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Exploring the impact of ecopreneurship on organizational performance of quoted paint manufacturing firms in Nigeria: The moderating role of government regulation

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Abstract

This study examines the relationship between ecopreneurship dimensions and organizational performance in quoted paint manufacturing companies in Nigeria, focusing on the moderating effect of government regulation. The research addresses the need to understand how ecopreneurship practices can impact organizational performance and explores the role of government regulations in shaping this relationship.

The study employs a quantitative research methodology, with a population figure of quoted paint manufacturing companies in Nigeria. A purposive sampling technique is utilized to select a sample size of 336 companies. Data is collected through a structured questionnaire survey. The collected data is analyzed using hierarchical regression analysis to examine the moderating effect of government regulation on the relationship between ecopreneurship dimensions and organizational performance.

The findings of the study provide important insights into the research hypotheses. The results indicate that ecopreneurship dimensions significantly positively affect organizational performance ($\beta = 0.385$, $p < 0.05$). Furthermore, the introduction of government regulation as a moderator significantly improves the effect of ecopreneurship dimensions on organizational performance ($R^2 \Delta = 0.032$, $F = 11.598$, $p < 0.05$). The results suggest that government regulation is crucial in moderating the relationship between ecopreneurship dimensions and organizational performance.

Based on the findings, it is recommended that quoted paint manufacturing companies in Nigeria embrace ecopreneurship practices to enhance their organizational performance. This includes adopting environmentally friendly production processes, using sustainable materials, and implementing eco-friendly initiatives. Additionally, it is essential for companies to navigate and comply with relevant government regulations to fully leverage the benefits of ecopreneurship. Future research can explore specific ecopreneurship dimensions and strategies that paint manufacturing companies can adopt to enhance their organizational performance. Additionally, investigating the specific government regulations and policies that impact the relationship between ecopreneurship and organizational performance would provide valuable insights for companies. Furthermore, studying the long-term effects of embracing ecopreneurship on the financial and environmental sustainability of paint manufacturing companies would contribute to the existing knowledge in this field.

Keywords: Ecopreneurship, government regulation, Nigeria, organizational performance, quoted paint manufacturing companies

1. Introduction

The performance of organizations, including the paint industry, has become a significant concern for researchers and business managers due to the global economic impact of the Covid-19 pandemic. According to the World Bank, the pandemic is projected to cause a 5.2% drop in global gross domestic product (GDP) in 2020, resulting in significant declines in growth across all regions. The global paints and coatings market, valued at USD 160.03 billion in 2021, is expected to witness growth in the Asia Pacific region, while Europe remains the fastest-growing region (Fortune Business Insights, 2020). Like other sectors, the paint industry must reinvent itself to achieve maximum growth and sustainability post-Covid era (World Bank, 2020; Gregurec *et al.*, 2021) [74, 25].

In Africa, the paint industry faced challenges due to lockdown measures imposed during the

pandemic, which halted manufacturing activities and disrupted supply chains. While some companies ventured into producing hand sanitizers or completed business acquisitions, others experienced declining sales. For example, AkzoNobel acquired a majority stake in Mauvilac, a Mauritius-based paint maker (Oirere, 2020) ^[51]. In Nigeria, the paint industry was projected to grow at a five per cent rate. However, the pandemic negatively impacted the demand for paints and coatings due to halted manufacturing and construction activities. Additionally, local paint producers faced challenges such as high inflation and limited access to foreign exchange for raw materials (Adekoya, 2021) ^[2].

The shift towards ecopreneurship, characterized by sustainable manufacturing practices, has gained traction globally due to environmental degradation concerns. Embracing sustainable practices can give companies a competitive edge, increase market share, and enhance shareholder value (International Institute for Sustainable Development, 2020). However, there is limited recognition of ecopreneurship in developing countries like Nigeria (Olateju, 2020) ^[54]. The role of government regulations in moderating the relationship between ecopreneurship and organizational performance in the paint manufacturing sector remains understudied, particularly in the Nigerian context. Previous research has examined this relationship across various industries and locations, emphasizing the importance of external pressures and environmental regulations (Meng *et al.*, 2020; Yuan & Xiang, 2018; Mulaessa & Lin, 2021; Lotfi *et al.*, 2018; Eneizan *et al.*, 2019; Hashmi & Akram, 2021) ^[44, 77, 46, 41, 20, 27].

Moreover, the manufacturing industry in Nigeria, including the paint sector, has been affected by unfavourable government regulations and policy changes. These inconsistencies threaten the nation's economic recovery path (Oyedele, 2021) ^[56]. Considering the research gaps in studying the moderating effect of government regulations on the ecopreneurship-organizational performance relationship, it is essential to investigate this aspect in publicly listed paint manufacturing firms in Nigeria (Eneizan *et al.*, 2019; Adebambo *et al.*, 2015) ^[20, 1]. Therefore, this study aims to fill the research gap by examining the moderating effect of government regulations on the relationship between ecopreneurship and organizational performance in quoted paint manufacturing firms in Nigeria. By investigating this aspect, the study seeks to contribute to understanding how government policies and regulations can influence the performance of paint manufacturers in the context of sustainable practices.

Literature Review

Ecopreneurship

Ecopreneurship, also known as green, ethical, environmental, or sustainable, encompasses various concepts and has been a research subject recently (Obisanya *et al.*, 2020) ^[50]. The concept emerged in response to environmental concerns such as pollution, climate change, and resource scarcity (Ataman *et al.*, 2018; Sharma & Kushwaha, 2015) ^[10, 64]. Scholars have used different terms to describe it, highlighting its focus on reducing negative environmental impacts while generating profits for organisations (Solaja, 2017; Dixon & Clifford, 2007;

Hockerts & Wüstenhagen, 2010) ^[65, 19, 30]. Despite the absence of a universally accepted definition, ecopreneurship is commonly understood to be rooted in the pursuit of a safe environment, societal well-being, and economic prosperity (Obisanya *et al.*, 2016; McEwen, 2013) ^[49, 43].

Scholars have proposed various definitions for ecopreneurship, reflecting its multifaceted nature. It involves consciously addressing environmental and social problems while aiming for positive environmental and financial sustainability impacts (Bakari, 2013; Saari & Joensuu-Salo, 2019) ^[12, 59]. Green entrepreneurship minimizes a business's impact on the natural environment while considering the ecological dimension of sustainability (Gast *et al.*, 2017) ^[24]. It encompasses activities that promote recycling, resource reduction, and reuse for environmental and economic sustainability (Bakari, 2013; Schapper, 2016) ^[12, 63]. Ecopreneurship is also seen as a source of innovation, offering opportunities for sustainable business practices (Sasongko & Anggadwita, 2016) ^[62].

Ecopreneurship is primarily driven by green entrepreneurs introducing environmentally friendly products and technologies. Three driving forces behind ecopreneurship include compliance-based entrepreneurs adhering to government regulations, market-driven entrepreneurs responding to incentives for environmental consciousness, and value-driven entrepreneurs meeting consumer demand for eco-friendly products (Saari & Joensuu-Salo, 2019) ^[59]. These green entrepreneurs contribute to the development of a sustainable economy by bringing forth innovative solutions and practices that can be adopted by other businesses (O'Neill & Gibbs, 2016; Santini, 2017) ^[54, 61]. While challenges such as financial barriers and complex regulations exist, ecopreneurship can address global environmental issues, create social value, and foster a green and sustainable business paradigm (Enuoh *et al.*, 2020; Schaper, 2016) ^[51, 63].

Ecopreneurship involves economic activities that offer products, services, or production methods with positive environmental effects. It encompasses changing consumer behaviour, aligning economic and ecological goals, introducing innovative ecological solutions, developing sustainable business models, and responding to societal demands. The Institute of Entrepreneurship Development's definition of ecopreneurship captures its essential elements, emphasizing the conscious efforts to address environmental and social issues while managing risks and pursuing financial sustainability. Multiple dimensions, including eco-innovation, eco-marketing, eco-production, green supply chain management, and waste management, contribute to achieving sustainability and competitiveness in various industries (Obisanya *et al.*, 2020) ^[50].

Organizational Performance

Firm performance is a complex concept that encompasses a company's overall operational, financial, and marketing aspects. It refers to the ability of a firm to create value for its stakeholders through the effective utilization of resources (Borin *et al.*, 2011; Sajjad *et al.*, 2020) ^[14, 60]. Organizational performance (OP) reflects the efficiency and productivity of business activities (Enuoh *et al.*, 2020) ^[51]. Various definitions have been proposed by researchers, emphasizing the achievement of goals and objectives (Okwata *et al.*,

2022)^[52], the outcome of company operations (Syafarudin, 2016)^[67], and the optimization of business strategy execution (Chukwuka, 2018)^[18].

Performance measurement is a multidimensional scale that requires both financial and non-financial criteria. Financial performance indicators include profit after tax, return on assets, and net income margin, while non-financial performance indicators encompass reputation, sales growth, market share, and employee commitment (Arokodare & Asikhia, 2020; Venkatraman & Ramanujam, 1986; Lumpkin & Dess, 2001)^[8, 68, 42]. However, researchers must carefully select the performance measurement index for their study, considering factors beyond financial performance, such as market performance, environmental performance, and learning and reinvestment performance (Bose & Ndegwa, 2019; Kushwaha & Sharma, 2016)^[16, 36]. Effective implementation of strategies to achieve institutional objectives is crucial for organizational performance and long-term survival in competitive environments (Almatrooshi *et al.*, 2016)^[6]. It is also essential to recognise that performance is future-oriented, dependent on unique resources, and can be characterised as "a performance" (positive result), "performance" (past results, both positive and negative), or "being performant" (Otioma, 2022; Bose & Ndegwa, 2019)^[55, 16].

Based on previous research, this study defines organizational performance as the quantification and monitoring of a company's achievement of stakeholders' goals and objectives, measured against established standards over a specific period, using variables such as environmental performance, operational performance, market share, sales growth, and financial performance. Assessing organizational performance involves various criteria, such as profitability, management performance, liquidity, market share, innovation, productivity, quality of goods and services, and human resource management (Bala & Mukhtar, 2014; Ringim, 2012)^[13, 58]. In addition to financial measures, more comprehensive constructs that encompass non-financial aspects like effectiveness, efficiency, quality, and company image should be considered (Waiganjo *et al.*, 2012)^[69]. Common performance indicators include return on investment, market share, sales growth, profitability, revenue growth, and operational efficiency (Khizar *et al.*, 2020)^[35].

Organisational performance encompasses multiple dimensions of a firm's operations, financial outcomes, and marketing effectiveness. It involves the creation of value for stakeholders through resource utilization and the achievement of goals and objectives. By understanding and evaluating organizational performance, businesses can strive for competitive advantage and long-term success in a dynamic marketplace. Performance measurement requires considering financial and non-financial criteria, and researchers should choose appropriate performance measurement indices. Performance indicators include profitability, market share, innovation, and human resource management.

Government Regulation

Regulation involves establishing targeted rules and authoritative mechanisms to ensure compliance (Woll, 2019)^[72]. Government regulations, also known as

environmental regulations in some studies, are a set of norms and binding policies implemented by governments to prevent and control environmental pollution caused by businesses (Liu *et al.*, 2019)^[39]. These regulations are designed to protect individuals and the environment by outlining industry legal boundaries and operational guidelines (The Policy Circle). They include preserving orderly markets, licensing financial service providers, enforcing applicable laws, pursuing market misconduct, safeguarding clients and investors, promoting financial system stability, and ensuring environmental protection (Agborndakaw, 2010)^[3].

The primary purpose of regulation is to protect individuals and the environment. Environmental regulations are crucial in achieving governmental targets, guiding enterprise production and operations, and stimulating technological innovation and green economic growth (Zhang & Song, 2021; Lin *et al.*, 2022; Hille *et al.*, 2020)^[28, 38, 29]. They also reduce compliance costs, improve resource utilization efficiency, and promote economic growth (Ajayi & Reiner, 2020). Furthermore, environmental regulations can reduce negative externalities associated with environmental pollution, enhance the green competitiveness of enterprises, and lead to eco-friendly products and practices (Borsatto & Amui, 2019; Yin *et al.*, 2015)^[15, 76].

However, there are potential downsides to government environmental regulations. They can increase production costs for enterprises, hinder performance improvement, and inhibit economic growth (Kheder & Zugravu, 2012)^[34]. Inflexible and poorly designed regulations may impede innovation and business performance (Liu *et al.*, 2018; Mi *et al.*, 2018)^[40, 45]. Regulation effectiveness also depends on enforcement, which is often low in many regions, including Africa (World Bank, 2016)^[73]. Therefore, in addition to enacting regulations, it is essential to conduct sound research on the activities of firms causing environmental pollution and identify the challenges they face in implementing environmental protection policies (Hao *et al.*, 2018)^[26].

Government environmental regulations are crucial in defining legal boundaries, guiding industries, and protecting individuals and the environment. They can stimulate technological innovation, green economic growth, and the development of environmentally responsible firms. However, poorly designed or strict regulations may hinder innovation and business performance, while low enforcement levels can undermine their effectiveness. Therefore, a comprehensive approach that combines well-designed regulations, effective enforcement, and continuous research is necessary to achieve the desired goals of environmental protection and organizational performance (Stavropoulos *et al.*, 2018)^[66].

Theoretical framework

The underlying theory for this study is ecological modernization theory, initially proposed by Joseph Huber in 1982 (Huber, 2000)^[31] and emphasizes the transformation of central institutions in modern society to address ecological crises (Janicke, 1985). Ecological modernization theorists argue that environmental problems can drive future industrial activity and economic development (Murphy, 2000)^[47]. They believe economic growth can be promoted

by prioritizing environmental concerns and integrating them into technological advancements and industrialization (Chukwuka & Eboh, 2018) [18].

The theory suggests that entrepreneurial action, mainly through ecopreneurship, can effectively address environmental problems by combining environmental awareness with entrepreneurial activities to enhance organizational performance (Anderson, 1998) [7]. Ecological modernization theory views environmental protection as a prerequisite for sustainable growth rather than a burden on the economy (O'Neill, 1998) [48]. However, critics of the theory, such as Foster (2002) [23], argue that it is not feasible and may overlook social equity concerns and conflicts that arise from technological advancement and industrialization (Pellow *et al.*, 2000) [57].

In the context of this study, ecological modernization theory assumes that environmental problems can be solved without impeding modernization. It suggests responsible resource usage, like labour and capital productivity, can contribute to future growth. The theory aligns with the study's hypothesis, which posits that government regulations may moderate the effect of ecopreneurship and organizational performance. By considering the interrelationship between ecopreneurial practices, environmental commitment, and government regulations, ecological modernization theory provides a comprehensive understanding of the effects of ecopreneurship dimensions on organizational performance in quoted paint companies in Nigeria. It highlights the importance of finding environmentally friendly ways to conduct sustainable economic activities while minimizing harm to the natural environment.

Empirical Review: Empirical research has highlighted the relationship between ecopreneurship, organizational performance, and government regulations. Only a small percentage of firms, approximately 20%, comply with environmental regulations, indicating a pressing need to address environmental issues (Ali *et al.*, 2021) [5]. Many countries have recognized this need and implemented environmental regulations to mitigate these problems (Weng *et al.*, 2015) [71]. Scholars argue that government regulations are crucial in promoting and creating awareness of environmental laws, acting as mediators that link ecopreneurship practices to organizational performance (Bai *et al.*, 2019) [11]. Compliance with these regulations has been found to drive ecopreneurial practices such as eco-innovation, eco-production, eco-marketing, green supply chain management, and proper waste management, ultimately enhancing economic performance (Bai *et al.*, 2019; Ali *et al.*, 2021) [11, 5].

Government policies are essential moderators in the relationship between ecopreneurship and performance. Hashmi and Akram (2021) [27] found that external pressure, such as government regulations, positively moderates the link between green supply chain management and operational performance in firms in Pakistan. Various studies have emphasized the significance of governmental regulations and their impact on companies' environmental practices and sustainability efforts (Mulaessa & Lin, 2021) [46]. The strictness and enforcement of these regulations determine the extent to which companies implement environmental protection practices. At the same time, the

government's support and enforcement of regulations also play a significant role in shaping companies' environmental policies (Mulaessa & Lin, 2021) [46]. Furthermore, environmental regulations have been shown to affect green innovation directly (Asadi *et al.*, 2020; Wang *et al.*, 2021) [9, 70]. However, economic policy uncertainty may influence the relationship between environmental regulations and firm performance (Lin *et al.*, 2022) [38]. Understanding the interplay between government regulations, ecopreneurship practices, and organizational performance is crucial for fostering sustainable development.

Empirical studies highlight the positive impact of government regulations on ecopreneurship practices and organizational performance. Compliance with environmental regulations is associated with increased engagement in ecopreneurial activities, leading to eco-innovation, eco-production, eco-marketing, green supply chain management, and proper waste management. Government policies play a crucial role as mediators in linking ecopreneurship practices to organizational performance. They also serve as external pressures that positively moderate the relationship between ecopreneurship and performance. The strictness and enforcement of regulations and the government's support and enforcement efforts influence companies' environmental practices and policies. Understanding the dynamics between government regulations, ecopreneurship, and performance is essential for promoting sustainable practices and achieving environmental goals.

Methodology: This study used positivist research philosophy and a quantitative research approach. It focused on the impact of ecopreneurship (eco-innovation, eco-production, green supply chain management, waste management, and eco-marketing) on the performance of selected paint manufacturing companies in Lagos State, Nigeria. The choice of paint manufacturing companies was based on their experience and years of existence. The study also examined how environmental commitment and government regulations moderate the relationship between ecopreneurship and organizational performance. The study population comprised 438 employees from four paint manufacturing companies listed on the Nigerian Exchange. The paint industry was chosen due to the environmental impact of its waste products. The selected companies were seen as capable of practicing ecopreneurship to improve their performance. The quoted paint manufacturers included CAP Plc, Berger Paints Plc, Meyer Paint Plc, and Premier Paints Plc. Questionnaires were used as the primary data collection method, and a pilot study was conducted to refine the questionnaire. The questionnaire was administered to 45 employees of Chemstar Paints Industries (Nig) Limited and President Paints Nigeria Limited for validation.

Table 1: Number of employees of the quoted paint manufacturing companies in Nigeria

S/No.	Firm	No. of employees
1	CAP Plc	202
2	Berger Paints Nigeria Plc	152
3	Meyer Plc (Nigeria)	63
4	Premier Paints Plc	20
Total population		438

Source: 2020 Annual Reports of the quoted paint manufacturing companies

Data Analysis and Model Specification

The data analysis for this study involved inferential statistical methods. Hierarchical regression analysis explored the moderating effects of environmental commitment and government regulations. Descriptive statistics, such as means, standard deviations, and percentages, were used to summarize the data and facilitate comparisons. Inferential statistics, such as t-tests and ANOVA, were used to assess the significance of regression coefficients and the overall fit of the models. The significance level for hypothesis testing was set at 0.05. The data analysis aimed to comprehensively understand the research variables and present the key findings using appropriate tabular displays.

The direct impact Hierarchical regression model is presented as follows:

$$Y_i = \alpha + \beta_1 X_i + \beta_2 Z_i + \beta_{12} X_i Z_i + \epsilon$$
 Equation (i)

Y_i = is the vector representing organizational performance measures, including; environmental performance, operational performance, market share, sales growth and financial performance.

X_i = is the vector representing Ecopreneurship measures such as education, eco-innovation, eco-production, green supply chain management, waste management and eco-marketing.

β_i = is the regression coefficient representing the effect of Ecopreneurship on organizational performance.

$X_i Z_i$ = is the vector representing the product of independent and moderating variable measure of the interaction term (Government regulation)

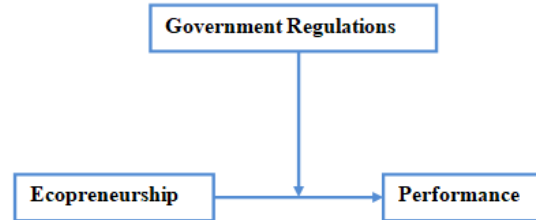
ϵ = error term assumed to be normally distributed with a mean of zero and constant variance

Model Specification

$$OP = f(ECP, GR, ECP*GR)$$

$$OP = \mu_0 + \mu_1 ECP + \mu_2 GR + \mu_3 ECP*GR + \epsilon_i$$

Where μ_0 = intercept of the model



Results and Discussion

The effect of ecopreneurship dimensions and organizational performance of quoted paint manufacturing companies in Nigeria has no significant effect as moderated by Government regulation.

Hierarchical Regression on the moderating effect of ecopreneurship dimensions and organizational performance as moderated by government regulation of quoted paint manufacturing companies in Nigeria.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.201 ^a	.040	.037	1.32176	.040	14.019	1	334	.000
2	.207 ^b	.043	.037	1.32210	.002	.827	1	333	.364
3	.274 ^c	.075	.067	1.30155	.032	11.598	1	332	.001

a. Predictors: (Constant), Ecopreneurship Dimensions

b. Predictors: (Constant), Ecopreneurship Dimensions, Government Regulation

c. Predictors: (Constant), Ecopreneurship Dimensions, Government Regulation, Ecopreneurship Dimensions*Government Regulation

Table 3: Analysis Of Variance

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.492	1	24.492	14.019	.000 ^b
	Residual	583.511	334	1.747		
	Total	608.003	335			
2	Regression	25.939	2	12.969	7.420	.001 ^c
	Residual	582.064	333	1.748		
	Total	608.003	335			
3	Regression	45.586	3	15.195	8.970	.000 ^d
	Residual	562.417	332	1.694		
	Total	608.003	335			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Ecopreneurship Dimensions

c. Predictors: (Constant), Ecopreneurship Dimensions, Government Regulation

d. Predictors: (Constant), Ecopreneurship Dimensions, Government Regulation, Ecopreneurship Dimensions*Government Regulation

Table 4: Coefficients^a

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.061	.486		4.245	.000
	Ecopreneurship Dimensions	.385	.103	.201	3.744	.000
2	(Constant)	2.006	.489		4.100	.000
	Ecopreneurship dimensions	.343	.113	.179	3.045	.003
	Government regulation	.053	.058	.053	.910	.364
3	(Constant)	5.796	1.212		4.780	.000
	Ecopreneurship dimensions	-.526	.278	-.275	-1.891	.059
	Government regulation	-.855	.273	-.859	-3.134	.002
	Ecopreneurship dimensions*government regulation	.203	.060	1.187	3.406	.001

a. Dependent Variable: Organizational Performance

Interpretation

In step one, ecopreneurship dimensions were regressed on organizational performance. The findings in Table 4a show the result of hierarchical regression analysis for Model 1 when only ecopreneurship dimensions and organizational performance of quoted paint manufacturing companies in Nigeria variables are in the equation model ($R = 0.201$, $R^2 = 0.040$, Adjusted $R^2 = 0.037$, $p = 0.000 < 0.05$, $\Delta R^2 = 0.040$). These indicate that ecopreneurship dimensions account for only 3.7% of the variability in the organizational performance of quoted paint manufacturing companies. Furthermore, Table 4c shows the beta coefficient β is 0.385, $p < 0.05$ when ecopreneurship dimensions are in the model. These results indicate that for every unit increase in ecopreneurship dimensions, the organizational performance of quoted paint manufacturing companies increased by 0.385. The overall model was also significant ($F_{(1,335)} = 14.019$, $p < 0.05$), as evident from Table 4a.

The introduction of the moderator (Government regulation) in Model 2 significantly improves the effect of ecopreneurship dimensions on the organizational performance of quoted paint manufacturing companies in Nigeria ($R = 0.207$, $R^2 = 0.043$, Adjusted $R^2 = 0.037$, $p = 0.364 > 0.05$, $\Delta R^2 = 0.002$). This means that ecopreneurship dimensions and government regulation explained about 3.7% of the variation in organizational performance of quoted paint manufacturing companies as against 3.7% of changes that occurred when only ecopreneurship was regressed against organizational performance. The F value is statistically significant ($F_{(2,333)} = 7.420$, $p < 0.05$), which means that the influence of the ecopreneurship dimensions and the moderator (government regulation) were significant in the model, as seen in Table 4b. In addition, Table 4c shows the beta coefficients of ecopreneurship dimensions ($\beta = 0.343$, $p < 0.05$) and government regulation ($\beta = 0.053$, $p < 0.05$); that is, for every unit increase in ecopreneurship dimensions and government regulation, the organizational performance of the quoted paint manufacturing companies increases by 0.343 and 0.053 respectively.

Model 3 of the hierarchical regression analysis showed how the moderating effect of government regulation affects the relationship between ecopreneurship and the organizational performance OF quoted paint manufacturing companies in Nigeria. The results in Table 4c (Model 3) provide values of co-efficient of multiple correlations, $r = 0.274$ and a coefficient of determination, $R^2 = 0.075$, when ecopreneurship dimensions and organizational performance was moderated by government regulation showed a very

significant improvement as against an r value of 0.207 and an R^2 of 0.043. The coefficient of multiple correlations (0.274) reveals a weak relationship between the independent, moderating, and dependent variables. Furthermore, the coefficient of determination indicates that about 27.4% variance in organizational performance is jointly explained by the ecopreneurship dimensions, government regulation and the interaction term (Ecopreneurship*government regulation), while other factors not studied in this research work account for the remaining 72.6%.

Model 3 also further shows the changes when the interaction term was introduced. All the variables of ecopreneurship dimensions, government regulation and the interaction term were entered into the regression model. The results under change statistics reveal that the R^2 change increased by 0.032 from 0.043 to 0.075 ($\Delta R^2 = 0.032$) when the interaction variable (ecopreneurship dimensions *government regulation) was added. The change was statistically significant at $p = 0.000$ (p -value < 0.05). The results show a statistically significant relationship between ecopreneurship dimensions, government regulation and the interaction term ($F_{(3,332)} = 8.970$, $p < 0.05$). Table 4a also reveals that the F statistics change the value of 11.598 from 0.827 ($F\Delta = 11.598$), showing an increase when the interaction term was added. The F ratio shows that the regression of ecopreneurship dimensions and government regulation and organizational performance of the quoted paint manufacturing companies is statistically significant.

The results in Model 1 Table 4a (for step one) show statistically significant regression coefficients for ecopreneurship dimensions ($\beta = 0.385$, $p < 0.05$), indicating that there is a linear dependence between ecopreneurship dimensions and organizational performance of quoted paint manufacturing companies. In Model 2, ecopreneurship dimensions were statistically significant ($\beta = 0.343$, $p < 0.05$), while government regulation was statistically insignificant ($\beta = 0.053$, $p > 0.05$). In Model 3, only government regulation and the interaction effect were still statistically significant [Ecopreneurship dimensions ($\beta = -0.526$, $p < 0.05$); Government regulation ($\beta = -0.855$, $p < 0.05$), Interaction term ($\beta = 0.203$, $p < 0.05$)].

When the interaction term was introduced, the beta coefficient, β , was 0.203, meaning that for every unit change in the interaction term, the organizational performance of the quoted paint manufacturing companies increased by 0.203. Further, the interaction term showed a positive effect ($\beta = 0.203$, $p < 0.05$), which is statistically significant. The

results suggest that government regulation has a statistically significant moderating effect on the relationship between ecopreneurship dimensions and the organizational performance of the quoted paint manufacturing companies in Nigeria. The confirmed regression equation from the results is stated as follows:

$$OP = 5.796 - 0.526ED - 0.855GR + 0.203(ED*GR) \text{ Eqn. (viii)}$$

Where

OP = Organizational Performance

ED = Ecopreneurship Dimensions

EC = Government Regulation

ED*GR= The interaction of the Ecopreneurship Dimension and Government Regulation

The results indicate that government regulations statistically significant effect on the relationship between ecopreneurship and the organizational performance of the quoted paint manufacturing companies in Nigeria. Based on these findings, null hypothesis seven (H_01), which states that the effect of ecopreneurship on the organizational performance of quoted paint companies in Nigeria is not significantly moderated by government regulation, was rejected.

The findings of hierarchical multiple regression analysis revealed that government regulation significantly moderated the relationship between ecopreneurship dimensions and organizational performance in quoted paint manufacturing companies in Nigeria.

$$\Delta R^2 = 0.032; F(5, 331) = 11.598, p < 0.05$$

This implies that the effect of ecopreneurship dimensions on organizational performance varies depending on the company's policy regulation. Smaller companies can leverage ecopreneurship to improve their organizational outcomes, while larger companies may need to consider other factors (Ali *et al.*, 2021) [5]. Therefore, quoted paint manufacturing companies in Nigeria must consider their policy regulation when adopting ecopreneurship dimensions and striving for better performance (Mulaessa & Lin, 2021) [46].

Previous research supports the notion that compliance with environmental and government regulations is a significant driver for engaging in ecopreneurial practices, such as eco-innovation, eco-production, eco-marketing, green supply chain management, and proper waste management, which ultimately enhance economic performance (Bai *et al.*, 2019; Ali *et al.*, 2021; Hashmi & Akram, 2021; Mulaessa & Lin, 2021) [11, 5, 27, 46]. Environmental regulations have been found to have a positive and significant direct effect on green innovation and a moderating effect on the relationship between proactive environmental strategies and green innovation (Mulaessa & Lin, 2021; Asadi *et al.*, 2020; Wang *et al.*, 2021) [46, 9, 70]. However, some studies have reported mixed findings regarding the moderating effect of government policy on the relationship between green initiatives and financial performance (Xie *et al.*, 2019; Eneizan *et al.*, 2019) [75, 20].

The study is grounded in the ecological modernization

theory, which provides a suitable framework for understanding the roles of different societal actors in achieving environmental outcomes and best practices (Murphy, 2000) [47]. This theory suggests that environmental problems can be addressed without impeding industrial and economic development. It emphasizes that green management is an innovative mechanism for firms to integrate environmental concerns into their operations and promotes economic growth by prioritizing the environment (Murphy, 2000) [47]. By adopting the ecological modernization theory, this study offers a comprehensive understanding of the relationship between ecopreneurship dimensions and organizational performance and the moderating effects of environmental commitment, competence, and government regulations in quoted paint manufacturing companies in Nigeria.

Conclusion and Recommendations

The results showed that ecopreneurship dimensions and organizational performance of quoted paint manufacturing companies in Nigeria have a significant effect moderated by government regulation. Therefore, this study recommended that the management of quoted paint manufacturing companies in Nigeria should embrace ecopreneurship for execution and measuring the success of tasks. This implies that embracing ecopreneurship practices, such as adopting environmentally friendly production processes, using sustainable materials, and implementing eco-friendly initiatives, can contribute to the success of paint manufacturing companies in Nigeria. It suggests that incorporating ecopreneurship into their business strategies can positively influence their performance. Furthermore, the implication highlights the importance of government regulations in shaping the relationship between ecopreneurship and organizational performance. Government regulations can either facilitate or hinder the adoption of ecopreneurial practices and their impact on performance. This implies that companies operating in Nigeria's paint manufacturing industry must navigate and comply with relevant regulations to fully leverage the benefits of ecopreneurship. Overall, the implication suggests that the management of quoted paint manufacturing companies in Nigeria should prioritize embracing ecopreneurship to execute tasks and measure success. Doing so can enhance organizational performance and align operations with environmental sustainability goals.

Further studies can explore the specific ecopreneurship dimensions and strategies that paint manufacturing companies in Nigeria can adopt to enhance their organizational performance. Additionally, the research could investigate the government regulations and policies that impact the relationship between ecopreneurship and organizational performance, providing insights into how companies can navigate and comply with these regulations effectively. Furthermore, examining the long-term effects of embracing ecopreneurship on the financial and environmental sustainability of paint manufacturing companies would contribute valuable knowledge to the field.

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