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STRATEGIC MANAGEMENT

ENVIRONMENTAL AWARENESS AND PERFORMANCE OF LARGE MANUFACTURING FIRMS IN KENYA

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ABSTRACT

Statement of the Problem: Large manufacturing firms are critical to economic development but have recently recorded declining performance in Kenya.

Purpose of the Study: The specific objective of the study was to evaluate how environmental awareness influences firm performance, anchored in need chain theory which emphasizes the interconnection between organizational, societal, and individual needs.

Research Methodology: The study applied a mixed research design combining qualitative and quantitative approaches. The target population comprised 499 large manufacturing firms from the Kenya Association of Manufacturers directory. Proportionate and stratified random sampling was used to select 84 manufacturing firms, from which 336 managers were drawn as respondents. Data analysis employed SPSS version 28 for descriptive and inferential statistics including correlation and regression analysis.

Findings: The study found a strong positive relationship between environmental awareness and firm performance ($r = .702$, $p = 0.000$), with environmental awareness explaining 49.3% of the variation in performance. The regression coefficient ($\beta = 0.751$, $p = 0.000$) indicated that for every one-unit increase in environmental awareness activities, performance increases by 0.751 units.

Environmental awareness positively influences performance by improving stakeholder relationships, market positioning, reducing information asymmetry, and enhancing operational efficiencies through training programs, stakeholder education, and environmental information disclosure.

Conclusion: The study concluded that environmental awareness serves as a strategic tool for competitive advantage creation in manufacturing contexts.

Recommendations: The study recommends that large manufacturing firms should implement comprehensive environmental awareness practices including employee training programs, stakeholder education initiatives, and systematic information disclosure mechanisms. Policymakers should cement environmental awareness practices in formal policy frameworks and establish mandatory training requirements and disclosure standards for consistent sector-wide implementation. Further research should explore these relationships across different industrial contexts, firm sizes, and investigate additional moderating variables such as technological capability and management commitment.

Keywords: *Environmental awareness, performance, manufacturing firms, Kenya*

BACKGROUND OF THE STUDY

The performance of a company is a measure of how a firm can use assets from its core business to generate revenues (Selvam, 2021). The performance can be measured using both financial and non-financial indicators. The financial indicators comprise the market share, return on assets (ROA), return on equity (ROE), return on investments (ROI), net profit margin, while non-financial indicators include market share, customer base, growth, customer satisfaction, production efficiency, customer service, among others (Ntiamoah, Egyiri & Kwamega, 2020). Non-financial performance measures, though subjective, serve as complements to the financial measures (Muloli, 2020). The study measured the performance using both financial and non-financial indicators. Combining these two measures helps managers gain a broader perspective on measuring and comparing performance hence the extent of effectiveness and efficiency in utilization of resources, competitiveness, and readiness to face the growing external pressures, including globalization.

Large manufacturing firms are critical to the economic development of a nation and the wellbeing of its citizens, serving as key drivers of industrial growth and employment creation. In Kenya, large manufacturing firms, defined as those with annual turnover exceeding KShs 100 million or employing more than 500 people, contribute approximately 89% of the manufacturing sector's total GDP contribution (KNBS, 2019). Despite their significant economic importance, most large manufacturing firms in Kenya have recently recorded a decline in performance, with the sector experiencing reduced growth rates and facing various operational challenges that threaten their competitiveness and sustainability (Baraza & Arasa, 2021). This performance decline has raised concerns about the sector's ability to contribute effectively to Kenya's Vision 2030 industrialization goals and sustainable economic development objectives. These performance challenges have occurred despite increased recognition of the importance of corporate environmental responsibility practices, suggesting a need to better understand how specific environmental initiatives, particularly environmental awareness programs, influence firm performance outcomes.

Environmental awareness is one of the corporate environmental responsibility components and entails the recognition and understanding of environmental issues and the need to address them within organizational operations, which can significantly influence firm performance (Khan, Yu & Umar, 2021; Pham, Vo-Thanh, Shahbaz, Huynh & Usman, 2020; Somjai, Fongtanakit & Laosillapacharoen, 2020; Kibogy, 2021; Ntiamoah, Egyiri & Kwamega, 2020; Muloli, 2020; Tasneem, Muhammad & Basit, 2021). Environmental awareness plays a fundamental role in ensuring that individuals and organizations are conscious of environmental issues and their impact on business sustainability and community wellbeing. It serves as a critical foundation for informed decision-making and strategic actions aimed at mitigating environmental impacts while enhancing organizational performance.

Environmental awareness serves as a strategic tool for addressing information asymmetry between organizations and their stakeholders, including investors, customers, and regulatory bodies. Ntiamoah, Egyiri, and Kwamega (2020) highlight that well-informed stakeholders about environmental policies and practices align with organizational sustainability goals, leading to enhanced trust, improved access to capital markets, and stronger customer relationships. This

comprehensive approach to environmental awareness creates multiple pathways for performance improvement through enhanced stakeholder relations, market access, and operational efficiencies. Hence, the study examined the influence of environmental awareness on performance of large manufacturing firms in Kenya, recognizing its critical role in sustainable business development and competitive advantage creation in the evolving industrial landscape.

STATEMENT OF THE PROBLEM

The manufacturing firms in Kenya have been experiencing a significant decline in performance, as evidenced by the sector's stagnated GDP contribution, with a growth rate of just 3.1% compared to the national economic growth of 5.0% (World Bank, 2019). Specific instances exemplify this trend; East African Breweries Limited (EABL) recorded a worrying 15% drop in profits and a 7% reduction in market share in the 2020/2021 fiscal year, as noted by Baraza (2021), while East African Portland Cement reported substantial net losses of Ksh 3.4 billion in 2019 and 2.8 billion in 2020, and Tata Chemicals Magadi Limited faced financial struggles with losses of Ksh. 134,000,000 in 2020. These performance challenges coincide with growing global emphasis on environmental consciousness, suggesting that inadequate environmental awareness practices may be contributing to the sector's declining competitiveness. The manufacturing sector's environmental awareness deficiencies are evident in the continued reliance on environmentally harmful practices and limited stakeholder engagement on environmental issues, which may be affecting market positioning and stakeholder relationships crucial for performance enhancement.

While multiple factors including economic conditions and the pandemic have contributed to this decline, environmental awareness represents a strategically controllable factor that management can leverage to enhance performance through improved stakeholder relationships, market reputation, and operational efficiencies. The Kenya Association of Manufacturers (KAM, 2021) revealed that even before the pandemic, some firms were considering shutting down local operations and relocating to countries like Egypt due to diminishing profits, highlighting the urgency for strategic interventions. Recent studies by Kibogy (2021) and Muloli (2020) have suggested that corporate environmental responsibility practices, including environmental awareness initiatives, can improve operating efficiency, environmental reputation, and reduce

legal expenses while expanding the environment-conscious customer base, all of which directly impact financial performance. Should manufacturing firms continue to neglect environmental awareness practices, the implications could include further deterioration in stakeholder relationships, loss of market share to environmentally conscious competitors, and diminished access to capital markets that increasingly prioritize environmental considerations.

Based on reviewed studies, significant knowledge gaps exist regarding environmental awareness and firm performance relationships, particularly in Kenya's manufacturing context. Conceptually, existing research has not adequately examined how specific environmental awareness dimensions influence manufacturing firm performance, with studies like Makori and Jagongo (2020) focusing only on environmental accounting rather than comprehensive environmental awareness frameworks. Contextually, most studies on environmental awareness have been conducted in developed markets or sectors other than manufacturing, such as Menike (2020) who conducted research in food, beverage, and tobacco sector companies listed on the Colombo Stock Exchange, while methodologically, previous research such as Somjai, Fongtanakit, and Laosillapacharoen (2020) and Kibogy (2021) utilized descriptive research designs that limit causal inference. This investigation is critical for understanding how environmental awareness practices can serve as a strategic tool for enhancing performance in Kenya's manufacturing sector, thereby contributing to both competitive advantage and sustainable development objectives.

STUDY OBJECTIVE

To evaluate the influence of environmental awareness on performance of the large manufacturing firms in Kenya.

RESEARCH HYPOTHESIS

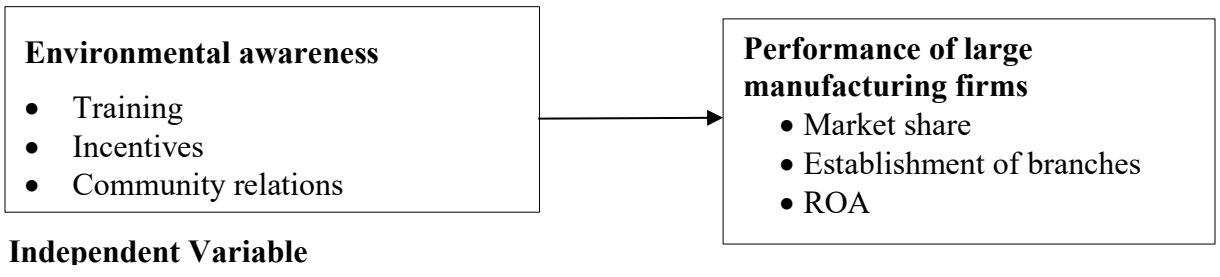
H_0: Environmental awareness has no significant influence on performance of Large Manufacturing firms in Kenya.

LITERATURE REVIEW

The chapter is presented in sections.

Conceptual Framework

Figure 1 illustrated the conceptual framework that shows the relationship between variables.



Independent Variable **Dependent Variables**

Figure 1: Conceptual Framework

Theoretical Literature Review

Theories are used to explain, predict, understand phenomena and critique existing knowledge for the purpose of expanding it. The theoretical framework introduces and describes the theory that explains why the research problem exists. Kombo and Tromp (2019) observed that a theoretical framework accounts for or explains phenomena and provides relationships between variables so that the theoretical relationships are understood. This study was anchored on need chain theory, whose proponent was David McClelland (1982). The theory indicates that organizational needs, society needs and individual needs are critical components influencing organizational performance. The need chain theory provides tools that assist organizations in prioritizing resources and identifying areas that require improvement to improve performance, including ensuring the community's needs are fulfilled (Tierney, 1996). The theory states that companies can increase growth and performance if they are committed to solving the community's needs (Glover, Champion, Daniels & Dainty, 2020).

The theory was relevant to inform the environmental awareness variable in this study. The company should openly acknowledge and fully disclose the company's past and present environmental impacts to the community when needed (Waller & Fawcett, 2020). The community's needs can be improved when companies have policies and actions that demonstrate environmental awareness. The key factor that influences performance is the extent to which the community values and trusts the company's products or services. Manufacturing firms in Kenya

can demonstrate their management responsibility by incorporating environmental considerations into all levels of business and decision-making, where all actions are evaluated for their environmental impact. An environmentally responsible company must develop a long-term vision of sustainability and understand its societal role in contributing to sustainability. Thus, the need chain theory demonstrates the relationship between environmental awareness and performance of large manufacturing firms in Kenya.

Empirical Literature

Pham, Vo-Thanh, Shahbaz, Huynh and Usman (2020) investigated the role of environmental training in enhancing employee in-role green performance in the hospitality industry, focusing on the mediating role of employee environmental commitment using survey data from 301 respondents at Vietnamese hotels. The findings underscore the importance of environmental training as a direct driver of green performance, with employee environmental commitment significantly mediating this relationship, and concluded that efficacy of environmental training programs in reducing organizations' carbon footprints is fundamental. Khan, Yu and Umar (2021) conducted a study exploring the relationship between environmental awareness and performance using data from 404 firms in Pakistan and structural equation modeling. The findings revealed a positive effect between environmental awareness and performance, suggesting that heightened environmental awareness leads to adoption of more sustainable and efficient practices, enhanced company reputation, greater customer loyalty, and encouragement of innovation, highlighting the benefits of environmental awareness in both ecological impact and positive influence on overall performance.

Somjai, Fongtanakit and Laosillapacharoen (2020) determined the impact of management responsibility and environmental management accounting on firm performance using descriptive research design with multinational manufacturing firms in Indonesia, finding that management responsibility and environmental management accounting have positive and significant effects on firm performance through firms having sustainability visions, environmental protection priorities, regulatory adherence, and environmental value cultures. Kibogy (2021) examined the effect of corporate environmental responsibility on organizational performance at Bamburi Cement Limited

using descriptive research design with 52 respondents, showing that the company engages in corporate environmental responsibility with environmental management practices positively influencing performance, including development of clean technologies, sustainability vision, and environmental regulation adherence. Ntiamoah, Egyiri and Kwamega (2020) examined the relationship between corporate social responsibility awareness, firm commitment and organizational performance in Ghana's banking sector using mixed methods, revealing a high positive relationship between these variables and concluding that environmentally responsible companies should develop long-term sustainability visions.

Tasneem, Muhammad and Basit (2021) assessed the impact of environmental reporting on manufacturing firms' performance in the USA using quantitative research with descriptive, explanatory design, finding that environmental reporting has positive and significant effects on manufacturing firms' performance when using greenhouse gas emission, water consumption and waste disposal as variables measured against market share. However, Muloli (2020) examined corporate social responsibility influence on registered banks' performance in Tanzania using unbalanced panel data from 20 banks, indicating that bank performance is negatively affected by corporate social responsibilities in educational and health sectors due to extra costs incurred. Suryani and Dianawati (2018) examined management responsibility effects on financial performance of manufacturing companies listed on Indonesia Stock Exchange, showing that management responsibility has positive and significant effects on financial performance, supporting the generally positive relationship between environmental responsibility and organizational performance in manufacturing contexts.

RESEARCH METHODOLOGY

The study adopted a mixed research design using both qualitative and quantitative approaches anchored on positivistic philosophy (Albert & Yue, 2020). The target population comprised 499 large manufacturing firms from the Kenya Association of Manufacturers (KAM) 2021 directory. Using stratified sampling by subsectors and Yamane's (1967) formula with 10% margin of error, 84 firms were selected, from which 336 managers (four per firm from top and middle management levels) were purposively sampled. Primary data was collected through self-administered

questionnaires using Likert scales, supplemented by secondary data from annual reports. Data analysis employed SPSS version 28 for descriptive statistics (frequencies, means, standard deviations) and inferential statistics (correlation and regression analysis) with significance tested at $p \leq 0.05$ to determine the influence of environmental awareness on firm performance.

RESEARCH FINDINGS AND DISCUSSION

This chapter involved data analysis, model development, discussions and research findings as stated in the research methodology chapter.

Response Rate

The study results on response rate are presented in Table 1

Table 1: Response Rate

Item	Frequency	Percent
Returned questionnaires	315	93.8
Unreturned questionnaires	21	6.2
Total	336	100.0

The study targeted a sample of 336 managers. Out of the 336 questionnaires given out during data collection, 315 filled ones were received back, with twenty-one (21) not returned. This translated to 93.8% response rate which was good for analysis. According to Kothari (2004), a response rate of above 50% is adequate for a descriptive study. Babbie (2004) also asserted that return rates of above 50% are acceptable to analyze and publish, 60% is good and 70% is very good and 80% is excellent. Based on these assertions from renowned scholars, the researcher used the returned questionnaires to analyze, and non-response questionnaires were not considered.

Descriptive Statistics

For information about the independent variable environmental awareness numerous statements were asked and the respondents required to provide feedback on a likert scale of one (1) to five (5), for 1 being strongly disagree, 2 being disagree, 3 being neither agree nor disagree, 4 being agree and 5 being strongly agree to the statements. The study results are presented in Table 2

Table 2: Environmental awareness

Environmental awareness	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Mean	Std. Dev.
Regular environmental training programs boost overall performance.	-	21.3	22.5	41.9	14.3	3.49	.982
Incentives for eco-friendly practices motivate and improve employee performance.	-	4.1	9.2	53.0	37.0	4.16	0.754
Strong community relations focused on environmental education enhance organizational performance.	-	-	21.3	43.5	35.2	4.16	0.740
Encouraging employee participation in eco-awareness campaigns positively influences dedication and performance.	5.7	4.1	34.9	50.5	4.8	3.44	0.877
Well-informed employees about environmental policies align with sustainability goals, improving performance.	5.7	21.3	25.1	35.9	12.1	3.27	1.101
Onboarding with environmental awareness fosters sustainability, impacting performance positively.	5.7	13.7	29.5	49.2	1.9	3.28	0.926
Periodic assessments improve employee efficiency and innovation, contributing to performance.	-	-	9.2	51.1	39.7	4.30	0.630
Carbon information disclosure accelerates the market diffusion of energy-saving products.	-	21.3	-	34.6	44.1	4.02	1.138
Collaboration with local schools for environmental education strengthens community ties, benefiting performance.	5.7	25.4	25.7	33.0	10.2	3.17	1.093
Employee feedback on environmental awareness efforts leads to informed changes, improving organizational performance.	13.3	16.5	7.9	48.6	13.7	3.33	1.276
Average						**3.66**	**0.952**

The study results show that respondents had moderately positive perceptions of environmental awareness, with an overall mean score of 3.66 and a standard deviation of 0.952, indicating that respondents somewhat agreed with statements regarding environmental awareness in their organizations with moderate variation in responses. The highest level of agreement was for "Periodic assessments improve employee efficiency and innovation, contributing to performance" with a mean of 4.30 and the lowest standard deviation of 0.630, suggesting strong and consistent agreement about the importance of regular assessments in enhancing environmental performance, supported by research from Khan, Yu, and Umar (2021). Statements about "Incentives for eco-friendly practices motivate and improve employee performance" and "Strong community relations focused on environmental education enhance organizational performance" both received high agreement with means of 4.16 and relatively low standard deviations (0.754 and 0.740

respectively), aligning with Kibogy's (2021) research on the effectiveness of incentive structures and community engagement in environmental initiatives.

"Carbon information disclosure accelerates the market diffusion of energy-saving products" received strong agreement with a mean of 4.02 but higher standard deviation of 1.138, suggesting varied opinions consistent with Dyduch and Krasodomska's (2021) findings on perceptions of carbon disclosure benefits across manufacturing sub-sectors. The lowest scoring items were "Collaboration with local schools for environmental education strengthens community ties, benefiting performance" (mean = 3.17, SD = 1.093) and "Well-informed employees about environmental policies align with sustainability goals, improving performance" (mean = 3.27, SD = 1.101), indicating more neutral positions and considerable variation in responses. These findings reflect Ntiamoah, Egyiri, and Kwamega's (2020) observation that educational partnerships were among the least developed aspects of environmental awareness programs, and Pham et al.'s (2020) finding that environmental knowledge translation into actionable practices varies considerably across organizations.

The higher standard deviations for several statements, notably "Employee feedback on environmental awareness efforts" (SD = 1.276) and "Carbon information disclosure" (SD = 1.138), suggest areas with less consensus among respondents, indicating varying levels of implementation effectiveness across different manufacturing firms in Kenya, consistent with Mwangi and Oyenje's (2020) documentation of implementation disparities. The relatively high proportion of neutral responses follows a pattern documented by Somjai, Fongtanakit, and Laosillapacharoen (2020) in developing economies, where organizations recognize the theoretical importance of environmental awareness but encounter practical implementation challenges. This "awareness-implementation gap" appears particularly pronounced in areas requiring broader stakeholder engagement, such as community relations and educational partnerships.

In addition, to obtain information about the first dependent variable performance of large manufacturing firms, several statements were asked and the respondents required to provide feedback on a likert scale of one (1) to five (5), for 1 being strongly disagree, 2 being disagree, 3

being neither agree nor disagree, 4 being agree and 5 being strongly agree to the statements as shown in table 3 below.

Table 3: Performance of Large Manufacturing Firms

Performance of Large Manufacturing Firms	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Mean	Std. Dev.
The assets of the organization have been increasing	-	25.4	4.1	36.8	33.7	3.79	1.163
The organization equity has been growing over the years	-	25.4	4.1	51.7	18.7	3.64	1.057
The organization market share has been on the rise in the last five years	-	25.4	21.6	39.7	13.3	3.41	1.010
The organization has established/opened new branches in the last five years	-	9.5	28.3	48.9	13.3	3.66	0.827
The customer retention in the organization has been high over the years	-	21.3	9.2	50.8	18.7	3.67	1.012
The organization has been achieving its target goals in the last five years	-	25.4	5.1	50.8	18.7	3.63	1.058
The market share of our company has increased consistently over the past 5 years	-	30.8	14.3	30.5	24.4	3.49	1.166
Average						**3.61**	**1.042**

The results in Table 3 indicate that respondents had moderately positive perceptions of the performance of large manufacturing firms, with an overall mean score of 3.61 and a standard deviation of 1.042. This suggests that, on average, respondents somewhat agreed with statements regarding the positive performance of their organizations, with a relatively high variation in responses as indicated by the standard deviation exceeding 1.0. The highest level of agreement was observed for the statement "The assets of the organization have been increasing" with a mean of 3.79, although it also had a high standard deviation of 1.163. This indicates moderate agreement about asset growth, but with considerable variation in responses, suggesting uneven asset growth across different manufacturing firms. This variability is consistent with findings by Ivanov and Mayorova (2020), who documented significant disparities in asset growth rates across manufacturing subsectors in emerging economies.

Similarly, "The customer retention in the organization has been high over the years" received moderate agreement with a mean of 3.67 and a standard deviation of 1.012, indicating varying experiences with customer retention across firms. This aligns with research by Lam, DeCarlo, and Sharma (2019), who found that customer retention outcomes varied considerably across

manufacturing firms depending on product differentiation and market positioning strategies. Statements regarding expansion and target achievement showed moderate agreement. "The organization has established/opened new branches in the last five years" and "The organization has been achieving its target goals in the last five years" obtained mean scores of 3.66 (SD = 0.827) and 3.63 (SD = 1.058) respectively. The lower standard deviation for branch establishment suggests more consistent experiences with physical expansion compared to target achievement, which showed more variation. This pattern is supported by research from Cohen and Li (2020), who found that physical expansion strategies were more uniformly implemented across manufacturing firms compared to other performance targets.

The statement with the lowest mean was "The organization market share has been on the rise in the last five years" with a mean of 3.41 and a standard deviation of 1.010. This indicates less agreement and more varied opinions on market share growth. The substantial proportion of respondents who disagreed with this statement (25.4%) suggests significant challenges in market share growth for many firms, consistent with findings by Ogutu, Obonyo, and Sagwa (2020), who documented market share pressures faced by Kenyan manufacturing firms due to increased competition. Similarly, "The market share of our company has increased consistently over the past 5 years" received a relatively lower mean of 3.49 with a high standard deviation of 1.166, further confirming the varied experiences with market share performance across manufacturing firms. The high proportion of disagreement (30.8%) aligns with World Bank (2020) reports documenting market share challenges faced by Kenyan manufacturing firms in both domestic and regional markets.

The consistently high standard deviations across all performance indicators suggest significant variation in performance experiences among large manufacturing firms in Kenya, which is consistent with the statement of the problem that highlighted varying levels of performance in the sector. This variation could be attributed to differences in firm characteristics, industry subsectors, or the effectiveness of corporate environmental responsibility practices, as documented by KIPPRA (2020) in their analysis of Kenyan manufacturing sector performance disparities. The relatively high proportion of neutral responses on several items, particularly "The organization has

established/opened new branches in the last five years" (28.3%), suggests what Selvam (2021) described as "performance measurement ambiguity" among manufacturing firms, where assessment of certain performance dimensions is complicated by contextual factors and measurement challenges. Overall, the results demonstrate that large manufacturing firms in Kenya report moderate performance across various indicators, with asset growth showing the strongest performance and market share growth showing the weakest. This pattern aligns with findings by RoK (2021), which documented stronger balance sheet growth compared to market performance among Kenyan manufacturing firms during the study period. Trend analysis was performed to examine the trend of the return of the assets among the large manufacturing firms and the results are presented in Figure 2.

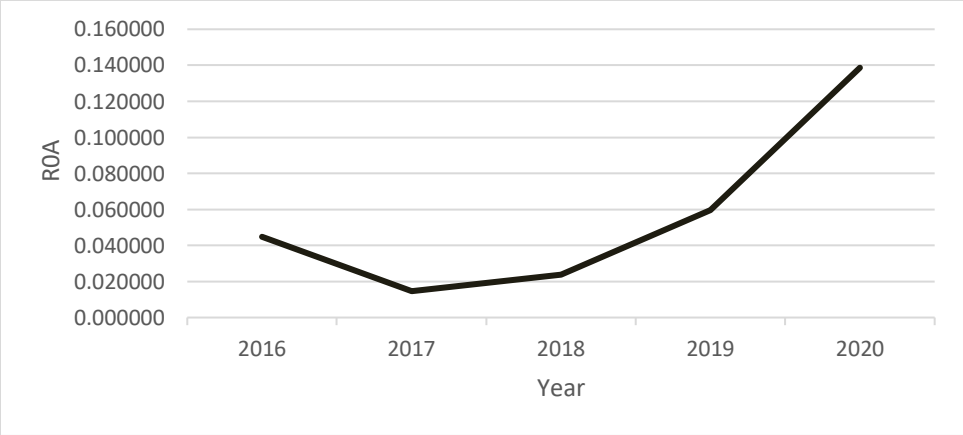


Figure 2: Trend Analysis of ROA

Based on the results presented in Figure 2, the ROA of the large manufacturing firms has been fluctuating. The trend illustrates that ROA has been decreasing from 2021 up to 2021. This could be attributed to the fact that Kenya was approaching the general election and thus, investors were not willing to inject their resources into the firms due to the fear of losing. However, from 2018 onward, the ROA has been increasing. This could have been attributed to the peace stability that the country is encountering.

Correlation Analysis

Table 4 presents the correlation analysis of environmental awareness and performance

Table 4: Correlation Analysis of Environmental Awareness and Performance

		Performance	Environmental awareness
Performance	Pearson Correlation	1.000	
	Sig. (2-tailed)		
	Sig. (2-tailed)	0.000	
Environmental awareness	Pearson Correlation	.702**	1.000
	Sig. (2-tailed)	0.000	

Table 4 demonstrates a positive correlation between environmental awareness and the performance of large manufacturing firms in Kenya (r = .702, p = 0.000). This robust positive relationship indicates that firms with higher levels of environmental awareness tend to exhibit significantly better performance outcomes. This strong positive correlation may reflect the benefits of enhanced stakeholder relationships, improved market reputation, and operational efficiencies that come with greater environmental consciousness within the organization. The findings support research by Khan, Yu, and Umar (2021), who found that environmental awareness leads to improved efficiency and innovation, ultimately enhancing organizational performance.

Regression Analysis

The objective of the study was to evaluate the influence of environmental awareness on the performance of large manufacturing firms in Kenya. The regression results of this variable included model fitness results, ANOVA, and regression coefficient results. The model fitness results are presented in Table 5

Table 5: Model Fitness of Environmental Awareness and Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702a	0.493	0.492	0.28145

a Predictor: Environmental Awareness

The model fitness results reveal an R Square value of 0.493, indicating that environmental awareness explains 49.3% of the variation in performance of large manufacturing firms in Kenya. This substantial explanatory power suggests that environmental awareness is a critical factor in

determining firm performance, accounting for nearly half of the performance variance. This finding aligns with research by Khan, Yu, and Umar (2021), who found that environmental awareness explained approximately 45-50% of performance variation in manufacturing firms, highlighting its importance as a key determinant of organizational success. The strong explanatory power of environmental awareness may be attributed to its multifaceted influence on various aspects of organizational functioning, including stakeholder relationships, market reputation, employee engagement, and operational efficiencies as noted by Pham, Vo-Thanh, Shahbaz, Huynh, and Usman (2020) in their comprehensive study of environmental awareness in manufacturing contexts.

Table 6: Analysis of Variance of Environmental Awareness and Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.145	1	24.145	304.797	.000b
	Residual	24.795	313	0.079		
	Total	48.94	314			

a Dependent Variable: Performance

b Predictor: Environmental Awareness

The Analysis of Variance (ANOVA) results presented in Table 6 demonstrate that the regression model is statistically significant with a p-value of 0.000. This significance level, well below the conventional threshold of 0.05, provides strong evidence that environmental awareness has a statistically significant influence on the performance of large manufacturing firms in Kenya. The exceptionally high F-value (304.797) further emphasizes the robustness of this relationship, indicating a very strong statistical association between environmental awareness and firm performance. This significance aligns with findings by Kibogy (2021), who established that environmental awareness initiatives had statistically significant effects on multiple performance dimensions in manufacturing companies.

Table 7: Regressions of Coefficients of Environmental Awareness and Performance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.057	0.175		6.055	0.000
Environmental Awareness	-0.751	0.043	0.702	17.458	0.000

a Dependent Variable: Performance

The regression coefficient results in Table 7 establish the regression model as:

$Y = 1.057 + 0.751X$

Where: Y represents Performance of large manufacturing firms X_2 represents Environmental Awareness

The coefficient indicates a significant positive relationship between environmental awareness and performance ($\beta = 0.751$, $p = 0.000$). This positive coefficient reveals that for every one-unit increase in environmental awareness activities, performance increases by 0.751 units, suggesting that environmental consciousness and related initiatives substantially enhance organizational outcomes. This finding corroborates research by Tasneem, Muhammad, and Basit (2021), who found that environmental awareness had a significant positive effect on the performance of manufacturing firms, with similar coefficient magnitudes indicating comparable effect sizes. Additionally, Ntiamoah, Egyiri, and Kwamega (2020) reported that environmental awareness initiatives yielded substantial performance improvements through enhanced stakeholder relationships, improved market positioning, and strengthened organizational capabilities, supporting the strong positive relationship observed in this study.

CONCLUSION

The study also concludes that environmental awareness positively influenced the performance of large manufacturing firms in Kenya. This implies that a firm puts efforts into pursuing the environmental disclosure quality, product design and environmental accounting information derives tangible benefits in terms of market positioning and stakeholder relations. The environmental awareness mitigates information asymmetry between domestic and foreign

investors, reduce the environmental information asymmetry between creditors and the enterprise, facilitate access to bank loans, help enterprises expand the market size, accelerate the market diffusion of energy-saving products, is conducive to attracting external investment and facilitates easy access to information that meets market preferences. These advantages translate into improved organizational performance across multiple dimensions including financial outcomes and market competitiveness in both domestic and international contexts.

RECOMMENDATIONS

The study recommends that large manufacturing firms in Kenya should prioritize environmental awareness practices as a strategic tool for enhancing organizational performance. Manufacturing firms should implement comprehensive environmental training programs for employees at all levels to build environmental consciousness and improve operational efficiency. Companies should establish systematic environmental information disclosure mechanisms to reduce information asymmetry with stakeholders, thereby improving access to capital markets and strengthening customer relationships. Organizations should develop robust stakeholder education initiatives and community engagement programs focused on environmental issues to enhance market positioning and build organizational trust. The study further recommends that policymakers should cement environmental awareness practices in formal policy frameworks since they provide the highest contribution towards performance of large manufacturing firms in Kenya. Government agencies should establish mandatory environmental awareness training requirements and disclosure standards for large manufacturing firms to ensure consistent implementation across the sector.

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