlveda and Zúñiga Collazos [19], who reported positive relationships among innovation capabilities, innovation strategies and SME performance in Colombia. Their finding suggests that businesses with stronger innovation capabilities are better positioned to respond to changing market conditions. The present study reaches a similar conclusion but extends the discussion to sustainability. This implies that innovation may help food enterprises respond to market demands while simultaneously addressing environmental and resource-related challenges.

The finding is also consistent with Otache [20], who reported that innovation capability positively influenced SME performance in Nigeria through competitive advantage. The agreement suggests that innovation can help SMEs distinguish themselves from competitors and strengthen their market position. In the food sector, such innovation may include sustainable packaging, improved production techniques, efficient storage systems, energy-saving technologies and measures for reducing food waste. These practices may simultaneously contribute to competitiveness and long-term sustainability.

Finally, the result agrees with Shomoye-Olusi *et al.*, [21], who found that innovation competency significantly contributed to SME performance in Lagos State, Nigeria. The similarity across the studies indicates that innovation competency remains an important capability within different SME contexts in Nigeria. However, the present study extends previous evidence by demonstrating that innovation skills are also significantly associated with sustainable food business practices rather than performance outcomes alone.

An important observation from the study is that the relationship between innovation skills and sustainable food business practices ($r = 0.642$) was stronger than the relationship between opportunity recognition skills and sustainable food business practices ($r = 0.556$). Although both relationships were positive and significant, the stronger coefficient for innovation skills suggests that the capacity to develop and implement new ideas may have a closer association with sustainable business practices than the ability to recognise opportunities alone. In practical terms, identifying a business opportunity may be only the first step. Entrepreneurs may also need the ability to translate identified opportunities into workable solutions through improved products, production processes, technologies, waste-reduction methods and more efficient resource utilisation. The finding therefore contributes to the existing literature by showing that innovation skills are relevant not only to business growth, financial performance and competitiveness but also to sustainability-oriented practices among food SMEs. It suggests that innovative entrepreneurs may be better positioned to explore practical approaches to resource conservation, waste reduction and improved business operations. Nevertheless, because the study examined relationships rather than cause-and-effect effects, the finding should be interpreted as an association between innovation skills and sustainable food business practices rather than proof that innovation skills directly cause sustainable practices [22].

Implications of the Findings

The findings suggest that food SMEs in Nigeria can improve their long-term sustainability by strengthening opportunity recognition and innovation skills. Entrepreneurs need to pay close attention to

changing customer needs, market trends and developments in their business environment so that they can identify and take advantage of opportunities that improve their operations. The findings also highlight the need for entrepreneurs to develop practical innovation skills. This could help them adopt better production methods, reduce food waste, use resources more efficiently, introduce sustainable packaging and apply energy-saving technologies. Government agencies and SME support organisations should therefore include innovation and sustainability in entrepreneurship training and provide the necessary financial and technical support.

Similarly, business and entrepreneurship education programmes should equip students with practical skills in opportunity recognition, innovation and sustainable business management. Overall, the findings indicate that sustainability does not have to be separated from business success. When entrepreneurs identify opportunities and apply innovative solutions, they can improve efficiency, reduce waste and strengthen the long-term survival and competitiveness of their enterprises.

Conclusion

Based on the findings, the study concludes that entrepreneurial skills are significantly associated with sustainable food business practices among small and medium-sized food enterprises in Nigeria. Specifically, both opportunity recognition skills and innovation skills demonstrated positive and statistically significant relationships with sustainable food business practices. The finding on opportunity recognition indicates that entrepreneurs who are better able to identify emerging opportunities, monitor changes in the business environment and respond to evolving customer and market needs tend to report stronger engagement in sustainable business practices. Similarly, the finding on innovation skills indicates that entrepreneurs with stronger capacities to develop and implement new ideas tend to report higher levels of sustainable approaches to production, resource utilisation, waste management and other areas of business operations.

The study further concludes that strengthening entrepreneurial competencies may be an important consideration in efforts to promote sustainable food enterprises in Nigeria. Although both opportunity recognition and innovation skills were significantly related to sustainable food business practices, innovation skills recorded the stronger relationship. This finding underscores the importance of moving beyond identifying opportunities to developing and implementing practical solutions that address business, resource and environmental challenges. Overall, the study highlights the relevance of entrepreneurial skills in supporting the sustainability of food SMEs. Encouraging entrepreneurs to remain alert to emerging opportunities while equipping them with the skills to transform those opportunities into innovative and responsible business practices may contribute to enterprises that are more adaptable, resource-efficient and capable of sustaining their operations over time.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made:

1. Food SME owners should strengthen their opportunity recognition skills by monitoring market trends, customer needs and emerging business opportunities.
2. Food SMEs should develop their innovation capabilities by adopting improved production methods, sustainable packaging,

appropriate technologies and waste-reduction practices.

3. Government and SME-support agencies should provide training, technical assistance and financial incentives to encourage sustainable innovation among food enterprises.

4. Business education and entrepreneurship programmes should integrate opportunity recognition, innovation and sustainability skills to prepare students and future entrepreneurs for sustainable business operations.

References

1. United Nations. Transforming our world: The 2030 agenda for sustainable development. 2015.
2. Onwubuya UN, Agbogo RA, Ejue FO, Ogala CS, Atah CA. Entrepreneurship training and involvement of business education graduates in small scale business in Calabar Metropolises: *Journal of International Cooperation and Development*. 2025; 8(1): 97-107.
3. Idika IM, Ochui MO, Atah CA. Entrepreneurial abilities required for the sustenance of small and medium enterprises (SME) in the southeast geopolitical zone of Nigeria. *Association of vocational & technical educators of Nigeria (AVTEN)*. 2023; 29(1): 120-128.
4. Pissareva L, Sobron Bernal M, Trapasso R, Velayos J. Equipping SMEs with the skills to navigate the twin transition. OECD Publishing. 2025.
5. Atah CA, Ogbuji MO, Agbor EE. Small scale business operators' risk-taking and pro-activeness: an imperative approach to sustainable Nigeria economic development of Federal Universities in South-South, Nigeria. *British International Journal of Education and Social Sciences*. 2019; 6(4): 1-8.
6. Ibidunni AS, Ogundana OM, Okonkwo A. Entrepreneurial competencies and the performance of informal SMEs: The contingent role of business environment. *Journal of African Business*. 2021; 22(4): 468-490.
7. Amadi L, Thom-Otuya I. Entrepreneurial resilience and business survival of food and beverage manufacturing SMEs in Rivers State. *BW Academic Journal*. 2025; 2: 50-63.
8. Amadi L, Thom-Otuya I. Strategic entrepreneurship and sustainable business growth of SMEs in food products sector in Nigeria. *BW Academic Journal*. 2025; 2: 1-16.
9. Adesua-Lincoln A. Challenges to environmental sustainability and circular economy practices of Nigerian small and medium enterprises. *Journal of Sustainable Business*. 2025.
10. Amadi L, Nuel-Mark GP. Market opportunity recognition and business performance of food and beverage manufacturing SMEs in Rivers State, Nigeria. *BW Academic Journal*. 2021.
11. Sambasivan M, Abdul M, Yusop Y. Impact of personal qualities and management skills of entrepreneurs on venture performance in Malaysia: Opportunity recognition skills as a mediating factor. *Technovation*. 2009; 29(11): 798-805.
12. Anwar M, Shuangjie L, Ullah R. Business experience or financial literacy? Which one is better for opportunity recognition and superior performance? *Business Strategy & Development*. 2020; 3(3): 377-387.
13. Anwar M, Clauss T, Issah WB. Entrepreneurial orientation and new venture performance in emerging markets: The mediating role of opportunity recognition. *Review of Managerial Science*. 2022; 16: 769-796.
14. Alim MA, Tan KL, Jee TW, Voon BH, Hossain MJ, Mia MU. To explain and to predict: Analysis of opportunity recognition on the relationship between personal factors, environmental factors and entrepreneurs' performance. *Asia-Pacific Journal of Business Administration*. 2023; 15(5): 772-794.
15. Chikere P, Renner BAI. Innovative behaviour and opportunity recognition in food and beverages firms, Port Harcourt. *International Journal of Entrepreneurship and Business Innovation*. 2024; 7(2): 36-45.
16. Otache I, Usang OUE. Innovation capability and SME performance in times of economic crisis: Does government support moderate? *African Journal of Economic and Management Studies*. 2021; 13(1): 76-88.
17. Jalil MF, Ali AS, Kamarulzaman R. Does innovation capability improve SME performance in Malaysia? The mediating effect of technology adoption. *The International Journal of Entrepreneurship and Innovation*. 2022; 23(4): 253-267.
18. Maldonado-Guzmán G, Garza-Reyes JA, Pinzón-Castro SY, Kumar V. Innovation capabilities and performance: Are they truly linked in SMEs? *International Journal of Innovation Science*. 2019; 11(1): 48-62.
19. Quintero Sepúlveda IC, Zúñiga Collazos A. Innovation capabilities, innovation strategies and performance: An empirical analysis in SMEs. *Technology Analysis & Strategic Management*. 2024.
20. Otache I. Innovation capability, strategic flexibility and SME performance: The roles of competitive advantage and competitive intensity. *African Journal of Economic and Management Studies*. 2024; 15(2): 248-262.
21. Shomoye-Olusi MA, Olayemi OO, Okonji PS. Managerial competencies and the small and medium enterprises' performance in Lagos State, Nigeria. *FUOYE Journal of Finance and Contemporary Issues*. 2024; 6(1): 82-96.
22. Ali H, Hao Y, Chen A. Innovation capabilities and small and medium enterprises' performance: An exploratory study. *The Journal of Asian Finance, Economics and Business*. 2020; 7(10): 959-968.