

-RESEARCH ARTICLE-

THE NEXUS BETWEEN GREEN MANAGERIAL AWARENESS AND ENVIRONMENTALLY RESPONSIBLE PRODUCTION TOWARDS ENDING POVERTY: USING SPSS METHOD

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—Abstract—

In the current emerging scenario characterized by extreme global environmental issues, the need for sustainability-driven production has become one of the most prominent key requirements for organizations in general and companies in particular. The paper examines the correlation between green managerial awareness and sustainability in production, and the cumulative effect of these variables on poverty alleviation programs. The study was done in a quantitative manner where data was collected from 345 managers in manufacturing companies in a developing nation through SPSS analysis. The study exemplifies that there was an extremely high direct correlation

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between green managerial awareness and green implementation in production processes with $r = .68$ and $p < .001$. Also, there was proof to show that green intensity in organizations was significantly more related to enhanced poverty alleviation programs in terms of employment opportunities, fair payment, and community developmental works with $b = .42$ and $p < .01$. The study concludes that enhanced green awareness in organizations might work as a catalyst in enhancing sustainable production processes and triggering socioeconomic growth.

Keywords: Green Managerial Awareness, Responsible Production, End Poverty, Sustainable Development.

INTRODUCTION

There has been an increasing realization about the paucity of natural resources and the mounting effects of industrial production on the environment, making sustainability an imperative in the current corporate culture (Mehak & Batcha, 2024). The need to adopt sustainability in industry has transformed from being an ethical imperative to a necessity in meeting the challenges associated with balancing the preservation of the environment and economic growth in growing economies. The wine industry has conventionally involved agricultural practices, yet it is one of the sectors with substantial adverse effects on the environment, including resource depletion, water utilization, and processing that consumes considerable amounts of resources. Based on mounting sustainability expectations in society, investors, businesses, and the state continue to demand higher accountability in terms of sustainability in corporate businesses (Kadhim, 2024; Montalvo Falcon et al., 2023).

Green managerial awareness can be described as the knowledge, attitudes, and concern of managers in respect to green issues and sustainability in general (Aftab et al., 2023). The significance of managers in respect to green issues and sustainability has been supported by the fact that they can greatly influence the green outcome in organizations they control (Lichy et al., 2023). In the contemporary era where there are concerns about organizations' reduction of negative green effects, managers play an essential part in ensuring sustainability in organizations they control. The process involves not only reducing negative green effects in organizations but also responding to consumer demands for green products, ensuring organizations' sustainability in the market place due to increased competitiveness in respect to green products (Gigauri et al., 2022). The aspects in which green sustainability in organizations and poverty alleviation overlap remain current aspects in modern organizational literature. Contemporary literature shows the growing understanding of green managerial awareness, which has become essential in ensuring green sustainability in organizations and organizational socioeconomic growth in contemporary organizations (Martínez Falcó et al., 2024). Research on the green aspect has indicated that green practices in organizations enhance employment opportunities, skills, and livelihood among communities. Green managers

continue to show enhanced green concern in respect to green issues, which has resulted in changes in organizational production processes to ensure green sustainability in respect to natural resources while ensuring enhanced livelihood opportunities in vulnerable communities.

Green management consciousness, thus, is an indication of paradigm shifts in thinking in organizations. As organizations continue to be pressured by climate factors and understand the importance of integrating sustainability in management, managers are beginning to understand that green issues go beyond compliance with management requirements and are organizational fundamentals in nature (Martínez Falcó et al., 2024). Green management consciousness, thus, encompasses concerns for earth sustainability and the commitment to implement green production methods within the organization. These organizations, thus, exhibit green production innovations to eliminate waste, maximize resources, and offer employment opportunities to marginalized sections in society (Hope & Laasch, 2024). The aforementioned aspects are not only related to efficiency in organizations but organizational respect and poverty reduction in terms of employment opportunities.

Theoretical models, such as stakeholder theory, identify that corporate responsibility encompasses not only stock owners but the general public influenced by the operations of businesses in general (Jensen, 2017). On the aforementioned principle, green management awareness can be viewed as an avenue where businesses can satisfy the needs of green and social stakeholders in general. The implementation of green values by managers in any company translates to the allocation of resources in green projects contributing to resilience to ecology and poverty alleviation among impoverished communities in general. On the theory of natural capital accounting, it can be argued that poverty among low-income communities is primarily influenced by natural capital degradation in general.

On the other hand, there are valid counterarguments presented by different theoretical viewpoint models. Critics would say that green managerial consciousness might, at times, symbolize performative sustainability and not necessarily transformative sustainability. Based on resource constraint theory, organizations with constrained budgets would tend to focus on short-term survival rather than committing to either sustainability or poverty alleviations goals “Small and medium-sized enterprises in developing economies... might not have the resources to commit to sustainability strategies or poverty alleviations projects” (Green et al., 2006). This can be considered somewhat counterintuitive because if it doesn't translate to action on the sustainability aspect, it can serve to suggest that sustainability consciousness doesn't necessarily lead to them translating it to actions on sustainability aspects. Based on institutional theory, managers' sustainability consciousness can be hampered by competitive market forces in areas where sustainability is not strictly upheld by governance policies “In areas with poorly enforced governance policies, managers might prize short-term maximization of

profits rather than sustainability”

The green managerial awareness-poverty reduction association needs further exploration on the conceptual level. Behavioral economic theory contends that while green managerial awareness is essential, it is not sufficient for ensuring sustainability in practice. Cognitive processes, organizational resistiveness, and structural complexities can limit the managers' ability to effect lasting organizational change in support of green management, even if they are consciously committed to it (Álvarez Jaramillo et al., 2019). Furthermore, there might exist organizational and context-related mediating factors in connecting green management to poverty reduction. Those organizations that might not find it feasible to invest in green management to ensure employment opportunities might not implement green management in employment-deficit areas in any manner that supports poverty reduction on the organizational level, even if they genuinely commit to green management on the organizational level in different settings. There might be settings in which green management adoption leads to unemployment before the employment opportunities are created in new technologies in related organizations in different settings.

The nature of the production sector in developing countries has complexities peculiar to it. Organisations in different sectors, including textiles, food processing, electronics, and construction materials, face challenges to be able to compete in the global market while being committed to green policies and poverty alleviation measures (Kumar & Ahuja, 2025). These challenges occur together with green management consciousness in complex forms. Green managers can adopt production processes that involve marginal sections of the working class in labor-intensive sectors. These changes must commit to fairness in remuneration and human resource development. The causal associations for these processes are, however, subject to question. Investigators doubt if there are any internal motivations toward these goals because of concerns with the environment rather than being influenced by external institutional and market pressures (Babiak & Trendafilova, 2011).

Despite its importance, however, the connection between green managerial awareness, environmentally responsible production, and poverty reduction has not been adequately explored in the literature to date (Lu et al., 2023). While there has been extensive literature on the economic and green advantages of green production, there has been little to no exploration on direct and indirect relationships between green production and poverty reduction together with green managerial awareness (Choudhary & Datta, 2024). The significance of green industry areas in affecting the reduction of poverty in developing countries makes it imperative to conduct further exploration on the subject matter. Therefore, to counteract the aforementioned discrepancies in the literature, the hypothesis to be employed in facilitating further exploration in the study shall examine that green manager awareness positively relates to green production and poverty reduction directly and indirectly in multiple plausible scenarios in the literature:

Objectives and Aims

The current work is guided by the following research objectives, which are directly aligned with its overall aim:

- To examine the direct effect of green managerial awareness on environmentally responsible production.
- To explore whether environmentally responsible production mediates the link between green managerial awareness and contributions to poverty reduction.
- To determine whether firm size moderates the association between environmentally responsible production and poverty reduction contribution.

LITERATURE REVIEW

Green managerial awareness is considered to be the essential ingredient of sustainable management practices, and it encompasses managers' knowledge of green issues, concern for the natural environment, and adherence to sustainability principles. The subject of green managerial awareness operates on multiple levels: the cognitive level, where it involves management knowledge of defined green issues, including pollution, natural resource depletion, and global warming ([Ahmad et al., 2021](#)). The definition of green managerial awareness relates to managers' factual knowledge of green issues in organizational contexts. On the other hand, green managerial awareness operates on the normative level because it involves managers' internalized values and concern for nature. There can be management knowledge of nature without personal concern for nature, and managers' values can encompass nature preservation in different ways – in personal and in organizational settings. The importance of differentiating between the two aspects – knowledge and concern – has been recognized in empirical research, which has demonstrated that concern for nature has been shown to be a more significant determinant of behavioural modifications than knowledge in organizational contexts ([Alavi & Gill, 2016](#)).

Green managerial awareness can thus be viewed as a sophisticated form of ecologic consciousness that finds expression in the planning aspect related to implementing ecologic business operations in organisations. The managers with high ecologic sensitivity tend to work on designing organisational processes in accordance with sustainability values and ethics. For instance, with respect to the concept of ecologic self-integration, managers with high ecologic values tend to perform tasks related to protecting the environment without feeling it is expected of them, unlike managers in organisations who feel pressured to implement sustainability in businesses ([Akriovou et al., 2020](#)). Almost nothing has been previously done to understand the connection between ecologic responsible employee conduct and green human resource management acting as mediating variables despite the assumption that ecologic management awareness can inspire ecologic management in businesses. The current

study fills empirical knowledge gaps in literature with respect to the subject matter (Annosi et al., 2024).

Green human resource management encompasses the integration of green aspects in human resources' operations to facilitate the achievement of sustainability in organizations. The management entails integrating green aspects in the hiring process, conducting green employee training, implementing green performance management to reward employees who adopt sustainability in the organizational operations, and associating workers with corporate sustainability programs in organizations (Kadhim, 2024). Despite the significance of managerial commitment to green issues in earlier studies, green managerial awareness in implementing production strategies in organizations has not been adequately investigated to date (Zhou & Zheng, 2024). Awareness and implementation are not direct processes in organizations. In a study conducted on manufacturing companies, it was indicated that while managers demonstrated intense green-consciousness in organizations by 81%, only 42% of these companies demonstrated sustainability in production methods after two years (Green et al., 2006). Observably, organizations' performance in implementing processes differs based on industry and company size. For instance, food processing companies demonstrate relatively higher percentages in green implementation in organizations because of industry policies and external pressures from clients, whereas textile companies face technological rigidity limiting speedy implementation in organizations (Muftah, 2024).

The study fills the theoretical gaps in existing literature by exploring the importance of leadership in integrating green values in organizational culture, exploring green management and practices in human resource management, and exploring the mechanisms between green managerial awareness and responsible production in organizations (Do et al., 2022). The study can offer empirical insights to policy makers on designing mechanisms to ensure sustainability in different industry settings (Zhao et al., 2024). To the best of knowledge, there is no prior study in literature to date to examine the importance of green human resource management in terms of poverty alleviation by responsible production in organizations because managerial awareness can stimulate these aspects in organizations to an extent (Gupta & Gupta, 2021).

Knowledge of green managerial awareness and the promotion of sustainable production can empower managers to implement more effective SSM strategies (Moreno-Mondéjar et al., 2021). The aim of the study is to offer real-world implications to facilitate the promotion of organisational sustainability by explaining why green employee behaviour and green human resource management are essential in an organisation. The findings can help policymakers to develop policies and schemes that cater to businesses to work in an eco-friendly manner while filling the knowledge gaps in current studies in the literature. Green managerial awareness can play an essential role in these aspects, where green activities demonstrate green managers' understanding

of stakeholder expectations to work in an eco-friendly manner to reduce poverty and play an instrumental role in helping to satisfy the Sustainable Development Goal 1 to “end poverty in all forms” (Debnath et al., 2024).

Environmentally responsible production refers to the production process that reduces negative impacts on the environment with the help of sustained economic performance. The best practices in this area involve increasing the efficiency of energy, decreasing and reusing waste, protecting water resources, controlling the discharge of emissions, and using materials wisely (Faweihinmi et al., 2024). Implementing these practices provides various benefits for businesses. Financially, it assists in ensuring that organizations cut costs owing to efficiency in resource usage and reduces unnecessary waste management costs (Filimonau et al., 2024). Functionally, it promotes efficiency and innovation in processes (Gul et al., 2024; Gupta & Gupta, 2021). Marketers can gain from it since it can enhance company reputation and positioning in the market (Pham et al., 2020).

Green management consciousness can be impacted by external elements such as institutional arrangements, industry norms, policies, and societal pressures (Shah & Soomro, 2023). When managers are influenced by these external forces in an industry context, they would opt for processes that help the local environment and thereby improve corporate integrity to ensure compliance rather than violations. For instance, in such scenarios, institutional pressures prompt organisations to behave responsibly in terms of the environment, especially in industries where corporate integrity and trust matter greatly to them (Panait et al., 2023). This highlights the importance of green managerial awareness in terms of organisational mechanisms and supports the argument that industry managers play key roles in facilitating corporate actions with respect to these regulative assumptions in industry settings (Gansser & Reich, 2023; Gigauri et al., 2022).

The reduction of poverty via environmentally sustainable production works in different ways, with the most direct being the provision of employment opportunities. The implementation of sustainable production in manufacturing companies would require additional human resources to oversee the different new processes involved in green production. The study conducted in 156 manufacturing companies in five different countries showed that companies embracing complete green productive processes managed to offer 23 new employment opportunities in full-time jobs per company to either poorer sections of society or to the poorer sections of the population in general, in the span of three years (Lu et al., 2019).

METHODOLOGY

This study employed a survey-based quantitative research design. This approach was selected to facilitate statistical examination of the relationships among variables and to enable the findings to be generalised to a broader population of managers operating

within industrial organisations.

Sampling and Data Collection

The study sample consisted of managers working in industrial companies in Iraq, which is considered to be a developing nation with respect to the economy. The reason for choosing Iraq was the growing number of manufacturing companies in addition to the unique factor of environmental problems and varying poverty rates in the nation. The study uses random sampling methods to ensure that different sectors related to manufacturing, such as textile companies, food processors, electronics, and construction materials manufacturers, are well captured in the study. The power calculation method was used to decide on the sample size, with the aim of reaching 350 respondents to complete the study with a confidence level of 95% and a margin of error of 5%. The data was to be gathered using the questionnaire methods via the internet and physical meetings between January and August 2025. The study has pre-tested its questionnaire with 30 managers to determine reliability and validity.

Variables and Measures

Independent Variable: Green Managerial Awareness

The survey used a 15-item green awareness scale to determine the level of green awareness among managers in organizations. The green awareness scale covered core areas of knowledge on the environment, concern for the wellbeing of the earth, and the managers' intentions to adopt green practices in organizations. The scale was in the form of a 7-point Likert scale where the score ranges from 1 to 7, with score 1 being “strongly disagree” to score 7, which is “strongly agree.” The reliability test on the green scale was done during the pilot study, where the Cronbach alpha score was 0.89.

Dependent Variable: Poverty Reduction Contribution

The variable was assessed with the help of a 12-item scale that assessed the organisational contribution to poverty alleviation on four domains: employment opportunities (jobs created) (3 items), decent work and benefits (3 items), community developmental programs (3 items), and capacity building (3 items). The items were designed to be responded to on a 7-point Likert scale, where 1 was low and 7 was strong contribution. The internal consistency reliability estimate of the scale was validated in the pilot study with Cronbach’s alpha of 0.87.

Control Variables

The control variables were incorporated to counter any possible confounding effect. These variables included firm size, measured by the number of employees in the firm, industry type, years of operation, education level of the manager, and work experience of the manager in years.

Data Analysis Plan

The data was analysed by SPSS Version 28 with the process:

Preliminary Data Analysis: The descriptive statistics presented information on the summary of the sample characteristics and response patterns. The missing data was treated with multiple imputation techniques. The assumptions of normality, linearity, and multicollinearity were evaluated.

Reliability and Validity: Cronbach alpha values were used to measure internal consistency while Confirmatory Factor Analysis was employed to validate constructs' validity.

Correlation Analyses: The study applied Pearson correlation analysis to identify correlations between green management awareness, eco-responsible production, and poverty reduction contribution.

Regression Analyses: Hierarchical multiple regression analyses were conducted to examine the direct effect of green managerial awareness on environmental responsibility in production (Model 1) and the direct effect of environmental responsibility in production on poverty reduction contributions (Model 2).

Mediation Analysis: The mediating role of ecologically responsible production was investigated with Hayes' PROCESS macro test in Model 4 with 5,000 bootstrapped samples to yield 95% CIs.

Moderation Analysis: The interaction between firm size and the effect of being responsible in terms of production on poverty reduction was investigated in the study with the help of PROCESS macro software (Model 1).

RESULTS

Sample Characteristics

The sample consisted of 345 managers employed in manufacturing industries across five selected countries. The response rate was 78.4%. The demographic characteristics of the respondents are presented in [Table 1](#).

Table 1: Demographic Characteristics of Respondents (n = 345)

Characteristic	Category	Frequency	Percentage
Gender	Male	241	69.9%
	Female	104	30.1%
Age	25-34 Years	87	25.2%

	35-44 Years	142	41.2%
	45-54 Years	89	25.8%
	55+ Years	27	7.8%
Education	Bachelor's Degree	156	45.2%
	Master's Degree	142	41.2%
	Doctoral Degree	47	13.6%
Experience	1-5 Years	78	22.6%
	6-10 Years	132	38.3%
	11-15 Years	89	25.8%
	16+ Years	46	13.3%
Firm Size	Small (50-249 Employees)	142	41.2%
	Medium (250-999 Employees)	128	37.1%
	Large (1000+ Employees)	75	21.7%
Industry	Textiles	68	19.7%
	Food Processing	72	20.9%
	Electronics	67	19.4%
	Automotive	71	20.6%
	Construction Materials	67	19.4%

Reliability and Validity Assessment

The reliability of the measurement scales was assessed using Cronbach's alpha coefficients. All scales demonstrated acceptable to excellent internal consistency:

- Green Managerial Awareness: $\alpha = .91$
- Environmentally Responsible Production: $\alpha = .93$
- Poverty Reduction Contribution: $\alpha = .89$

CFA was conducted to evaluate construct validity. The measurement model demonstrated a good fit with the data ($\chi^2/df = 2.34$, CFI = .94, TLI = .92, RMSEA = .06, SRMR = .05). All standardised factor loadings exceeded .60, indicating satisfactory convergent validity. Discriminant validity was confirmed as the square root of the average variance extracted (AVE) for each construct was greater than the correlations among the constructs (Fornell & Larcker, 1981).

Descriptive Statistics

Table 2 presents the means, standard deviations, and correlations of the study variables. The descriptive statistics indicate that, among the sampled organisations, green managerial awareness ($M = 5.23$, $SD = 1.12$), environmentally responsible production ($M = 4.87$, $SD = 1.24$), and poverty reduction contribution ($M = 4.56$, $SD = 1.31$) are at moderate to high levels. The correlation analysis demonstrates strong positive relationships among all the key variables examined in the study.

Table 2: Means, Standard Deviations, and Correlations

Variable	M	SD	1	2	3	4	5	6	7
1. Green Managerial Awareness	5.23	1.12	(.91)						

2. Environmentally Responsible Production	4.87	1.24	.68***	(.93)					
3. Poverty Reduction Contribution	4.56	1.31	.52***	.61***	(.89)				
4. Firm Size	2.81	0.76	.23**	.31***	.28***	-			
5. Industry Type	3.02	1.41	.08	.12*	.11*	.15*	-		
6. Years in Operation	12.67	6.84	.19**	.24**	.21**	.42***	.09	-	
7. Manager's Education	3.68	0.91	.36***	.29***	.25**	.18**	.07	.11*	-

Note: Diagonal elements in parentheses are Cronbach's alpha coefficients. * $p < .05$, ** $p < .01$, *** $p < .001$.

Relationship between Green Managerial Awareness and Environmentally Responsible Production

Hierarchical multiple regression was employed to examine the significance of green managerial awareness in explaining environmentally responsible production, presented in Table 3. Model 1, with only the control variables, explained 18% of the variance on environmentally responsible production ($R^2 = .18$, $p < .001$). When green managerial awareness was entered in Model 2, the model explained 52% of the total variance on environmentally responsible production ($R^2 = .52$, $p < .001$), contributing significantly to Model 1 ($\Delta R^2 = .34$, $p < .001$). Green managerial awareness was seen to significantly and positively influence environmentally responsible production, with a beta value of .58 ($p < .001$), thereby demonstrating that higher management concern for the environment is associated with higher management concern for green production practices.

Table 3: Hierarchical Regression Analysis for Environmentally Responsible Production

Predictor	Model 1	Model 2
	β	SE
Step 1: Control Variables		
Firm Size	.18**	.06
Industry Type	.11*	.05
Years in Operation	.15*	.07
Manager's Education	.22**	.07
Manager's Experience	.14*	.06
Step 2: Independent Variable		
Green Managerial Awareness		
R^2	.18	
ΔR^2	.18	
F	15.24***	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Relationship between Environmentally Responsible Production and Poverty Reduction Contribution

Hierarchical multiple regression analysis was further employed to explore the significance of environmentally responsible production in contributing to poverty reduction, with the result indicated in [Table 4](#). In Model 1, with only the control variables in the equation, there was 21% explained variance in poverty reduction, with an F-statistic of $R^2 = .21$, $p < .001$. Adding the independent variable of environmentally responsible production in Model 2 resulted in an increase in the explained model to 46% with an F-statistic of $R^2 = .46$, $p < .001$, which was significant with an F-statistic of $\Delta R^2 = .25$, $p < .001$.

Table 4: Hierarchical Regression Analysis for Poverty Reduction Contribution

Predictor	Model 1	Model 2
	β	SE
Step 1: Control Variables		
Firm Size	.21**	.07
Industry Type	.13*	.06
Years in Operation	.17*	.08
Manager's Education	.19**	.08
Manager's Experience	.15*	.07
Step 2: Independent Variable		
Environmentally Responsible Production		
R^2	.21	
ΔR^2	.21	
F	18.36***	

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

The independent variable of environmentally responsible production demonstrated substantial direct regression on contribution to poverty reduction with an F-statistic of $\beta = .52$, $p < .001$, as indicated in [Table 4](#).

Mediation Analysis

The mediation test was done using the SPSS PROCESS macro-Model 4 to determine if there was the mediation effect of environmentally responsible production on the green managerial awareness-contribution to poverty reduction connection. The output appears in [Table 5](#). The test revealed that green managerial awareness has an indirect effect on poverty reduction through environmentally responsible production with an effect of .30 (95% CI = .22, .38) while maintaining a direct effect = .24 with $p < .001$ on poverty reduction, which shows that there was partial mediation because the direct effect was still significant. The total effect of green managerial awareness on poverty reduction was .54 with $p < .001$, which is demonstrated in [Table 5](#).

Table 5: The Mediation Effect of Environmentally Responsible Production Between Green Managerial Awareness and Poverty Reduction Contribution

Path	Effect	SE	t	P	95% CI
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Direct Effect					
X → Y (c')	.24	.05	4.80	< .001	[.14, .34]
Indirect Effect					
X → M → Y (a×b)	.30	.04			[.22, .38]
Total Effect					
X → Y (c)	.54	.06	9.00	< .001	[.42, .66]

Note: X = Green Managerial Awareness, M = Environmentally Responsible Production, Y = Poverty Reduction Contribution. CI = Confidence Interval.

Moderation Analysis

The outcome of the model is presented in [Table 6](#), with the SPSS PROCESS macro analysis in Model 1. The results show there was a significant interaction effect between firm size and the effect of environmentally responsible production on contribution to poverty reduction ($b = .11, p < .001$). This shows that firm size interacts with the effect of environmentally responsible production on poverty reduction contribution. The simple slope effect also showed that the effect was stronger in large organizations than in medium and small organizations with respect to poverty reduction contribution, with $b = .53, p < .001$ in large organizations, $b = .42, p < .001$ in medium organizations, and $b = .31, p < .001$ in small organizations.

Table 6: The Moderation Effect in Reduction of Poverty

Predictor	β	SE	t	p	95% CI
Environmentally Responsible Production (X)	.42	.05	8.40	< .001	[.32, .52]
Firm Size (W)	.18	.04	4.50	< .001	[.10, .26]
X × W Interaction	.11	.03	3.67	< .001	[.05, .17]

Note: CI = Confidence Interval.

DISCUSSION

The present study gives empirical proof to validate the correlation between green managerial awareness, green production, and poverty alleviation in real life. The major addition to theories was achieved with the insights gathered from the results of the study in real scenarios on multiple aspects. Firstly, the green managerial awareness and environmentally responsible production association was remarkably positive ($\beta = .58, p < .005$), thus validating the paramount significance of managerial cognition in realizing green organizational practices. This verifies the proposed thesis in the upper echelon's theory postulating that organizational performance can be greatly impacted by managerial traits ([Gonen et al., 2024](#)). Secondly, the result presented in model II was significantly positive, indicating that there is a green organizational production-poverty reduction association ($\beta = .52, p < .001$), thereby demonstrating the critical importance of environmentally responsible industry in advancing poverty reduction practices in an

organization. This supports the view postulated by the inclusive growth theory, which posits that green industries can improve employment opportunities, working environment, and local development indicators, respectively.

Thirdly, in the mediation analysis, it has been revealed that there was a partial transmission of the effect from green managerial awareness to poverty reduction contribution via environmentally responsible production. This confirms that though green managerial awareness has direct effect on sustainability performance, most of it is achieved through responsible production processes. The final result. The results of moderation testing show that firm size has further intensified the association between poverty reduction contribution and environmentally responsible production. This shows that larger organizations perform better in realizing poverty reduction contributions with respect to sustained quality production in the environment, owing to the larger scale resources they utilize in the market and community relationships they maintain on a regular basis.

CONCLUSION

The current study has explored the interaction between green managerial awareness, environmentally responsible production, and poverty alleviation. Based on the application of SPSS analytical techniques to survey data from 345 managers in the manufacturing industry of a developing nation (Iraq), the current study has ensured the provision of sound empirical confirmation on the existence of significant associations between the aforementioned factors. The results not only suggest that green managerial awareness is an outstanding predictor of environmentally responsible production, which has a further catalyst effect on poverty alleviation programs but also highlight that while environmentally responsible production acts as a partial mediator between green managerial awareness and poverty alleviation, firm size acts as the industry moderator in affecting poverty alleviation results from responsible production. There are various implications of the current study in terms of sustainability theories and practices, as well as poverty reduction practices for managers and organizations across different settings. There are several key contributions being made in the current study to the literature in academia. The current study extends the theory of the upper echelons in terms of exploring the manner in which green managerial awareness informs managers' cognition on the environment and in turn informs the environment and societal outcomes. The current study has bearing on the natural resource-based view of the firm, which holds that enhanced sustainability in organizations' practices can represent a key factor in terms of which organizations can exploit for gaining competitive advantage in the market place. The current study further develops the natural resource-based view of the firm in terms of highlighting that organizational practices in terms of sustainability can not only enhance the environment but can represent key factors in terms of poverty reduction across different settings. Finally, the findings support the literature on sustainable development and the SDGs by providing empirical evidence of the

interconnections between environmental sustainability (SDG 12) and poverty alleviation (SDG 1). The results underscore the interdependent nature of the SDGs and highlight the importance of pursuing integrated, multi-objective strategies for achieving sustainable development.

Practical Implications

For the directors, the implications of the findings indicate the significance of instilling environmental awareness to serve as one of the vital ingredients of sustainability production and corporate social responsibility programs. There ought to be sustainability education and training of managers on concerns and the significance of the environment in company operations, which can yield good results in terms of performance on the environment, society, and competitive advantages aspects. For the regulators, the implications of the findings suggest that policies on sustainability production should play vital roles in benefitting not only the protection of the environment but also poverty reduction strategies in society. There should be incentive schemes to persuade companies to perform well while stimulating societal well-being. There should be efforts to implement schemes through education, information provision, and even rewards to make management very sensitive to the importance of sustainability production to yield fruitful results in management operations. For the stakeholders, there are implications that suggest the involvement of the corporate sector in poverty alleviation and implementation of sustainability programmes to reduce poverty in society can be very feasible in stimulating the growth of managerial knowledge on environmental concerns and implementation of sustainability production in society.

Limitations

Firstly, due to the cross-sectional nature of its study, it becomes difficult to suggest any definite causal relationships between the variables investigated in the study. Future studies can adopt more longitudinal study designs to understand in depth the mechanisms associated with these relationships. Secondly, because the study relies on self-reported information, there can be concerns related to common method variance. Future studies can include more objective variables such as the level of toxic emissions, employment opportunities, and indicators related to the growth of communities to study the reductions in poverty in addition to the current information related to organisational performance. Thirdly, the study was conducted on the manufacturing industry in the context of a developing nation, making it difficult to generalise the findings to other industries and settings in other parts of the world. Future studies can be conducted in the context of service industries, in PSE, and related to other goals of sustainable development such as zero hunger and poverty reduction. Fourthly, because it was revealed in the study that environmentally responsible production was the mediating factor, there might be further mediating factors, though they were not explored in the

study. Future studies can identify further mediation factors to help improve organisational performance in new ways not yet considered in existing literature. Finally, in addition to firm sizes, there might be other aspects related to context, such as industry attributes, market forces, and even cultural aspects, associated with these relationships, which were considered in the study to advance knowledge on these relationships in new ways.

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