Green Strategic Management and Organizational Performance of Manufacturing Firms in Cross River State, Nigeria

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Abstract
This study examined the effect of green strategic management on the organizational performance of manufacturing firms in Cross River State, with particular reference to Flour Mills Nigeria PLC, Calabar. Specifically, it investigated the effects of green innovation, green supply chain management and green human resource management on organizational performance. A descriptive survey research design was adopted. The population comprised 396 employees, from whom 196 respondents were selected through simple random sampling. Primary data were collected through a structured questionnaire validated by experts in business management and research methodology. The instrument recorded an overall Cronbach's alpha coefficient of 0.887, confirming its reliability. Of the 196 questionnaires administered, 184 were completed and returned, representing a response rate of 93.9 per cent. Data were analysed using descriptive statistics and multiple regression analysis with SPSS version 27 at the 5 per cent significance level. The findings showed that green innovation had a positive and significant effect on organizational performance ($\beta = 0.341$, $t = 5.679$, $p < 0.001$). Green supply chain management also had a positive and significant effect ($\beta = 0.377$, $t = 6.103$, $p < 0.001$), while green human resource management exerted a positive and significant effect ($\beta = 0.296$, $t = 4.754$, $p < 0.001$). Collectively, the variables explained 69.1 per cent of the variation in organizational performance. The study concluded that integrating environmental considerations into innovation, supply chain activities and human resource practices significantly improves overall organizational performance. It recommended cleaner technologies, environmentally responsible sourcing and regular employee environmental training.

Keywords: *Green strategic management; green innovation; green supply chain management; green human resource management; organizational performance; manufacturing firms.*

1.0 Introduction

1.1 Background to the study

Growing concerns about environmental pollution, depletion of resources, climate changes, and ecological effects of industry activities have progressively influenced the way in which manufacturing companies perceive strategy and performance. Organizational performance used to be assessed primarily through the lenses of profitability, productivity, growth in sales, and competitive position. Nowadays, manufacturing companies are under growing pressure to achieve economic performance and minimize environmental impact of their activities at the same time. Thus, environmental management is perceived not only as the necessity to comply with requirements and standards but as the need to integrate environmental consideration into corporate strategy, production system, logistics chain, innovations, and human resource management practices. Thus, green strategic management becomes an important approach that helps to align environmental responsibilities and organizational performance. It is especially applicable to the manufacturing industry because of the great involvement of production processes into energy consumption, use of raw materials, transportations, machinery and logistics network. Therefore, green strategic management includes not only environmental initiatives but also integration of environmental priorities into organizational activities and capabilities. Such a view on environmental responsibility is also supported empirically: Lee et al. (2021) prove that strategic management can help organizations to perform better in terms of environment and finances, whereas Thaher and Jaaron (2022) demonstrate the role of sustainability-oriented strategic planning and management in achievement of organizational sustainable performance. This suggests that environmental responsibilities become an integral part of mainstream strategic management and not separate activity that takes place aside from organizational performance.

One of the critical elements of this strategy includes green innovation, which implies the process of developing and implementing environmentally responsible products, processes, technologies, and management practices. According to empirical research, green innovation can be associated with positive effects on both environment and organization. In particular, Wang et al. (2021) found that green innovation practices affect environmental and organizational performance. Similarly, Ahmed et al. (2023) have discovered the relationship between green innovation practices and environmental/organizational performance in situations characterized by high level of management commitment and proper human resources practices. Thus, it can be stated that innovations aimed at improving the environmental state can help an organization become more competitive and effective. The next principle of green business strategy refers to green supply chain management. As it was mentioned before, manufacturing performance is affected not only by in-factory processes but also by the way an organization manages its materials acquisition, supplier relations, production processes, distribution activities, and the harmonization of environmental practices throughout the supply chain. Abdallah and Al-Ghwayeen (2020) have found that green supply chain management practices promote the performance of business by means of improvement of environmental and operational performance. In addition, Sahoo and Vijayvargy (2021) have discovered the positive impact of green supply chain management on organizational performance of Indian manufacturers. The human aspect of environmental strategy is another area of growing interest of scholars. Green human resource management (green HRM) involves embedding the objectives of an organization concerning the environment into recruiting,

training, performance management, participation, rewards, and organizational behavior of workers. According to the results of Ghouri et al. (2020), green HRM practices helped to increase the performance of Malaysian manufacturers. Moreover, Amjad et al. (2021) showed the role of green HRM in achieving organizational sustainability through improving environmental and employee performance. Similarly, Muisyo et al. (2022) have established the positive relationship between green HRM and green competitive advantage. Furthermore, recently, Akbar et al. (2024) found the positive correlation between green HRM and organizational performance. Finally, the importance of green HRM for employees, clients, and organizations is highlighted by AlKetbi and Rice (2024). Overall, these findings indicate that the environmental strategy should include not only technologies and systems but also the competence, motivations, and proper support of employees. In spite of all the evidence found, the results about the nature and mechanisms through which green practices affect performance are not always consistent. Some research focuses on direct impacts, while other studies claim that factors like green innovation, integration of the supply chain, performance of operations, capabilities of organizations, employees' behavior, and management's commitment act as mediating/enabling mechanisms (Abdallah & Al-Ghwayeen, 2020; Kanan et al., 2023; Khaskhely et al., 2022; Novitasari & Agustia, 2021). It means that the relationship between green strategic management and organizational performance is complex and depends on various organizational and contextual factors. Regarding African countries, most of the existing evidence is related to manufacturing industry and comes from Ghanaian companies, while in Nigeria, strategic management and organizational performance are usually researched in general. For instance, Phina (2020) found out that strategic management affects the organizational performance of manufacturing firms in South-East Nigeria. However, the review of the body of literature, which was done to write this paper, reveals insufficient focus on the joint impact of green innovation, green supply chain management, and green HRM as components of green strategic management in manufacturing firms in Cross River State. It is crucial to notice that the effectiveness of green management practices can be related to the economic, organizational, legal, and operational environment of firms. Thus, the current study will explore green strategic management and organizational performance of manufacturing firms in Cross River State, Flour Mills Nigeria PLC, Calabar.

1.2 Statement of the problem

In recent times, manufacturing companies have begun to appreciate the importance of green strategic management as an effective approach towards increasing environmental consciousness and maintaining organizational performance. However, despite the increased focus, most manufacturing companies still find themselves facing various challenges associated with the implementation of green approaches to achieving increases in productivity, efficiency, competitiveness, and general performance. Research shows that environmentally conscious strategies help to increase firm performance but their degree of success often depends on how effectively such practices are implemented within the organization (Lee et al., 2021; Thaher & Jaaron, 2022; Madah, 2023). This problem is especially relevant for manufacturing companies because their operations are accompanied by a high level of raw material, energy, machinery, labor, and logistical costs. It becomes essential to find out whether or not green strategic management practices really lead to improved organizational performance in Cross River State.

One of the main issues relates to green innovation. Manufacturing companies are supposed to implement green innovations in terms of production of goods and services, processes, and technologies to be able to increase efficiency, competitiveness, and minimize waste. However,

implementing innovations of such a kind may require significant investment of finances, efforts, management skills, and other organizational assets. In situations when some or all of those resources are not available in sufficient quantities, firms may find it difficult to depart from traditional approaches to production. Green supply chain management is an additional issue area to consider. Industrial companies depend significantly on the purchase of raw materials, the supply chain, production processes, and logistics of goods transportation and delivery. In case environmental management is not properly applied to such processes, it may result in inefficiency, waste generation, and increase in the cost of operation. Finally, another important issue in terms of green strategic management is represented by green human resource management. The success of environmental strategy implementation heavily depends on the company's staff because it is the employees who will implement the environmental policy and operate the production system. Empirical research has revealed that green HRM positively impacts organizational performance and sustainability through employee behaviors and the green awareness and commitment of the latter (Ghouri et al., 2020; Amjad et al., 2021; Akbar et al., 2024). On the other hand, some research has suggested that the effect may not be direct and may be moderated by green innovation, green culture, employee behavior, and organizational capabilities (Kanan et al., 2023; Khaskhely et al., 2022). Therefore, questions remain concerning how much the effect of green HRM influences organizational performance independently. It is clear from above that both practical and empirical reasons exist for conducting a research into how three dimensions of green strategic management impact organizational performance in manufacturing firms in Cross River State, particularly Flour Mills Nigeria PLC, Calabar.

1.3 Objectives of the study

The main objective of this study was to examine the effect of green strategic management on the organizational performance of manufacturing firms in Cross River State, with particular reference to Flour Mills Nigeria PLC, Calabar. The specific objectives were:

1. To determine the effect of green innovation on the organizational performance of Flour Mills Nigeria PLC, Calabar.
2. To assess the effect of green supply chain management on the organizational performance of Flour Mills Nigeria PLC, Calabar.
3. To examine the effect of green human resource management on the organizational performance of Flour Mills Nigeria PLC, Calabar.

1.4 Research questions

The following research questions guided the study:

1. To what extent does green innovation affect the organizational performance of Flour Mills Nigeria PLC, Calabar?
2. To what extent does green supply chain management affect the organizational performance of Flour Mills Nigeria PLC, Calabar?
3. To what extent does green human resource management affect the organizational performance of Flour Mills Nigeria PLC, Calabar?

1.5 Statement of hypotheses

The following hypotheses, stated in the null form, guided the study:

H_{01}: Green innovation has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

H_{02}: Green supply chain management has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.
H_{03}: Green human resource management has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

2.0 Literature Review

2.1 Conceptual framework

2.1.1 Concept of green strategic management

In general terms, green strategic management can be defined as the integration of environmental matters into the process of strategic planning, decision making, resource allocation, and operation of the company. Green strategic management represents the effort to ensure organizational growth and competitiveness without disconnecting business performance from environmental considerations. Unlike traditional strategic management, which considers environmental issues as external factors to be dealt with only to some extent, green strategic management incorporates environmental aspects into the overall strategy of the company. There are different perspectives on the definition of the concept under discussion. For example, Lee et al. (2021) view environmentally oriented strategic management as the inclusion of environmental considerations in business strategies to make sure that both environmental and financial performance will be enhanced by that. Thaher and Jaaron (2022) define sustainability strategic management as the integration of sustainability considerations into the process of planning and managing organizational performance. Madah (2023) offers an approach to the definition of the concept from the perspective of green manufacturing strategy, according to which green strategic management refers to strategic practices that help manufacturing firms improve their competitive performance while minimizing the negative impact on the environment with a specific focus on manufacturing operations. At the same time, Habib et al. (2021) argue that the concept of green strategic management is associated with strategic orientation because it determines how green supply chain practices are implemented in order to improve sustainable firm performance. The meaning of the concept under consideration has also changed considerably. Environmental management approaches that used to be applied in organizations were mostly based on regulatory compliance, waste control, and pollution reduction. Contemporary research describes green management as an organizational strategy aimed at innovation, coordination in supply chains, employee involvement, environmental knowledge, and competitiveness. Thus, Javed et al. (2025) discuss the relationship between green innovation and organizational capabilities and sustainable performance, while Khan et al. (2023) pay attention to the role of green leadership and environmental knowledge sharing in sustainable performance improvement. For the purposes of the current study, green strategic management refers to the integration of environmental objectives into the activities of the manufacturing firm via green innovation, green supply chain management, and green human resource management.

2.1.2 Concept of green innovation

The topic of green innovation has gained increasing popularity in manufacturing as organizations seek to improve products and processes, while minimizing the environmental footprint of their operations. Generally speaking, green innovation refers to the development and implementation of products, processes, technologies, and management practices that contribute to environmental improvement and organizational effectiveness and success simultaneously. In this respect, green innovation differs from the traditional innovation as the environmental aspects of innovation are

intentionally integrated into the process rather than being the results of the latter (Wang et al., 2021; Rehman et al., 2021; Yurdakul & Kazan, 2020). The literature provides several perspectives on green innovation as a concept. For instance, according to Wang et al. (2021), green innovation is associated with practices that promote not only environmental but also organizational performance. Rehman et al. (2021) define environmentally-oriented innovation as innovation that takes place in large manufacturing firms. The eco-innovation is seen by Yurdakul and Kazan (2020) as an innovation that helps generate both economic and environmental advantages for firms. Additionally, the perspective provided by Ahmed et al. (2023) is based on the idea that green innovation influences organizational performance. However, the effectiveness of such innovation depends on the management commitment and human resource practices in an organization. All these perspectives indicate that the scope of green innovation is not limited to the issue of environmental protection; it also represents a strategic instrument that organizations use to increase their efficiency, competitiveness, and performance. In manufacturing, green innovation is represented by green product innovation and green process innovation. While the former implies product, innovation aimed at minimizing negative environmental effects of manufacturing, the latter concerns cleaner production, resources and energy efficiency, and environmentally-friendly technologies. Both green product innovation and process innovation are viewed as critical elements of sustainable manufacturing performance by Sarfraz et al. (2022). Likewise, green innovation is associated with sustainable corporate performance by Le et al. (2022), while Novitasari and Agustia (2021) note that green innovation is one of the key links between green supply chain management and performance of an organization. Even though the views of researchers about green innovation slightly vary, the idea of integration of environmental improvement and organizational value generation remains unanimous. Some authors focus on environmental consequences of green innovation (Rehman et al., 2021), some on competitive advantage and organizational performance, others on sustainable performance of organizations (Ahmed et al., 2023; Le, 2022; Shehzad et al., 2023).

2.1.3 Concept of green supply chain management

The notion of green supply chain management (GSCM) refers to the incorporation of environmental considerations into the process of transporting raw materials, goods, data, and resources from suppliers to manufacturers and to customers. Green supply chain management expands the notion of SCM because it requires organizations to assess not only such criteria as cost, quality, time, and reliability but also the environmental aspects of the processes of sourcing, manufacturing, transportation, packing, distribution, and others. Therefore, in manufacturing, the notion of GSCM denotes attempts to ensure that the organizational and economic needs correspond to environmental concerns in the context of SCM (Abdallah & Al-Ghwayeen, 2020; Ahmad et al., 2022; Feng et al., 2024). There is some divergence in scholarly viewpoints regarding GSCM, yet some similarities are also observed. For instance, Abdallah and Al-Ghwayeen (2020) state that GSCM denotes environmentally responsible SCM practices that can affect the performance of organizations owing to improvements in environmental and operational performance. Similarly, Sahoo and Vijayvargy (2021) consider GSCM as the incorporation of green practices into manufacturing SCM that affects organizational performance. Moreover, from the perspective of sustainability, GSCM is viewed as an important mechanism that will allow organizations to enhance their sustainability performance in the view of Ahmad et al. (2022) and as a connection between environmental sustainability and organizational performance by Feng et al. (2024). Despite the differences in desirable outcomes of GSCM, scholars agree that environmental

concerns should be incorporated into all SCM activities and not just into the activities performed in factories. The main characteristics of GSCM in the context of manufacturing may include environmentally responsible sourcing, supplier environmental management, cleaner production, resource efficiency, waste minimization, sustainable transportation, packaging, distribution, and coordination of environmental practices among SCM participants. The scope of GSCM activities may also include internal environmental management and the incorporation of green practices in organizational processes (Gelagay & Werke, 2024). Furthermore, according to Novitasari and Agustia (2021), green innovation may be a vital link between GSCM and firm performance. Also, Le et al. (2022) stress the complementary role of green innovation and SCM in the sustainable performance of organizations. Thus, even though some scholars pay more attention to environmental and operational outcomes and others focus on sustainability or organizational performance, it is generally agreed that GSCM involves managing SCM activities in order to reduce environmental concerns without overlooking organizational goals (Ahmed et al., 2020; Jassim et al., 2020; Pinto, 2020).

2.1.4 Concept of green human resource management

Green human resource management (Green HRM) is understood as the embedding of environmental considerations into human resource policies and practices of the organization. In this context, Green HRM is the development of traditional human resource management which entails the alignment of the recruitment process, training, appraisal of employee performance, involving employees, reward systems, and workplace behavior with the firm's environmental goals. Thus, Green HRM is not only focused on effective management of personnel but also on the development of environmentally responsible individuals (AlKetbi & Rice, 2024; Amjad et al., 2021; Ghouri et al., 2020). Scientists have taken several approaches to the definition of the concept. For example, Ghouri et al. (2020) define Green HRM as environmentally oriented human resource practices that may help improve business performance especially for manufacturing organizations. Amjad et al. (2021) stress the importance of organizational sustainability in Green HRM by showing that environmentally oriented practices may impact sustainability by improving employee and environmental performance. AlKetbi and Rice (2024), on the other hand, adopt a wider perspective in connecting Green HRM not only with employees but also with clients and overall organizational performance. Akbar et al. (2024) relate Green HRM directly to organizational performance. Notwithstanding different points of view, scientists agree on the idea that employees are the key to success of environmental strategies. Besides, the evolution of the concept went from its narrowly focused definition to a more human resource-oriented one. Current understanding of Green HRM implies attracting environment-friendly employees, green training of employees, green appraisal of performance, rewarding environment-friendly behavior, and encouraging employees to participate in environmentally oriented activities. Muisyo et al. (2022) prove that Green HRM may help companies gain competitive advantage related to green practices. Khaskhely et al. (2022) associate Green HRM with dynamic sustainable capabilities and corporate sustainable performance. In addition, Shahzad et al. (2023) highlight the contribution of green innovation, green culture, and green employee behavior to the explanation of sustainable performance of organizations.

2.1.5 Concept of organizational performance

Organizational performance refers to the extent to which the organization realizes its intended goals based on its effective use of its resources, capabilities, processes, and strategies. The early

literature on management often defined performance in terms of financial measures, such as profitability, sales growth, investment return, and cost efficiency. However, more recent studies define the concept of performance in a wider scope that includes performance efficiency, competitiveness, environmental performance, employee performance, innovation, market positioning, and sustainability (Afum et al., 2020b; Lee et al., 2021; Thaher & Jaaron, 2022). There are differences among scholars in regard to the specific areas of performance emphasized. For instance, Abdallah and Al-Ghwayeen (2020) discuss business performance through operational and environmental routes by stating that the organizational outcomes depend on the management of internal processes and environmental performance. Similarly, Afum et al. (2020a) relate the performance of organizations to performance efficiency, firm reputation, and sustainable performance. On the other hand, Ahmed et al. (2023) relate the performance of organizations to the ability of firms to implement green innovations in the business and environmental spheres, whereas Akbar et al. (2024) relate the performance of organizations to green human resource management.

2.1.6 Green strategic management and organizational performance

There has been a significant growth of literature on green strategic management and organizational performance in light of efforts by manufacturing companies to integrate environmental responsibility and competitiveness. Prior studies focused on examining separate environmental practices in isolation, including green manufacturing, green supply chain, and eco-innovations. However, in contrast to previous research, current literature takes a more holistic approach and considers green innovation, green supply chain management, human resource practices, leadership, and capabilities of organizations as interrelated approaches to the improvement of performance of the organization (Lee et al., 2021; Thaher & Jaaron, 2022; Javed et al., 2025). It can be noted that there is one common pattern among all existing research on green strategies and organizational performance – green strategies positively impact organizational performance, but the way how these impacts are realized differs from one study to another.

The first topic of discussion is green innovation and its contribution to performance. Green product and process innovations have been proved to contribute to better environmental and organizational performance. The studies by Wang et al. (2021) and Rehman et al. (2021) show that green innovation practices positively contribute to the environmental and organizational performance. The same results were found in other research on the connection between eco-innovation and economic performance and competitiveness (Yurdakul & Kazan, 2020; Tu & Wu, 2021). Still, the research conducted recently shows that this connection is not direct. In particular, Ahmed et al. (2023) stress the moderating effect of management commitment and human resource practices, while Javed et al. (2025) pay attention to organizational capabilities and environmental regulation. Thus, the modern literature considers green innovation to be an approach that requires certain capabilities. The second significant theme is associated with green supply chain management. The existing literature suggests that the inclusion of the environment in the process of sourcing, producing, transporting, and collaborating with suppliers can increase the performance of firms. In particular, Abdallah and Al-Ghwayeen (2020) found that green supply chain management influences the performance of businesses through the improvement in environmental and operational performance. Similar correlations were identified by Sahoo and Vijayvargy (2021), Pinto (2020), and Jassim et al. (2020). More recent research supports this view as well. Feng et al. (2024) found that green supply chain management increases the correlation between environmental sustainability and organizational performance. Nonetheless, there are significant

differences in terms of how these correlations can be explained. Thus, Afum et al. (2020a) focused on green supply chain integration, Novitasari and Agustia (2021) on green innovation as the mediating factor, and Samad et al. (2021) on collaborative capability. The third significant theme includes the green human resource management. The literature pays increasing attention to the role of employees in terms of implementing the environmentally-focused strategies. For instance, Ghouri et al. (2020) found a positive correlation between the use of green human resources management practices and the performance of firms in manufacturing. Also, Amjad et al. (2021) found that the employee and environmental performance serve as mediators in the correlation between green HRM practices and organizational sustainability. Moreover, Muisyo et al. (2022) found that green HRM can increase green competitive advantage. More recent research confirms this trend. In particular, Akbar et al. (2024) found the positive impact of green HRM on organizational performance, and Gelagay and Werke (2024) found it to be positively associated with operational performance. Nonetheless, the literature also mentions indirect effects. Thus, Kanan et al. (2023), Khaskhely et al. (2022), and Shahzad et al. (2023) suggest that green innovation, sustainable capabilities, green culture, and employee behavior can influence the effectiveness of green HRM practices.

2.2 Theoretical framework

This research work is based on the theory of the natural resource-based view, where organizations that build valuable capabilities in the environment, which cannot be easily imitated by their competitors, will be able to have better organizational performance.

2.2.1 Natural resource-based view theory

The NRVB concept is founded on the Resource-Based View of the firm of Hart (1995), which was developed by Barney (1991). The theoretical framework claims that it is possible to get a competitive advantage through the creation of resources and capabilities that help an organization deal effectively with the challenges posed by the environment. Furthermore, the theory states that the environmental problems such as pollution, resource exhaustion, waste production, and sustainable development are able to affect strategic positioning and performance of an organization. Besides, the NRBV suggests that organizations which have valuable and difficult to imitate environmental capabilities can demonstrate better organizational performance.

The NRBV theory is especially important to this research because green innovation, green supply chain management, and green human resource management can be regarded as environmental capabilities that an organization can use to its advantage. Thus, the use of green innovations, environmentally friendly supply chains, and employee-oriented green practices at Flour Mills Nigeria PLC, Calabar, will increase resource efficiency, decrease waste production, make improvements to the production process, and increase competitiveness. Therefore, the theory provides an excellent basis for the explanation of the impact of green strategic management on organizational performance of manufacturing organizations in Cross River State.

2.2.2 Stakeholder theory

The Stakeholder theory as stated by Freeman (1984) is that organizations do not function only for their owners or shareholders but exist in a web of people or organizations that can be affected by, or affect, the operations of the organizations. The stakeholders include the workers, customers, suppliers, governments, local communities, shareholders, regulatory bodies and environmental groups. Stakeholder theory also states that an organization can achieve sustained performance

when it is able to understand and balance the different interests of the stakeholders. It further adds that organizations that take into account the expectations of the stakeholders in a responsible manner will gain trust, legitimacy and support and hence will have better organizational performance. The Stakeholder theory is relevant to this research because Flour Mills Nigeria PLC, Calabar uses various green strategic management practices that involve internal and external stakeholders. The green innovations can satisfy the customers', community's and the regulatory agencies' expectations while the green supply chain management includes suppliers, distributors and other business partners. On the other hand, green human resource management mainly involves employees of the organization. How well the organization meets the environmental expectations of these stakeholders can determine its efficiency, reputation, competitiveness and organizational performance. Therefore, the Stakeholder theory serves as an appropriate framework for explaining the relationship between stakeholder considerations and green strategic management practices and their impacts on organizational performance.

3.0 Methodology

3.1 Research design

This particular study used a descriptive survey research design. This method is appropriate for research studies intended to gather data from the respondents in relation to existing situations and relationships of variables without any modification of the research setting.

3.2 Population of the study

The population included all the workers of Flour Mills Nigeria PLC, Calabar. There were 396 people working for the firm in various functional and operational departments.

3.3 Sample size determination

A sample size of 196 was obtained from a population size of 396. The determination of sample size was done by use of the Krejcie and Morgan table of 1970 that gives the appropriate sample size of 196 for a population size of approximately 400.

3.4 Sampling technique

Simple random sampling technique was used in this research work. The rationale behind the choice of this sampling technique is the fact that all members of the study population have an equal and independent chance of being chosen for participation in the survey. The population of employees used in this study is 396 members of Flour Mills Nigeria PLC, Calabar.

3.5 Source of data

Data was mainly collected through primary sources. Primary data were obtained by direct collection from workers of Flour Mills Nigeria PLC, Calabar, through the use of questionnaires. Collection of primary data enabled the researcher to get information directly related to the research objectives and variables.

3.6 Instrument of data collection

The data used in the study was collected using a structured questionnaire that had been designed by the researcher. The questionnaire was designed in such a way as to suit the goals of the study and was composed of two main parts. Part A requested the respondents to provide demographic data such as sex, age, level of educational qualifications, department and years of service in the

organization. Part B on the other hand contained questions designed to measure the main concepts of the study such as green innovation, green supply chain management, green human resource management and organizational performance.

3.7 Validity and reliability of the instrument

In order to ensure the validity of the research instrument, face and content validation were done on the questionnaire. The research instrument was presented to experts in Business Management and Research Methodology, and their observations and suggestions were included in the final version of the questionnaire before it was administered to the respondents.

Reliability of the questionnaire was tested through a pilot study. The pilot study comprised 30 employees working in a manufacturing company, which was not the location of the actual study, and had similar characteristics to the study respondents. Participants in the pilot study were not included in the main data collection process. Analysis of the data collected through the pilot study was done using Cronbach's alpha coefficient in order to determine the reliability of the questionnaire items.

Table 3.2: Reliability Analysis of the Research Instrument

Variable	Number of Items	Cronbach's Alpha	Decision
Green Innovation	3	0.862	Reliable
Green Supply Chain Management	3	0.884	Reliable
Green Human Resource Management	3	0.851	Reliable
Organizational Performance	3	0.903	Reliable
Overall Instrument	**12**	**0.887**	**Reliable**

Source: Researcher's Pilot Study (2026)

The overall reliability measure using the Cronbach's alpha for the 12 questionnaire items was 0.887. Considering the reliability measure was higher than the minimum required cut-off points of 0.70, the instrument is said to be reliable for conducting the research. Therefore, all the items in the questionnaire were included since they were fit to gather information on green innovation, green SCM, green HRM, and organization performance at Flour Mills Nigeria PLC, Calabar.

3.8 Method of data analysis

Field data was coded, entered, and analyzed by the Statistical Package for Social Sciences (SPSS) version 27. Data analysis involved the use of descriptive statistics such as frequencies, percentage, mean score, and standard deviation to describe the demographic profile of the respondents as well as their response to the questions. Inferential statistics, especially multiple regression analysis, was used to determine the effect of green strategic management on organizational performance. The choice of multiple regression analysis was informed by the fact that there were three independent variables namely green innovation, green supply chain management, and green human resource management against one dependent variable called organizational performance. Three null hypotheses were tested at 5 percent level of significance. A p-value below 0.05 will result in rejection of the null hypothesis while p-value above 0.05 will show that null hypothesis is not rejected.

The functional relationship between the variables is expressed as:

OP = f(GI, GSCM, GHRM) ..... (1)

The econometric model is specified as:

$$OP = \alpha + \beta_1 GI + \beta_2 GSCM + \beta_3 GHRM + \varepsilon \quad \text{..... (2)}$$

Where:

OP = Organizational Performance; **GI** = Green Innovation; **GSCM** = Green Supply Chain Management; **GHRM** = Green Human Resource Management; **α** = Constant term; **β_1–β_3** = Regression coefficients of the independent variables **ε** = Error term

4.0 Data Presentation, Analysis and Discussion Of Findings

4.1 Data presentation

Table 4.1: Response Rate of Questionnaire

Description	Number of Questionnaires	Percentage (%)
Questionnaires Distributed	196	100
Questionnaires Returned	184	93.9
Questionnaires Not Returned	12	6.1
Total	**196**	**100**

Source: Field Survey, 2026.

The response rate of the questionnaires issued to employees of Flour Mills Nigeria PLC, Calabar is shown in Table 4.1. A total of 196 questionnaires were issued to the sampled individuals. Out of the total, 184 questionnaires were received back fully filled, accounting for 93.9% of the total number of questionnaires issued; 12 questionnaires were not received back, making up 6.1%. The response rate recorded is 93.9%, which is adequate for the purpose of the analysis in this study. This response rate shows high levels of participation from the sampled employees, providing enough information to measure the influence of green strategic management on organizational performance.

Table 4.2: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	108	58.7
	Female	76	41.3
	Total	**184**	**100**
Age	Below 25 years	28	15.2
	25–34 years	67	36.4
	35–44 years	54	29.3
	45 years and above	35	19.0
	Total	**184**	**100**
Educational Qualification	SSCE/WAEC	32	17.4
	NCE/OND	45	24.5
	HND/B.Sc.	83	45.1
	Postgraduate	24	13.0
	Total	**184**	**100**
Department/Functional Area	Production/Operations	58	31.5
	Supply Chain/Procurement	36	19.6
	Human Resources/Administration	27	14.7

	Sales/Marketing	31	16.8
	Finance/Accounts	20	10.9
	Other Units	12	6.5
	Total	**184**	**100**
Years of Service	Below 1 year	20	10.9
	1–5 years	71	38.6
	6–10 years	58	31.5
	Above 10 years	35	19.0
	Total	**184**	**100**
Employment Level	Junior Staff	73	39.7
	Senior Staff	78	42.4
	Management Staff	33	17.9
	Total	**184**	**100**

Source: Field Survey, 2026.

Table 4.2 gives the demographic profile of the 184 questionnaires that were duly completed and analyzed. As far as the gender is concerned, 108 respondents (58.7%) were males whereas 76 respondents (41.3%) were females suggesting that more male employees were represented while both sexes were adequately represented. When it comes to age group, 67 respondents (36.4%) were 25-34 years old, 54 respondents (29.3%) were 35-44 years old, 35 respondents (19.0%) were 45 years and above and 28 respondents (15.2%) were below 25 years old. It can be said that most of the respondents belonged to active working age group. As far as educational qualification of the respondents is concerned, 83 respondents (45.1%) were holders of HND/B.Sc. degrees, 45 respondents (24.5%) were holders of NCE/OND degrees, 32 respondents (17.4%) had SSCE/WAEC qualifications and 24 respondents (13.0%) had postgraduate qualifications.

In terms of departmental classification, 58 (31.5%) respondents were from the production and operations unit, while 36 (19.6%) respondents came from the supply chain and procurement unit. The sales and marketing function had 31 (16.8%) respondents, and human resources and administration had 27 (14.7%) respondents. Finance and accounts had 20 (10.9%) respondents, while 12 (6.5%) respondents came from other departments. This pattern shows that a variety of functions within the firm were represented in the study; hence, views from various departments involved with green strategic management activities could be collected in the study.

In terms of years of service with the organization, 71 (38.6%) respondents had service of 1–5 years, while 58 (31.5%) respondents had 6-10 years of service. In addition, 35 (19.0%) respondents had more than 10 years of service, and 20 (10.9%) respondents had less than one year of service with the firm. This shows that a significant number of respondents had enough work experience to make their inputs on the practices and performance of Flour Mills Nigeria PLC, Calabar. Lastly, in terms of employment level, 78 (42.4%) respondents were senior staff, while 73 (39.7%) were junior staff. Management staff comprised 33 (17.9%) respondents. This pattern shows that the study involved respondents at different organizational levels, hence providing a wide range of information about green innovation, green supply chain management, green human resource management, and organizational performance.

4.2 Test of hypotheses

Table 4.3: Multicollinearity Test

Variable	Tolerance	Variance Inflation Factor (VIF)
(Constant)		
Green Innovation	0.638	1.567
Green Supply Chain Management	0.601	1.664
Green Human Resource Management	0.674	1.484

a. Dependent Variable: Organizational Performance

Source: Researcher's Computation, 2026.

Table 4.3 below provides an analysis of the multicollinearity conducted to determine whether there is any high intercorrelation among the independent variables. The tolerance and VIF for green innovation were found to be 0.638 and 1.567 respectively; on the other hand, the tolerance and VIF for green supply chain management were found to be 0.601 and 1.664 respectively. The tolerance and VIF for green human resource management are 0.674 and 1.484 respectively. All tolerances have exceeded the minimum threshold of 0.10 and all VIFs have remained significantly below the critical value of 10, which means that there is no multicollinearity among green innovation, green supply chain management, and green human resource management.

Table 4.4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	0.831[a]	0.691	0.686	0.404	1.948

a. Predictors: (Constant), Green Innovation, Green Supply Chain Management, Green Human Resource Management

b. Dependent Variable: Organizational Performance

Source: Researcher's Computation, 2026.

Table 4.4 summarizes the overall relationship between green strategic management dimensions and organizational performance. The correlation coefficient (R) at 0.831 shows a high positive relationship between green innovation, green supply chain management, green human resource management, and organizational performance. The coefficient of determination (R^2) of 0.691 suggests that 69.1 percent of the variation in organizational performance is collectively explained by green innovation, green supply chain management, and green human resource management. The rest 30.9 percent is accounted for by other variables which have not been considered in the regression analysis model. An adjusted R^2 value of 0.686 further strengthens the claim that the model possesses a good explanatory capacity even after accounting for the number of independent variables. A Durbin-Watson value of 1.948 is close to 2, which implies the absence of any problem of autocorrelation in the regression residual terms. Thus, the model is well-suited to explain the relationship between green strategic management and organizational performance.

Table 4.5: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	65.694	3	21.898	134.178	0.000[b]
Residual	29.376	180	0.163		
Total	95.070	183			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Green Innovation, Green Supply Chain Management, Green Human Resource Management
Source: Researcher's Computation, 2026.

According to the results of the ANOVA test, which can be seen in Table 4.9, the overall regression model is statistically significant ($F = 134.178$, $p = 0.000$). Since the p-value is less than 0.05, which is the critical value, it means that green innovation, green SCM, and green HRM together have a significant effect on organizational performance. It implies that the factors included in the model of green strategic management make a difference in the organizational performance of Flour Mills Nigeria PLC, Calabar.

Table 4.6: Regression Coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	0.521	0.173		3.012	0.003
Green Innovation	0.318	0.056	0.341	5.679	0.000
Green Supply Chain Management	0.354	0.058	0.377	6.103	0.000
Green Human Resource Management	0.271	0.057	0.296	4.754	0.000

a. Dependent Variable: Organizational Performance
Source: Researcher's Computation, 2026.

All three factors of green strategic management have positive and statistically significant effects on organizational performance as indicated by the regression coefficients in Table 4.6. The highest standardized coefficient is that of green supply chain management, which is $\beta = 0.377$. This is followed by the standardized coefficient of $\beta = 0.341$ for green innovation, and that of $\beta = 0.296$ for green human resource management. It can be concluded that while all variables have a positive effect on organizational performance, green supply chain management has the most significant effect.

Test of Hypothesis One

H_{01}: Green innovation has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.
H_{11}: Green innovation has a significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

Table 4.6 presents the findings from the regression analysis, which suggest that green innovation has a positive and significant effect on organizational performance ($\beta = 0.341$, $t = 5.679$, $p = 0.000$). Since the p-value is less than 0.05, the null hypothesis is not accepted in favor of the alternative hypothesis. Thus, any increase in green innovation will lead to better organizational performance.

Test of Hypothesis Two

H_{02}: Green supply chain management has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.
H_{12}: Green supply chain management has a significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

From the research findings, it is evident that there is a positive relationship between green supply chain management and organizational performance (β = 0.377, t = 6.103, p = 0.000). Since the p-value is less than the significance level (0.05), it means that we reject the null hypothesis and accept the alternate hypothesis. From the findings, improvements in the environmental practices within the supply chain improve the performance of the organization.

Test of Hypothesis Three

H_{03}: Green human resource management has no significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

H_{13}: Green human resource management has a significant effect on the organizational performance of Flour Mills Nigeria PLC, Calabar.

From Table 4.6, it is evident that green human resource management has a positive and significant effect on organizational performance (β = 0.296, t = 4.754, p = 0.000). In this case, the rejection of the null hypothesis at 5% significance level implies the acceptance of the alternative hypothesis since the value of p is less than 0.05.

4.4 Discussion of findings

According to the results of Hypothesis 1, green innovation positively and significantly influences organizational performance at Flour Mills Nigeria PLC, Calabar. This means that environmentally friendly technology application, cleaner production, process improvement, and reduction of wastes may positively impact productivity, efficiency, and competitiveness. Thus, the findings of the study correspond with those of Ahmed et al. (2023) indicating substantial improvements in environmental and organizational performance due to green innovation. Nevertheless, the results slightly contradict with the findings of Lee et al. (2021) indicating the lack of significance of environmental shared vision on environmental performance. Namely, it means that all environmentally oriented actions do not necessarily improve performance of organizations.

According to the results of Hypothesis 2, green supply chain management positively and significantly influences organizational performance at Flour Mills Nigeria PLC, Calabar. This means that manufacturing firms which include environmental concerns in their supply chain activities (sourcing, relationships with suppliers, procurement, logistics, and others) may improve efficiency and organizational performance. These results correspond to those provided by Feng et al. (2024) who proved that green supply chain management plays a pivotal role in the relationship between environmental responsibility and organizational performance of manufacturing firms. These findings slightly differ from those obtained by Sahoo and Vijayvargy (2021) indicating that internal environmental management and green purchasing do not significantly influence performance outcomes while green supply chain management does not have an impact on economic performance. According to the results of Hypothesis 3, green human resource management positively and significantly influences organizational performance at Flour Mills Nigeria PLC, Calabar. This means that manufacturing firms which integrate environmental concerns into employee recruitment, training, expectations regarding environmental behavior, participation in green initiatives and rewarding employees for that are more likely to achieve better organizational outcomes. These findings support the results of Muisyo et al. (2022) who proved that green human resource management practices significantly and positively influence green competitive advantage in manufacturing firms. Moreover, the environmentally oriented human resource practices are expected to lead to better organizational outcomes if employees are actively involved in green initiatives. However, these findings slightly differ from those provided by

Ahmed et al. (2023) indicating that human resource practices did not significantly moderate the relationship between green innovation and organizational and environmental performance.

5.0 Conclusion and Recommendations

5.1 Conclusion

This research shows that the application of green strategic management makes a huge contribution to the improvement of the organizational performance of manufacturing companies. It has been shown that organizational performance is not only dependent on conventional approaches in production and management, but also on how well the issues connected with environment are incorporated into the processes of innovation, supply chain, and human resource management. Concerning the case of Flour Mills Nigeria PLC, Calabar, the findings have shown that the application of green innovation, green supply chain management, and green human resource management will make a significant contribution to the improvement of organizational performance.

5.3 Recommendations

The recommendations based on the study's findings are as follows:

1. Flour Mills Nigeria PLC, Calabar, should improve its green innovation by adopting environmentally friendly technology and cleaner production, which not only results in less waste but is efficient in terms of energy and material use.
2. The organization should focus on the improvement of green supply chain management through the increased importance of environmentally sound practices regarding sourcing, supplier, procurement, transportation and utilization of resources. The suppliers should also adopt environmentally friendly practices.
3. The management should work on green human resource management by giving environmental training to the employees, encouraging them in green activities and integrating environmental practices into employee performance evaluation and rewarding system. Thus, the employees will be able to play an effective role in both environmental goals and organizational success.

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