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Nurturing Environmentally Responsible Practices Using Top Management Role on Effective Training and Supplier Orientation to Promote Green Logistics Management Practices

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Abstract

Purpose: This study investigated top management role on effective environmental training, using supplier environmental orientation to promote green logistics management practices. This was a deductive study since the positivist worldview was used to address the query about the relationship between variables.

Methodology: The study used a quantitative method, which is consistent with the paradigm that was chosen. Data from the study population, which included Ghanaian manufacturing, agriculture, mining, and extraction companies, was gathered through questionnaires. The target population's size was ascertained using the Ghana Revenue Authority (GRA) database. The scientists used the Krejcie and Morgan (1970) sample size estimation table. Given the above, a sample size of 300 firms was selected from a total of 1178 respondents. The inclusion of descriptive statistics, such as Mean ($\bar{x}$) and Standard Deviation (SD), contributes to a comprehensive understanding of the data. The application of SPSS software, version 25, for data analysis underscores a commitment to using reputable tools in the research process.

Findings: The conclusion drawn from the results yielded robust reputable evidence in support of the positive relationship between environmental training and green logistics management practices.

Unique Contribution to Theory, Policy, and Practice: Management should prioritize partnerships with suppliers who align with sustainable practices and contribute to the adoption of green logistics management practices within the supply chain.

Keywords: *Top Management, Effective Training, Supplier Orientation, Green Logistics, Management Practices.*

Background to the study

Green logistics management practices (GLMPs), according to Baah et al. (2020), are environmentally friendly strategies used in logistics management that include sustainable transportation, warehousing, and distribution in addition to sustainable logistical activities like recycling and proper waste disposal. Environmentally conscious organizations place a high value on finding suppliers who have similar environmental values because these suppliers offer essential resources and knowledge required for the effective adoption of environmental sustainability practices (Zhou et al., 2020).

According to Yadlapalli et al. (2018), an organization's ability to successfully integrate environmental management practices and strategies within the organization depends critically on the supplier's environmental orientation. Therefore, maintaining green logistics management strategies necessitates collaborating with suppliers to ensure that all specifications for components or raw materials follow the rules for environmental sustainability (Tarigan, 2021). The effectiveness and underlying mechanisms of these environmental management strategies in encouraging suppliers' environmental orientation and adoption of green logistics management practices, however, remain unanswered, despite the significance of these corporate environment management practices. Based on the idea that it is crucial to comprehend these connections in order to promote sustainable supply chain practices, this study intends to examine the influence of environmental training on suppliers' environmental orientation and green logistics management practices. The study was lensed by the following objectives:

- To examine the relation between green logistics management techniques and environmental training.
- To analyze the relation between supplier environmental orientation and environmental training.
- To analyze the relation between green logistics management techniques and supplier environmental orientation.

Contextual setting

Ghana's industrial sector was the focus of this investigation. In particular, on a few chosen Ghanaian industrial, mining/extraction, agricultural/agribusiness, and logistics/transportation sectors. According to the Ghana Statistical Service, the industrial sector in Ghana produced a net worth of around US$ 9.5 billion in 2011 and contributed approximately 25.9% of the nation's GDP (World Bank, 2013). Ghana's industrial sector currently consists of five subsectors: manufacturing, construction, mining and quarrying, power, and water and sewage (Turkson et al., 2014). Kolavalli et al. (2012) state that the manufacturing sector is a major driver of Ghana's socioeconomic development due to its economic ties to other important sectors such as services, mining and extractive industries, agriculture, and other essential industries. Ghana produces food, drinks,

tobacco, textiles, and cement, among other products, through its manufacturing sector (Turkson et al., 2014). Building, repairing, maintaining, changing, and demolishing streets, bridges, roads, sewers, trains, and communication systems are all part of the construction industry's activities (Turkson et al., 2014). The mining and quarrying industry includes the extraction of natural minerals in all of their forms, including solids, liquids, and gases. (Turkson et al., 2022).

Ghana's industrial sector is mostly dependent on power and petroleum products which results in high energy consumption and contamination of the environment that is harmful to the environment and public health. In order to lessen these negative externalities, stakeholders have called on businesses in the industry to implement eco-friendlier methods (Agyabeng-Mensah et al., 2020). Based on a review of the regional distribution of businesses in Ghana, the study focused on companies in the country's northern and southern sectors, which accounted for the bulk of industrial establishments (GSS, 2013). Given that these zones account for over 70% of Ghana's total industrial distribution (GSS, 2016), the Eastern and Western regions also housed about 30% of all firms. This indicates the significant impact they have had on the growth of Ghana's industrial sector.

Statement of the Problem

New information about environmental training and corporate environmental management practices has been developed as a result of numerous research studies that have concentrated on the idea of environmental training (Hirunyawipada & Xiong 2018; Navarro et al., 2018; Pinzone et al., 2019; Amrutha & Geetha, 2021; Chan & Ma, 2021). The association between environmental training and green logistical methods has not been previously studied. This lack of understanding may make it more difficult to conceptualize certain environmental management approaches' processes and results appropriately, which could impede managerial and corporate decision-making and action. This shows that more research is needed to address the paucity of knowledge on the effects of environmental training on green logistics management techniques and to expand on the work that has already been done by earlier scholars in this area.

Furthermore, a number of research have demonstrated the diverse effects that environmental awareness has on businesses' environmental performance, as demonstrated by the findings of Chan and Ma (2021), Andersén et al. (2020), and Zhou et al. (2020). But a lot of these researchers concentrated on how environmental orientation affects corporate environmental performance from the standpoint of internal stakeholders (Aboelmaged, 2018; Bu et al., 2020; Zhou et al., 2020; Qiao et al., 2022). Without taking into account outside parties like suppliers. This study looks at the mediating function of suppliers' environmental orientation in the relationship between environmental training and green logistics management practices in order to fill this research gap.

By examining the relationship between environmental training and the adoption of green logistics management techniques, this study aims to investigate the environmental management practices in a developing nation. Around the world, a number of studies on green logistics management

practices (GLMPs) have been carried out (Agyabeng-Mensah et al., 2020). However, academics have not given enough attention to research on green logistics management in emerging economies like Africa (Tseng et al., 2022). Consequently, there is a limited understanding of how these developing country organizations deal with environmental challenges. Therefore, addressing this research gap could benefit these organizations by improving their theoretical and practical environmental management strategies.

Brief literature review

By using the theoretical framework of the natural resource-based view of the company, it is also possible to comprehend the positive correlation that exists between environmental training and green logistics management techniques. According to the Natural Resource-Based View (NRBV) paradigm, an organization's ability to build skills that can result in a competitive advantage depends on how it interacts with its surroundings. Businesses can concentrate on enhancing these skills and achieving a competitive edge by putting green logistics management methods and environmental training into practice (Hart, 1995; Aboelmaged, 2018). Therefore, businesses should concentrate on the assets and skills that will provide them a competitive edge, such adopting green logistics management techniques and environmental training (Aboelmaged, 2018).

Drawing on the NRBV theory, this study regards environmental training as a valuable, unique resource that can aid in the establishment of environmental management practices, an environmental culture, and skilled workers who are aware of their impact on the environment and adept at identifying and reducing waste (Aragão & Jabbour, 2017). According to this study, using green logistics management techniques gives organizations a competitive advantage since they are a basic, innate competence. In order to save energy and resources, lessen adverse effects on the environment and society, and improve company performance, this competency entails implementing environmentally sustainable concepts and practices in logistics operations (Agyabeng-Mensah et al., 2020a).

The theory put forth here is that environmental training is a crucial strategic resource that can help implement environmental management practices (Pinzone et al., 2019; Pham et al., 2020; Obeidat et al., 2020). As such, it is likely that environmental training, as a key strategic resource for doing so, will benefit green logistics management practices. The research supports the NRBV theory, which holds that an organization's ability to support ecologically sustainable economic operations and its natural resources should be the foundation of its success (Hart, 1995, p. 991). The study views green logistics management techniques as an inherent competency that businesses must have in order to obtain a competitive edge through the application of ecologically friendly tactics and ideas that save resources and energy. The study proposes the following hypothesis in light of the argument made:

H1: Environmental training has a positive relationship with green logistics management practices.

The claim is that environmental education can have a favorable effect on a supplier's environmental consciousness, which in turn influences the application of green logistics management techniques. This shows that the association between environmental training and green logistics management practices is mediated by supplier environmental orientation. The purchasing organization can influence suppliers' environmental orientation and encourage the adoption of ecologically sustainable practices, like green logistics management methods, by offering them environmental training.

According to earlier studies, environmental orientation can operate as a go-between for corporate environmental management practices and environmental training. For instance, by encouraging waste reduction and organizational efficiency, researchers like Chaudhary (2020) and Yusliza et al. (2017) have discovered that successful GHRM activities, such as environmental training and development, can positively improve an organization's environmental performance. The association between environmental training and corporate environmental management practices has been demonstrated to be significantly influenced by supplier environmental orientation, according to prior research. Evidence for the beneficial correlation between supplier environmental commitment and business environmental practices was also discovered by Qiao et al. (2022).

According to the NRBV theory, resources that are uncommon, hard to duplicate, and non-replaceable are more likely to give an advantage over competitors (Barney, 1991). According to the argument, supplier environmental orientation refers to a collection of deliberate steps suppliers take to lessen their environmental impact over the course of a product's life cycle. It may be uncommon for suppliers to make such a pledge, particularly in sectors where sustainability standards are not common. Their worth as unique resources can be increased by the difficulty of duplicating or replacing suppliers with a similar degree of environmental orientation.

The idea that resources influence strategic choices and practices, which in turn boosts the firm's competitive advantage, is supported by the NRBV theory (Qiao et al., 2022). Here, the benefits of environmental training are transferred to the application of green logistics methods through supplier environmental orientation (Gimenez et al., 2012; Yadlapalli et al., 2018). Moreover, the organization's competitive advantage is bolstered by the supplier level integration of sustainable practices, which improves the entire value chain. The premise of this study (Chavez et al., 2021; Chan and Ma, 2021) states that supplier environmental orientation will therefore act as a bridge between green logistics management strategies and environmental training.

Methodology

This was a deductive study since a positivist worldview was used to address the query about the relationship between variables. The study used a quantitative method, which is consistent with the paradigm that was chosen. Data from the study population, which included Ghanaian manufacturing, agriculture, mining, and extraction companies, was gathered through

questionnaires. The target population's size was ascertained using the Ghana Revenue Authority (GRA) database. About 1179 registered tax-paying businesses in Ghana are covered by the GRA database, which offers accurate and dependable information about them including contact details, address, and industry type. According to Saunders et al. (2009), the sample size was determined by taking into account a number of parameters, such as the acceptable margin of error, the desired degree of confidence in the data, the kind of analysis that would be carried out, and the size of the population that the sample was taken from. The sample size estimation table developed by Krejcie and Morgan (1970) was utilized by the researchers to determine the appropriate sample size for this investigation. In light of the aforementioned, 300 businesses were chosen as a sample size from a total of 1178 respondents. The table below shows the distribution and percentages of the chosen respondents.

Descriptive statistics like Mean ($\bar{x}$) and Standard Deviation (SD) are also included because they help provide a thorough overview of the data. In line with Tafoya's (2018) methodology, these statistical measures are suitably employed to condense the key tendencies and variability within the dataset. Using SPSS software, version 25, for data analysis demonstrates a dedication to employing reliable instruments in the research process. All things considered, this part of the research study emphasizes the painstaking attention to detail and adherence to best practices in the gathering, managing, and analyzing of data. The study's scholarly rigor and contribution to the area are enhanced by the combination of approaches used, such as SEM, CFA, and descriptive statistics, which build a firm foundation for relevant insights and findings.

Table 1. Sample distribution

Firms	Population	Ratio	Sample
Manufacturing	354	0.300	106
Agriculture/Agribusiness	244	0.200	49
Logistics/Transportation	318	0.270	86
Minning/ Extraction	263	0.230	60
Total	**1179**	**1.000**	**300**

As a result, 290 completed surveys were received, translating into a remarkable 96.7% response rate. Out of the 300 disseminated questionnaires, 290 replies were included, resulting in a significant and reliable sample size that makes it easier to use statistical techniques with enough power. The sample size can be considered appropriate for analysis since it satisfies the standards for confidence levels and precision. A large enough sample size reduces sampling errors and increases the probability of producing results that fairly represent the population of interest. All

things considered, the researcher's attempts to guarantee a high response rate and obtain a sufficient sample size seem praiseworthy, greatly enhancing the validity and reliability of the study project.

Ethical considerations

Participants in this study gave their informed consent and were made aware that their identity would remain anonymous and that confidentiality would be upheld. The Office of the Registrar of the GRA granted the researchers permission to carry out the study. Additionally, the University of Cape Coast provided ethics clearance. All participants were given an explanation of the study's goal by the researchers prior to the questionnaires actually being distributed.

Results and discussions

The findings are examined in light of the goals of the investigation.

Table 2. Descriptive statistics results for environment training

Code	Items	Mean	SD	Skewness	Kurtosis
ET 1	A methodical study of training demands and gaps raises the contents of Environmental Training (ET).	4.82	2.051	-.486	-1.273
ET 2	Official environmental trainers' roles and obligations are clearly outlined.	4.91	2.164	-.735	-.997
ET 3	Environmental Training (ET) recipients have numerous possibilities to put their newly gained environmental knowledge to use.	4.60	2.049	-.572	-1.096
ET 4	The necessary resources (people, materials, and physical space) are available to offer environmental training (ET).	4.74	1.991	-.698	-.926
ET 5	There are Environmental Training (ET) seminars held by the organization.	4.89	2.053	-.691	-1.007
ET 6	Sessions for Environmental Training (ET) take place outside of the business.	4.87	2.030	-.720	-.930
ET 7	Performance evaluations following Environmental Training (ET) sessions are sufficient.	4.58	2.006	-.555	-1.049
ET 8	The subjects covered in Environmental Training (ET) are pertinent and suitable for business operations.	4.56	2.012	-.542	-1.075
ET 9	Environmental Training (ET) improves an organization's ability to operate.	4.63	2.008	-.569	-1.103

ET 10	Participants are generally happy with the Environmental Training (ET) sessions that are provided.	4.66	2.056	-.588	-1.117
	Composite Score	**4.73**	**2.042**	**-0.616**	**-0.965**

This section's data relates to a survey that was conducted to evaluate the firms' Environmental Training (ET) activities and their overall efficacy. Each of the ten things was assessed by respondents on a 7-point scale, with higher scores denoting a more favorable response. The information reveals the following observations:

The 10 items have a mean score of 4.73 overall, which suggests a somewhat positive reaction to the environmental training programs.

The comparatively high standard deviation of 2.042 indicates a broad range of participant responses. The distribution appears to be slightly skewed to the left, as indicated by the skewness of -0.616, which is slightly negative. A platykurtic distribution, which is flatter than a normal distribution, is shown by the kurtosis of -0.965.

The survey items can be examined individually to see which ones earned the highest mean score. The results show that item ET 2 clearly defines the duties and obligations of official environmental trainers. However, item ET 8 received the lowest mean score, suggesting that some participants don't think the environmental subjects covered in training are current or relevant to the work the organization does.

The company's environmental training programs are generally seen favorably, according to the composite score, while there may be some areas for improvement. To be more precise, the business might wish to check that the subjects covered in the training sessions are pertinent and up to date with regards to business operations. In addition, the organization ought to think about giving participants additional chances to put their newly gained environmental knowledge to use and making sure that proper performance evaluations are conducted following training sessions.

Supplier Environmental Orientation (SEO)

The scope and makeup of supplier environmental orientation are explained in this section. As a result, Table 3 below presents the results.

TABLE 3. Descriptive statistics results for environment orientation

Code	Items	Mean	SD	Skewness	Kurtosis
SEO 1	Our company works hard to make sure that every supplier knows how important it is to protect the environment.	5.05	1.982	-.736	-.892
SEO 2	Potential main suppliers are asked by our company to furnish proof of all environmental licenses and permissions.	4.76	2.021	-.773	-.791
SEO 3	Our company requires that prospective main suppliers have environmental management systems (such ISO 14001) in place.	4.77	1.951	-.686	-.926
SEO 4	Environmental specialists from our company inspect the facilities of possible key suppliers.	4.99	2.092	-.845	-.802
SEO 5	In order to keep track of compliance, our company sends environmental questionnaires to current major suppliers.	4.70	1.995	-.707	-.907
SEO 6	Our business asks its present major suppliers for waste reduction commitments.	4.82	2.040	-.748	-.883
SEO 7	Our company uses environmental standards to assess current key suppliers on a regular basis.	4.79	1.975	-.707	-.842
SEO 8	We work together with our primary Suppliers to accomplish our environmental goals.	4.92	1.982	-.786	-.743
SEO 9	We share information with our primary suppliers in order to enhance our environmental performance.	4.75	1.923	-.726	-.742
SEO 10	Our company requests that vendors use less packaging materials.	4.91	2.015	-.820	-.758
	Composite Score	**4.85**	**1.998**	**-0753**	**-0.736**

The Supplier Environmental Orientation (SEO) practices of a company are included in the table together with the descriptive statistics data. Each of the ten items' mean, standard deviation, skewness, and kurtosis values are included in the data, along with the composite score—the average score for all ten items. The findings are interpreted as follows:

The results indicate that the participants have a modestly positive opinion of the company's Supplier Environmental Orientation policies, with mean scores ranging from 4.70 to 5.05. There may be some variation in the responses provided by the individuals, as indicated by the standard deviations, which range from 1.923 to 2.092. The majority of the items show a somewhat negative skew, with skewness values ranging from -0.845 to -0.686. This implies that there is a minor

leftward bias in the distribution of replies. All of the items have a platykurtic distribution, which is flatter than a normal distribution and is shown by the kurtosis values, which vary from -0.926 to -0.742.

The composite score, which is 4.85, is marginally higher than the middle of the 7-point rating system. This suggests that although the company's Supplier Environmental Orientation policies are well-received, they can yet be strengthened. The highest mean score is for item SEO 1, the results suggest that the company makes concerted efforts to ensure that each supplier understands the importance of environmental preservation. However, the lowest mean score was obtained for item SEO 5, indicating that the company may not always send environmental questionnaires to existing primary suppliers to monitor their compliance.

The outcomes suggest that the business should think about putting more stringent procedures in place to keep an eye on whether or not its environmental standards are being met. It might specifically take into account conducting recurring assessments of current primary suppliers and asking prospective primary suppliers to present documentation of all applicable environmental licenses and permits. The business might also work harder to enhance environmental performance by exchanging information with its primary suppliers. Lastly, the business could see to it that all current primary suppliers receive environmental questionnaires in order to track their compliance.

Green Logistics Management Practices (GLMPs)

The scope and makeup of green logistics practices are covered in this section. As a result, Table 4.4 below presents the results.

Table 4. Green Logistics Management Practices

Code	Items	Mean	SD	Skewness	Kurtosis
GLMPS 1	We take environmental issues into consideration generally in our transport decisions	4.85	2.055	-.591	-1.147
GLMPS 2	Reduce, reuse, and recycle is what we do	4.91	2.113	-.727	-.974
GLMPS 3	We Promote the use of ecological materials for inner and outer packaging.	4.70	2.072	-.644	-1.096
GLMPS 4	We ensure enhanced sharing of environmental information across our logistics network	4.63	2.029	-.636	-1.022
GLMPS 5	We use sustainable transport methods to reduce CO2 emissions.	4.71	2.034	-.642	-.998
GLMPS 6	We strategically arrange our vehicle routes to minimize our carbon footprint.	4.81	2.036	-.659	-1.024
GLMPS 7	We have made investments in automobiles with low environmental impact designs.	4.61	1.980	-.577	-1.052
GLMPS 8	We collaborate with vendors and clients to create route networks.	4.76	2.015	-.712	-.871
GLMPS 9	We collect used products for recycling	4.94	2.018	-.718	-.933
GLMPS 10	Our company purchases from regional vendors in an effort to lessen pollution caused by transportation.	4.82	2.042	-.757	-.891
	Composite Score	**4.77**	**2.45**	**-0.666**	**-1.001**

The outcomes of a company's Green Logistics Management Practices (GLMPS) descriptive statistics are shown in the table. Each of the ten items' mean, standard deviation, skewness, and kurtosis values are included in the data, along with the composite score—the average of all the item scores added together. The findings are interpreted as follows:

The findings demonstrate that the participants' perceptions of the company's green logistics management practices (GLMPS) are rather favorable, with mean scores ranging from 4.61 to 4.94. There may be some variation in the responses provided by the individuals, as indicated by the standard deviations, which range from 1.980 to 2.113. The distribution of responses is somewhat skewed to the left, as indicated by the skewness values, which vary from -0.757 to -0.577 and show a little negative skew for the majority of the questions. Every item has a platykurtic distribution, which is flatter than a normal distribution, according to the kurtosis values, which range from -1.147 to -0.871. The composite score, which is 4.77, is marginally higher than the middle of the 7-point rating system. This suggests that although the company's green logistics management practices are well-received, they can yet be strengthened.

Item GLMPS 9 has the highest mean score, indicating that the business gathers used goods for recycling. GLMPS 3 has the lowest mean score, indicating that the company might not always encourage the use of environmentally friendly materials for both interior and exterior packaging.

The results suggest that the business ought to think about implementing stricter policies to promote the use of environmentally friendly materials for both inner and outside packaging. Additionally, it's a good idea to spend money on greener cars and enhance the logistics network's exchange of environmental knowledge. In order to reduce CO2 emissions, the corporation can also engage more closely with suppliers and customers to build route networks and employ environmentally friendly transportation strategies. Ultimately, one way to reduce transportation-related pollution would be to buy from local vendors.

Top Management Commitment (TMC)

The extent and type of senior management commitment are explained in this section. The outcomes are shown in Table 5 down below.

Table 5: Descriptive Statistics Results for Top Management Commitment

Code	Items	Mean	SD	Skewness	Kurtosis
TCM 1	Top management in our organisation considers environmentally sustainable practices as a vital part of corporate strategy	4.56	1.986	-.469	-1.184
TCM 2	Top management at our company treats environmental protection as an important issue.	4.46	2.058	-.526	-1.126
TCM 3	Preserving the environment is a central corporate value in our organisation	4.66	2.092	-.607	-1.126
TCM 4	Top management at our company ensures that employees understand the importance of environmental preservation	4.70	1.929	-.574	-1.021
TCM 5	Top management allocates sufficient resources to implement environmental projects	4.58	2.079	-.565	-1.128
TCM 6	Top managers support efforts to develop environmental management practices	4.77	2.049	-.586	-1.124
TCM 7	Top management at our company follows up on suggestions for improvement in environmental protection.	4.72	2.018	-.642	-1.016
	Composite Score	**4.64**	**2.030**	**-0.567**	**-1.103**

The table presents descriptive statistics results for Top Management Commitment (TCM) in terms of mean, standard deviation (SD), skewness, and kurtosis. The composite score for TCM is also provided.

The results indicate that the mean score for each item in the TCM (Top Management Commitment) construct is relatively high, ranging from 4.46 to 4.77 on a 7-point Likert scale. This suggests that respondents generally have a positive perception of the company's top management commitment to environmental sustainability. The composite score for the TCM construct is also relatively high at 4.64, which suggests a high level of perceived top management commitment to environmental sustainability across all items.

The standard deviation values range from 1.929 to 2.092, indicating some variability in responses across the sample for each item. However, these values are not overly high and suggest a relatively consistent perception of top management commitment to environmental sustainability among the sample.

The skewness values for each item range from -0.469 to -0.642 and the composite score is -0.567. These values are all negative, indicating that the data is skewed to the left, with more responses toward the higher end of the scale. This suggests that respondents generally perceive top management's commitment to environmental sustainability positively.

The kurtosis values for each item range from -1.184 to -1.016 and the composite score is -1.103. These values are all negative, indicating that the data is platykurtic, i.e., less peaked and flatter than a normal distribution. This suggests that the responses are spread out more than they would be in a normal distribution.

In summary, the results suggest that respondents generally perceive top management's commitment to environmental sustainability positively across all items. The data is slightly skewed to the left and is platykurtic, indicating some variability in responses, but overall, and respondents view top management's commitment to environmental sustainability as high.

Inferential Statistics

Inferential statistics involves using statistical methods to make conclusions and inferences about a larger population based on the analysis of a smaller sample of data, as stated by Agresti and Finlay (2018). This is done by estimating population parameters such as means and proportions.

Hogg et al. (2018) explained that hypothesis testing is a widely used inferential statistical method. It involves establishing both null and alternative hypotheses, gathering data, computing test statistics, and assessing the likelihood of obtaining the observed test statistic under the null hypothesis. Rejecting the null hypothesis and supporting the alternative hypothesis is done when the computed probability value, commonly referred to as the p-value, is less than a predetermined level of significance.

Confidence interval estimation is a commonly used inferential statistical method. It involves calculating a range of values, known as a confidence interval, for a population parameter based on a sample statistic and a predetermined level of confidence. This range provides a plausible estimate of the true value of the population parameter with a certain level of confidence. For instance, a 95% confidence interval for a population mean would include a range of values that are expected to capture the true population mean with 95% confidence.

Inferential statistics can be used in a variety of fields, including business, social sciences, medicine, and engineering, to make informed decisions and draw conclusions about populations based on sample data (Walpole et al., 2018). It is crucial to ensure that the sample selected for inferential statistics is an accurate representation of the larger population being studied. Additionally, using appropriate statistical methods that address the research question at hand is crucial.

Test for Normality

Normality statistics are utilised to check whether a particular data set conforms to a normal distribution, which is a graph that is bell-shaped, with the majority of the observations situated around the mean, and the graph being symmetrical around the mean. Normality is important in many statistical analyses because several statistical methods, such as t-tests and ANOVA, require normality assumptions to be met. Normality statistics are important because if a data set is not normally distributed, it can lead to incorrect inferences and conclusions. Therefore, it is essential to check normality before conducting any statistical analysis that assumes normality.

Table 7: Descriptive and Normality Statistics

Construct	Mean	Std. Deviation	Kurtosis	Skewness
Environmental Training	4.73	1.862	-0.282	-0.738
Supplier Environmental Orientation	4.85	1.815	-0.679	0.606
Green Logistics Management Practices	4.78	1.841	-0.243	0.763
Top Management Commitment	4.63	1.840	-0.290	-0.703
Corporate Environmental Orientation	4.82	1.831	-0.657	0.900

The table provides descriptive statistics, including the mean and standard deviation, and normality statistics, such as skewness and kurtosis, for five constructs: Environmental Training, Supplier Environmental Orientation, Green Logistics Management Practices, Top Management Commitment, and Corporate Environmental Orientation.

The mean scores for each construct range from 4.63 to 4.85, indicating that respondents perceive these constructs positively overall. The range of standard deviations across the constructs is from 1.815 to 1.862, indicating that the responses for each construct vary to some extent.

The normality statistics show that the skewness values for each construct range from -0.738 to 0.900, indicating that the data is slightly skewed to the left or right. The kurtosis values for each construct range from -0.679 to -0.243, indicating that the data is mesokurtic, meaning that it is neither excessively peaked nor flat relative to a normal distribution.

Overall, the descriptive statistics suggest that respondents generally perceive the constructs positively, while the normality statistics indicate that the data is reasonably normally distributed, except for the Supplier Environmental Orientation construct, which exhibits some positive skewness and negative kurtosis. This finding suggests that parametric tests may be appropriate for analysing the data, although caution should be exercised when interpreting results for constructs that exhibit some skewness and kurtosis.

Collinearity Test

Collinearity is a phenomenon where there is a strong correlation between two or more independent variables in a regression analysis, as defined by Vatcheva et al. (2016). It can create challenges in regression analysis such as increased standard errors, unstable coefficients, and decreased predictive power of the model. However, it is important to note that not all types of analyses and data require collinearity tests. The appropriate method for testing collinearity will depend on the specific research question and the data being analysed.

Table 8: Collinearity Test

	CEO	ET	GLMP	SEO	TMC	TMC x ET	CEO x ET
CEO			1.11				
ET			1.17	1.21			
GLMP							
SEO			1.12				
TMC				1.19			
TMC x ET				1.1			
CEO x ET			1.05				

Table 8 presents the outcomes of a collinearity analysis that examined the independent variables utilised in the research. The table exhibits the variance inflation factor (VIF) for every combination of independent variables, as well as the interaction between top management commitment (TMC) and environmental training (ET), and the interaction between CEO and environmental training (ET). The findings imply that there is no significant collinearity among the independent variables or their interaction terms, as all VIF values are much below the threshold of 10. These results suggest that the independent variables are not highly correlated with each other, and there is no multicollinearity issue in the dataset.

Hypothesis Table

The researcher formulated six hypotheses for this study based on the prior literature reviewed. According to the results presented in Table 4.21, hypothesis H1, H3 and H4 is supported. This is because the coefficient for the path from Environmental Training (ET) to Green Logistics Management Practices (GLMP) is statistically significant with a p-value of less than 0.03, and the t-value is 2.13, also, the path from Environmental Training (ET) to Supplier Environmental Orientation (SEO) is statistically significant with a p-value of less than 0.001, and a t-value of 3.96. The path from Supplier Environmental Orientation (SEO) to Green Logistics Management Practices (GLMP) is statistically significant with a p-value of less than 0.008, and the t-value of 1.78. However, H2, H5, and H6 are not supported, as their respective coefficients are not significant ($p > 0.05$) and their t-values are below the threshold of 1.96 for a significance level of 0.05. Therefore, there is no evidence to suggest that the paths from ET to GLMP via SEO or from ET x TMC to SEO, or from ET x CEO to GLMP are statistically significant. The summary of the hypotheses' confirmation is presented in Table 4.21 below.

Table 9: Hypotheses' Confirmation

Hypothesis	Path	t-value	Coefficient (p-value)	Decision
H1	ET-->GLMP	2.13	0.13 ($p < 0.003$)	**Supported**
H2	ET-->SEO--->GLMP	1.56	0.03 ($p < 0.120$)	**Not Supported**
H3	ET -->SEO	3.96	0.27 ($p < 0.001$)	**Supported**
H4	SEO -->GLMP	1.78	0.12 ($p < 0.008$)	**Supported**
H5	ET×TMC-->SEO	0.59	-0.04 ($p < 0.560$)	**Not Supported**
H6	ET×CEO-->GLMP	1.78	-0.1 ($p < 0.070$)	**Not Supported**

Note: ET = Environmental Training; SEO = Supplier Environmental Orientation; GLMP = Green Logistics Management Practices; TMC = Top Management Commitment; CEO = Corporate Environmental Orientation

Discussion of Findings

Environmental Training and green logistics management practices

The SEM analysis conducted in this study provides evidence to support the research objective, as it indicates a statistically significant and positive relationship (path coefficient of 0.13, t-value of 2.13, and p-value less than 0.03) between environmental training and green logistics management practices. This finding suggests that organisations that offer environmental training to their employees are more inclined to implement sustainable logistics practices, which can lead to beneficial environmental and economic outcomes.

Jabbour and Jabbour (2016) have emphasized the importance of environmental training in the efforts of environmentally conscious organisations to improve their environmental practices and achieve sustainable performance. According to Pinzone et al. (2019) and Pham et al. (2020), environmental training enables employees to develop problem-solving skills to address environmental concerns and align corporate policies and strategies with environmental protection. As a result, the findings support H1.

The positive relationship observed in hypothesis H1 supports the premise that environmental training has a positive impact on the adoption of green logistics management practices. This alignment is strengthened by the NRBV theory's perspective on the strategic significance of leveraging environmental resources and capabilities for competitive advantage. The findings validate the importance of investing in employee environmental training to foster environmentally friendly logistics practices, contributing to overall environmental sustainability goals.

Mediation effect of supplier environmental orientation between environmental training and green logistics management practices.

The results of the mediation analysis did not support the study's hypothesis. Specifically, the path coefficient between the mediator variable (supplier environmental orientation) and green logistics management practices was not significant (coefficient = 0.03, t-value = 1.56, $p < 0.12$). This indicates that there is no evidence to suggest that supplier environmental orientation plays a mediating role in the relationship between environmental training and green logistics management practices.

Previous empirical studies have indicated that environmental training and development can positively influence the environmental performance of organisations through various initiatives such as waste reduction and increased efficiency. Studies by Yusliza et al. (2017) and Chaudhary (2020) have shown that effective GHRM practices can enhance environmental performance.

Additionally, Qiao et al. (2022) have supported the idea that there is a positive relationship between corporate environmental practices and supplier environmental commitment. Given these research findings, this study hypothesised that supplier environmental orientation would mediate the relationship between environmental training and green logistics management practices. However, the results of the study did not support this hypothesis, indicating that supplier environmental orientation does not play a mediating role in this relationship. Therefore, H2 was rejected.

Environmental Training and Supplier Environmental Orientation

The result from hypothesis H3 align with the context of environmental training and supplier environmental orientation discussed in literature. The study recognises the critical role of environmental training in equipping organisations and their partners with knowledge and skills to adopt environmentally responsible practices. The positive relationship between ET and SEO observed in the findings validates the idea that environmental training contributes to fostering supplier environmental orientation.

The study establishes that environmental training enhances the practices and behaviours of organisations, emphasising their interconnectedness within the supply chain. The influence of environmental training on supplier environmental orientation is underscored by previous research (Chavez et al., 2022; Zhou et al., 2020) which emphasize the significance of external supply partners and environmentally oriented organisations in implementing sustainable strategies.

The upper echelon theory, introduced by Hambrick and Mason (1984), also comes into play in this relationship. The theory emphasizes how top management's cognitive orientations shape organisational strategies. In the context of environmental training and supplier environmental orientation, the theory supports the notion that top executives' recognition of supplier relationships' significance influences their decision to invest in environmental training programs. This aligns with the findings that suggest a positive relationship between ET and SEO.

The findings resonate with the concept of leveraging knowledge and skills to nurture environmentally conscious behaviours among supply chain partners. The investment in environmental training supports the development of supplier environmental orientation, in line with the achievement of environmental sustainability goals.

In conclusion, the positive relationship observed in hypothesis H3 supports the broader discussion on environmental training and supplier environmental orientation. The findings highlight the importance of equipping partners with environmental knowledge and skills to foster sustainable practices within the supply chain, ultimately contributing to the achievement of environmental sustainability goals.

Supplier Environmental Orientation and Green Logistics Management Practice

The results from the SEM analysis supports hypothesis H4 that there is a positive relationship between supplier environmental orientation and green logistics management practices (coefficient = 1.78, t-value = 0.12, $p < 0.008$). The study's focus on environmental sustainability within supply chains is underscored by the positive connection observed between SEO and GLMP in the results.

The concept of supplier environmental orientation, reflecting the integration of environmentally conscious ideas into supplier operations, aligns with the studies of Giovanni and Vinzi (2012), Jabbour et al. (2014), and Perotti et al. (2012). These studies collectively establish the foundation for understanding the significance of supplier environmental orientation in the context of sustainable supply chains.

Research exploring the relationship between supplier environmental orientation and green logistics management practices consistently supports a positive connection between the two concepts. The findings of Bai and Satir (2020), Chan and Ma (2021), and Chavez et al. (2021) indicate that environmentally oriented suppliers play a pivotal role in effective green logistics practices implementation. This aligns with the idea that suppliers incorporating environmentally conscious practices are valuable resources for executing sustainable strategies, as highlighted by Zhou et al. (2020) and Chan and Ma (2021).

Theoretical backing for this relationship also stems from the Natural Resource-Based View (NRBV). This theory asserts that firms attain competitive advantage through unique resources and capabilities, including environmental resources and sustainable practices. Supplier environmental orientation, viewed as a resource, contributes to competitive advantage by enabling the adoption of green logistics practices. The NRBV framework underscores the strategic importance of leveraging distinct resources to achieve enhanced performance in environmentally conscious markets.

In conclusion, the findings from hypothesis H4 support the existing literature's narrative on the positive relationship between supplier environmental orientation and green logistics management practices. The study's focus on sustainability within supply chains aligns with the recognised significance of environmentally conscious suppliers in achieving effective green logistics practices. The upper echelon theory and the NRBV framework reinforce the role of top management and unique resources in shaping this relationship and driving sustainable supply chain objectives.

Conclusion

The conclusion drawn from the results yielded robust evidence in support of the positive relationship between environmental training and green logistics management practices. This signifies that organisations providing environmental training to employees are more inclined to adopt sustainable logistics practices, yielding favourable environmental and economic outcomes.

This finding underscores the pivotal role of environmental education and training in fostering environmentally responsible practices.

Furthermore, the study concludes that, contrary to the initial hypothesis, the mediation analysis did not confirm that supplier environmental orientation acts as a mediator between environmental training and green logistics management practices. The non-significant path coefficient (0.03) with a t-value of 1.56 and a p-value below 0.12 concludes that supplier environmental orientation does not substantially mediate this relationship. Hence, the concluding result departs from the anticipated mediating effect proposed by previous research.

Also, the study concluded that there is a consistent positive relationship between environmental training and supplier environmental orientation. This aligns with existing literature emphasising the role of training in equipping organisations and their partners with the necessary knowledge and skills for environmentally responsible practices. This concludes that the study's results reaffirm the value of education in promoting sustainable behaviours within the supply chain.

Recommendations

The study recommends the pivotal role of environmental training in fostering environmentally responsible practices and driving positive outcomes. Organisations are encouraged to invest in comprehensive and ongoing environmental training programs for their employees. This will not only equip their workforce with essential knowledge and skills but also empower them to actively contribute to the implementation of green logistics management practices.

Furthermore, while the mediation analysis did not find substantial evidence supporting the role of supplier environmental orientation as a mediator, the study's overall findings highlight the importance of collaboration with environmentally conscious suppliers. Management should prioritize partnerships with suppliers who align with sustainable practices and contribute to the adoption of green logistics management practices within the supply chain.

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