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STRATEGIC MANAGEMENT

ENVIRONMENTAL REGULATIONS COMPLIANCE AND PERFORMANCE OF LARGE MANUFACTURING FIRMS IN KENYA

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ABSTRACT

Purpose of the study: The study examined the relationship between environmental regulations compliance and performance of large manufacturing firms in Kenya. Environmental regulations compliance is a critical aspect of responsible business operations, involving several key components that contribute to environmental protection and legal compliance.

Research methodology: The study applied descriptive and correlational research designs. The target population for the study was 499. A questionnaire was designed, and experts in the fields of strategic management were used to determine the validity and reliability of the data collection instruments. Proportionate and stratified random sampling was used. The unit of analysis included large manufacturing firms, while the unit of observation included managers from middle level management and top-level management. The study used descriptive and inferential statistics to analyze the results with help of SPSS version 22.

Findings: The study found significant correlations between environmental regulations compliance and performance of large manufacturing firms in Kenya with a Pearson coefficient of 0.404. Environmental Regulations compliance also showed a positive impact (Beta = 0.580, p = 0.001), with a higher explanatory power for performance variance ($R^2 = 0.163$).

Conclusion: The study concludes that environmental regulations compliance had a positive influence on the performance of large manufacturing firms. The positive relationship between compliance and performance underscores the value of integrating sustainable practices into the core business strategies.

Recommendations: The study recommends that large manufacturing firms should comply with environmental regulations as it positively affects performance. It is recommended that manufacturing firms take proactive steps to ensure full compliance with all relevant environmental laws and regulations. Additionally, obtaining and maintaining all necessary environmental permits should be prioritized, as these are fundamental to legal operations and can prevent costly disruptions or penalties associated with non-compliance.

Keywords: *environmental regulations compliance, performance, large manufacturing firms, Kenya*

BACKGROUND OF THE STUDY

Corporate environmental responsibility focuses on highly polluting companies and operates in social or physical contexts, which further increases risks from external conditions or public attitudes toward environmental hazards. According to Muloli (2020), Banerjee (2020), Dietrich, Madhu and Lyon (2020), Martensson and Westerberg (2021), Dayuan *et al*. (2021), Makori and Jagongo (2020), Nederhand and Klijn (2019), Somjai, Fongtanakit and Laosillapacharoen (2020), Kibogy (2021), Ienciu, Cardos and Muller (2021), Menike (2020), Mwangi and Mwiti (2020), Hsu (2021), Dyduch and Krasodomska, (2021), Mikial, Marwa, Fuadah and Meutia (2019), Ntiamoah, Egyiri and Kwamega (2020) and Gichohi (2020), components of corporate environmental strategies include environmental impact assessment, environmental awareness, environmental regulations compliance and energy efficiency. The study examined the relationship between energy efficiency and performance of large manufacturing firms in Kenya.

Environmental regulations compliance is a critical aspect of responsible business operations, involving several key components that contribute to environmental protection and legal compliance (Achuora, Guyo, Arasa & Odhiambo, 2020). Complying with environmental laws and regulations is fundamental to ensure that organizations operate within the legal framework established to protect the environment (Wang & Yan, 2022; Yoo & Heshmati, 2019). This includes activities such as managing emissions, waste disposal, and other practices that have the potential to impact the environment negatively. By complying with these regulations, organizations contribute to minimizing their environmental impact and reducing the risk of legal penalties. Adhering to reporting requirements is essential for transparency and accountability (Sendawula et al., 2021). Many regulatory authorities require organizations to report their environmental performance, emissions, and other relevant data. Accurate and timely reporting is crucial to demonstrate compliance with regulations and provide information to stakeholders, including regulatory agencies, the public, and investors. This reporting helps track environmental progress and ensures that organizations are held accountable for their environmental impact.

Obtaining all necessary permits (Menike, 2020; Emuebie, Olaoye & Ogundajo, 2021) is a key step in environmental regulations compliance. These permits grant organizations the legal authority to carry out specific activities that may have environmental implications, such as

emissions or waste disposal. It is crucial to secure the necessary permits before commencing operations to avoid legal and environmental liabilities (Nawawi et al., 2022). By obtaining permits, organizations demonstrate their commitment to following the established rules and regulations. Thus, environmental regulations compliance involves complying with environmental laws and regulations, adhering to reporting requirements, and obtaining all required permits. These actions are essential for responsible environmental management, legal compliance, and transparency.

The current study examining the relationship between environmental regulations compliance and the performance of large manufacturing firms in Kenya holds significant worth for several reasons. The manufacturing sector has a great potential on promoting economic growth and competitiveness in the country like Kenya. According to the World Bank (2020), sluggish growth in the manufacturing sector is pulling down economic growth in Kenya and is also losing grip on the East Africa Community market where it was dominant, due to inefficiencies and the unpredictable operating environment. Kenya, as a developing country with a growing industrial base, faces unique challenges and opportunities in integrating environmental considerations into its economic growth strategies.

The findings from this study could provide valuable insights into how compliance with environmental regulations can impact the operational efficiency, cost structures, and competitive positioning of large manufacturing firms. This is particularly relevant as global markets increasingly favor environmentally responsible businesses, and compliance can open new opportunities for trade and investment. Furthermore, understanding this relationship can inform policymakers and industry leaders, helping to tailor regulations and corporate strategies that promote both economic and environmental sustainability. By shedding light on the practical implications of environmental regulation compliance, the study contributes to a more sustainable industrial growth model that balances economic development with environmental stewardship, a crucial consideration for Kenya and similar economies aiming for sustainable progress.

STATEMENT OF THE PROBLEM

Manufacturing firms in Kenya have seen a significant decline in performance. This downturn is reflected in the sector's stagnant contribution to the country's GDP, which is growing at a mere 3.1 percent, significantly trailing the overall economic growth rate of 5.0 percent reported by the

World Bank in 2019. Specific examples of this trend include East African Breweries Limited (EABL), a major player in the East African brewing industry, which reported a 15% drop in profits and a 7% decrease in market share in the fiscal year 2021/2021, compared to the previous year, as noted by Baraza (2021). Similarly, East African Portland Cement posted significant net losses of Ksh 3.4 billion in 2019 and Ksh 2.8 billion in 2020. Tata Chemicals Magadi Limited also struggled financially, posting a loss of Ksh. 134,000,000 in 2020. These examples highlight a troubling pattern of financial underperformance in the sector.

According to the Kenya Association of Manufacturers (KAM, 2021), some companies are considering closing their local operations and relocating to countries such as Egypt due to declining profits. This shift can be attributed in part to the sector's declining export volumes, with cement exports falling by 62.8 percent from 388.4 thousand tonnes in 2021 to 144.3 thousand tonnes in 2018, according to the Kenya National Bureau of Statistics (KNBS, 2019). Furthermore, cement production decreased by 2.6% to 6,069.9 thousand tonnes in 2018 from 6,230.3 in 2021, while imports increased from 14.7 thousand tonnes in 2021 to 23.0 thousand tonnes in 2018. These statistics suggest a decline in domestic manufacturing capability and competitiveness, which could be linked to issues of corporate environmental responsibility and serve as the foundation for this study.

If these trends continue, the consequences for the Kenyan economy and manufacturing sector could be severe and far-reaching. A continued decline in the performance of large manufacturing firms would have an impact not only on their profitability and market share, but could also result in job losses, decreased industrial output, and a diminished role in the global market. This scenario would exacerbate the trade imbalance by increasing imports to compensate for reduced domestic production, potentially straining the nation's financial resources. In the long run, these firms' declining performance could stifle economic growth, stifle innovation, and potentially lead to the Kenyan economy's deindustrialization. Addressing the underlying issues, particularly those related to corporate environmental responsibility, is critical for reversing this trend and ensuring the manufacturing sector's long-term growth and competitiveness.

Based on the reviewed studies, a knowledge gap exists, which served as the foundation for conducting the current study. For instance, Makori and Jagongo (2020) focused solely on

environmental accounting, whereas the current study investigates the impact of environmental regulations compliance on performance, indicating a conceptual gap. Menike (2020) conducted research in the food, beverage, and tobacco sectors for companies listed on the Colombo Stock Exchange, presenting a contextual gap because the current study focused on manufacturing firms. Another study by Mwangi and Mwiti (2020) revealed a conceptual gap because it only examined voluntary financial disclosures. Nederhand and Klijn (2019) conducted a study on environmental regulations compliance in public-private partnerships, revealing a contextual gap.

Somjai, Fongtanakit, and Laosillapacharoen (2020) used a descriptive research design, indicating a methodological gap, whereas the current study used both descriptive and explanatory research designs. The explanatory research design investigates the relationship between variables. In addition, Kibogy (2021) employed a descriptive research design, resulting in a methodological gap. Ntiamoah, Egyiri, and Kwamega (2020) conducted their research in the banking industry, highlighting a contextual gap. Furthermore, Muloli (2020) conducted the study in banks, resulting in a context gap. Thus, the reviewed studies revealed a knowledge gap in conceptual, contextual, and methodological areas, which served as the foundation for the current study. To address the knowledge gap, the study investigated the relationship between environmental regulation compliance and the performance of large manufacturing firms in Kenya.

RESEARCH OBJECTIVE

The research objective of the study was to analyze the relationship between environmental regulations compliance and performance of large manufacturing firms in Kenya.

RESEARCH HYPOTHESIS

The study was guided by the null hypothesis.

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

LITERATURE REVIEW

THEORETICAL LITERATURE REVIEW

The study was underpinned by regulation theory. The theory was developed by George Stigler in 1971. This theory recognizes that regulation is not a one-size-fits-all concept but rather a complex

phenomenon influenced by the interplay of political, economic, social, and legal factors (Baldwin et al., 2012). One key element of regulatory theory is the examination of the roles and motivations of regulatory agencies, which can vary from promoting public interest and ensuring compliance to protecting vested interests and maintaining power balances (Levi-Faur, 2005). Regulatory capture, a concept rooted in regulatory theory, highlights the risk of regulatory agencies being influenced or controlled by the industries they are supposed to regulate (Stigler, 1971). Additionally, the theory recognizes that regulatory outcomes can have unintended consequences, emphasizing the need for adaptive and responsive regulatory frameworks (Ayres & Braithwaite, 1992). In essence, regulatory theory provides a comprehensive framework for understanding the complexities of regulation, its drivers, and its implications in a variety of social and economic contexts (Zubcic & Sims, 2020).

The theory is relevant to the current study, which aims to analyze the relationship between environmental regulations compliance and the performance of large manufacturing firms in Kenya. The theory provides a valuable framework for understanding the dynamics of regulatory compliance within the context of economic activities. In this study, the theory can be applied to explore how large manufacturing firms respond to and navigate environmental regulations. Stigler's insights into the behavior of regulated entities can help shed light on how these firms may seek to influence regulations, lobby for favorable rules, or adapt their operations to comply with existing regulations while minimizing costs. By considering the theory's premise that firms often aim to maximize their utility within the regulatory environment (Stigler, 1971).Furthermore, the theory underscores the concept of regulatory capture, where regulatory agencies may become subject to industry influence (Stigler, 1971). This aspect is particularly pertinent to the study's objective, as it can help assess whether regulatory agencies overseeing environmental compliance in Kenya are effectively carrying out their mandates or if there are indications of undue industry influence. Understanding the dynamics of regulatory capture and its potential consequences is crucial for evaluating the efficacy of environmental regulations and their impact on firm performance. Additionally, the theory's focus on unintended consequences of regulation highlights the importance of examining potential spillover effects or unintended outcomes arising from firms' compliance efforts, such as shifts in market dynamics, innovation, or ecological impacts.

2.3 Conceptual Framework

Orodho (2020) defines conceptual framework as graphical or diagrammatical model that represents relationships between variables in the study. Figure 1 illustrates the relationship between variables.

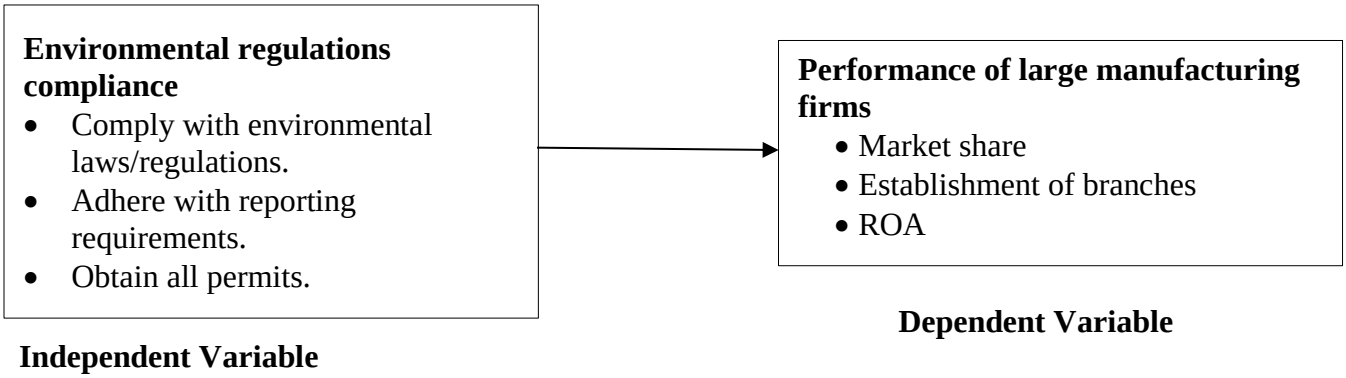

Figure 1: Conceptual Framework

2.3 Empirical Literature

Wang and Yan (2022) conducted a study on environmental regulation intensity, carbon footprint and green total factor productivity of manufacturing industries. The findings indicate that the intensity of environmental regulation significantly impacts GTFP, with direct carbon footprint playing a partial intermediary role in this relationship. This research reveals that environmental regulation not only influences manufacturing processes but also contributes to the reduction of carbon emissions, thereby enhancing green economic benefits. Based on these insights, the authors propose strategies for adjusting environmental regulations in the manufacturing sector. These strategies align with national policy guidance and aim to promote the sustainable development of China's green manufacturing industry. Wang, Xu and Liang (2021) examined the effect of environmental regulation on firm performance, specifically focusing on the Chinese cement industry. Utilizing a differences-in-differences model and focusing on the off-peak production policy in China's cement market, the research found that environmental regulation negatively impacts the revenue and profit of listed companies. The study attributes this decline in firm performance to the high elasticity of market demand, which hinders firms from transferring regulatory costs to consumers. Despite an 8% increase in cement prices due to the policy, cement

consumption decreased by 16%, indicating the significant impact of environmental regulation on market dynamics and firm profitability in the cement industry

The study by Yoo and Heshmati (2019) examined the impact of environmental regulations on the manufacturing industry in Korea. Key findings include the observation that stricter environmental policies, exemplified by the enactment of the Low-carbon Green Growth (LCGG) Act, have had a negative impact on labor productivity and employment in polluting industries. This suggests that these industries face higher costs due to environmental compliance, aligning with previous research in the field. In contrast, the green sector, which includes industries producing environmentally friendly products, exhibits increased labor productivity and employment post-regulation. This indicates a positive response to environmental regulations, contrasting with the challenges faced by their non-green counterparts. Moreover, the study finds that firms within the green sector, even those with high carbon dioxide emissions, are able to adapt more rapidly to regulatory constraints than similar firms in the non-environmental sector of the polluting industry. This adaptability may be due to the inherent alignment of the green sector with environmental goals. The research suggests that strengthened environmental regulations not only shift the industrial landscape but also promote labor reallocation from non-green to green sectors.

The study by Sendawula et al. (2021) investigates the relationship between regulatory compliance and environmental sustainability practices in manufacturing small and medium entrepreneurial ventures (SMEVs) in Uganda.. The findings of the indicate that specific dimensions of regulatory compliance, namely controls, legitimacy, and deterrence, are significant factors influencing environmental sustainability practices in these SMEVs. This implies that when these ventures perceive the regulatory environment as controlled, legitimate, and having the potential for deterrence, they are more likely to engage in environmentally sustainable practices. A study was conducted by Menike (2020) to examine the impact of environmental disclosure on firm performance of food, beverage, and tobacco sector companies listed on the Colombo Stock Exchange. The results show that environmental accounting disclosure and firm size had a significant positive impact on return on assets. The study recommended that managers need to adopt environment-friendly resources/activities to satisfy the stakeholders' expectations. The top management should make sure that they comply with the environmental laws as a long-term business strategy in enhancing sustainability.

Further, Emuebie, Olaoye and Ogundajo (2021) examined the impact of environmental disclosure on the performance of Nigerian consumer goods-producing companies. The study found that environmental disclosure, such as environmental disclosure quality and accounting information had a significant effect on return on assets. The study concluded that environmental disclosure has a significant impact on the performance of manufacturing companies in Nigeria. Moreover, Li, Cao, Zhang, Chen, Ren and Zhao (2021) examined the effect of corporate environmental responsibility on financial performance. The data was collected from 1179 observations of Chinese energy-intensive listed companies from 2020-to 2020. The study results showed that corporate environmental responsibility significantly positively influences financial performance. In addition, Oba, Fodio, and Soje (2020) found a positive and significant relationship between the quality of environmental disclosure and financial performance.

Moreover, Hsu (2021) investigated the effect of environmental awareness on corporate financial performance for the steel industry. The study result showed there is a significant effect of environmental, financial disclosure on firm performance. The environmental awareness includes environmental financial and non-financial information disclosure. The environmental financial disclosure reflected in monetary terms regarding the environmental investment, costs and provisions. The environmental non-financial information disclosure refers to environmental objectives, management, and policy. A study was conducted by Dyduch and Krasodomska, (2021) to look at the effect of corporate social responsibility disclosure on stock market returns of the companies listed in Warsaw Stock Exchange. The results show that the relationship between voluntary disclosure and stock returns is not significant. The voluntary disclosure included revealing information such as financial data, shareholders information, corporate social responsibility and human resources.

RESEARCH METHODOLOGY

The study employed descriptive and explanatory research designs to describe relationships and explain causal connections between variables. A positivistic philosophy was adopted, guiding the formulation and testing of hypotheses through quantitative methods. The target population for the study was 499 and the sample size was 336 respondents selected through stratified and simple random sampling techniques. Data collection utilized a questionnaire to gather primary data,

complemented by secondary data from industry reports and firm annual reports. Descriptive statistics like mean and frequencies was used to perform data analysis. Statistical Package for Social Scientists (SPSS) was used to produce frequencies, descriptive and inferential statistics was used to derive conclusions and recommendations regarding the study findings. The analysis of variance (ANOVA) was checked to reveal the overall model significance. The regression coefficient was checked to establish whether the energy efficiency affects the performance of large manufacturing companies in Kenya. A critical p value of 0.05 was used to determine whether the variable is significant or not.

RESEARCH FINDINGS AND DISCUSSION

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 respondents. 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 ANALYSIS

ENVIRONMENTAL REGULATIONS COMPLIANCE

Table 2 presents the summary of the descriptive statistics of environmental regulations compliance.

Table 2: Environmental regulations compliance

Environmental regulations compliance	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Mean	Std. Dev.
Strict compliance with environmental laws enhances a manufacturing firm's overall performance	21.3	4.1	14.9	47.0	12.7	3.26	1.345
Meeting reporting requirements aids transparency and operational improvements, contributing to better performance.	14.0	8.9	7.0	64.8	5.4	3.39	1.169
Timely acquisition of permits ensures uninterrupted operations, positively influencing performance	-	-	34.6	65.4	-	3.65	0.476
Compliance fosters responsibility and efficiency, improving resource management and overall performance	-	-	48.6	47.9	3.5	3.55	0.564
Meeting emissions and pollution standards mitigates legal and financial risks, safeguarding performance	-	-	35.2	45.4	19.4	3.84	0.723
Compliance opens doors to markets with stringent standards, expanding the customer base and boosting performance.	5.7	-	23.2	34.0	37.1	3.97	1.058
Employees and other stakeholders at the forefront in creating awareness about environment conservation	21.3	-	15.6	41.6	21.6	3.42	1.399
Compliance minimizes regulatory issues and disruptions, allowing the organization to focus on core activities and enhance competitiveness and performance	19.7	8.9	16.2	45.2	10.2	3.17	1.307
Average						**3.53**	**1.005**

The study results in Table 2 indicates that concerning the statement "Strict compliance with environmental laws enhances a manufacturing firm's overall performance" 21.3% of the respondents strongly disagreed to the statement, 4.1% disagreed to the statement, 14.9% of the respondents neither agreed nor disagreed to the statement, 47.0% of the respondents agreed to the statement whereas 12.7% of the respondents strongly agreed to the statement, with a mean of 3.26 and standard deviation 1.345. About the statement "Meeting reporting requirements aids transparency and operational improvements, contributing to better performance." 14.0% of the respondents strongly disagreed to the statement, 8.9% disagreed to the statement, 7.0% of the

respondents neither agreed nor disagreed to the statement, 64.8% of the respondents agreed to the statement whereas 5.4% of the respondents strongly agreed to the statement, with a mean of 3.39 and standard deviation 1.169. On the statement "Timely acquisition of permits ensures uninterrupted operations, positively influencing performance" 34.6% of the respondents neither agreed nor disagreed to the statement, 65.4% of the respondents agreed to the statement with a mean of 3.65 and standard deviation 0.476.

In addition, the statement "Compliance fosters responsibility and efficiency, improving resource management and overall performance" 48.6% of the respondents neither agreed nor disagreed to the statement, 47.9% of the respondents agreed to the statement whereas 3.5% of the respondents strongly agreed to the statement, with a mean of 3.55 and standard deviation 0.564. On the statement "Employees and other stakeholders at the forefront in creating awareness about environment conservation" 35.2% of the respondents neither agreed nor disagreed to the statement, 45.4% of the respondents agreed to the statement whereas 19.4% of the respondents strongly agreed to the statement, with a mean of 3.84 and standard deviation 0.723. Concerning the statement "Compliance opens doors to markets with stringent standards, expanding the customer base and boosting performance" 5.7% of the respondents strongly disagreed to the statement, 23.2% of the respondents neither agreed nor disagreed to the statement, 34.0% of the respondents agreed to the statement whereas 37.1% of the respondents strongly agreed to the statement, with a mean of 3.97 and standard deviation 1.058.

About the statement "Employees and other stakeholders at the forefront in creating awareness about environment conservation" 21.3% of the respondents strongly disagreed to the statement, 15.6% of the respondents neither agreed nor disagreed to the statement, 41.6% of the respondents agreed to the statement whereas 21.6% of the respondents strongly agreed to the statement, with a mean of 3.42 and standard deviation 1.399.. On the statement "Compliance minimizes regulatory issues and disruptions, allowing the organization to focus on core activities and enhance competitiveness and performance" 19.7% of the respondents strongly disagreed to the statement, 8.9% disagreed to the statement, 16.2% of the respondents neither agreed nor disagreed to the statement, 45.2% of the respondents agreed to the statement whereas 10.2% of the respondents strongly agreed to the statement, with a mean of 3.17 and standard deviation 1.307. The average

mean score was 3.53, with a standard deviation of 1.005. This implied that most of the respondents agreed with the survey statement under environmental regulations compliance.

In addition, from open ended questions, the study found that environmental regulations compliance plays a pivotal role in influencing the performance of manufacturing firms in various ways. Environmental regulations compliance is seen as a fundamental driver of operational efficiency. By adhering to laws and regulations related to emissions, pollution control, waste management, and resource conservation, manufacturing firms can optimize their processes. This leads to reduced resource consumption, lower waste production, and more efficient use of energy. As a result, operational costs are often lowered, positively impacting the organization's bottom line. Moreover, efficient operations contribute to increased productivity, reduced downtime, and improved overall performance.

In addition, compliance with environmental regulations is essential for reputation management and market competitiveness. Respondents emphasized that manufacturing firms that uphold environmental standards are more likely to enjoy a positive public image and gain the trust of consumers, investors, and partners. This, in turn, can lead to increased sales, higher market share, and improved access to capital. Organizations that are recognized for their environmental responsibility are often preferred by customers who are becoming increasingly eco-conscious, and this can translate into a competitive advantage and enhanced financial performance.

The environmental regulations compliance has strategic implications that can influence the long-term performance of manufacturing firms. By adhering to regulatory requirements, organizations are better positioned to navigate legal complexities and avoid costly fines and penalties. This, in turn, contributes to financial stability and risk mitigation. Additionally, compliance opens doors to markets with stringent environmental standards, both domestically and internationally. Being able to meet these standards not only broadens the customer base but also facilitates international trade and partnerships, thus expanding growth opportunities and enhancing overall organizational performance. Thus, environmental regulations compliance profoundly influences the performance of manufacturing firms in Kenya. It drives operational efficiency, enhances reputation and competitiveness, and provides strategic advantages for long-term success.

PERFORMANCE OF LARGE MANUFACTURING FIRMS

Table 3 presents the summary of the descriptive statistics of performance of large manufacturing firms

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 study results in Table 3 shows that on the statement "The assets of the organization have been increasing" 25.4% disagreed to the statement, 4.1% of the respondents neither agreed nor disagreed to the statement, 36.8% of the respondents agreed to the statement whereas 33.7% of the respondents strongly agreed to the statement, with a mean of 3.79 and standard deviation 1.163. About the statement "The organization equity has been growing over the years" 25.4% disagreed to the statement, 4.1% of the respondents neither agreed nor disagreed to the statement, 51.7% of the respondents agreed to the statement whereas 18.7% of the respondents strongly agreed to the statement, with a mean of 3.64 and standard deviation 1.057. Concerning the statement "The organization market share has been on the rise in the last five years" 25.4% disagreed to the

statement, 21.6% of the respondents neither agreed nor disagreed to the statement, 39.7% of the respondents agreed to the statement whereas 13.3% of the respondents strongly agreed to the statement, with a mean of 3.41 and standard deviation 1.010.

Regarding the statement "The organization has established/opened new branches in the last five years" 9.5% disagreed to the statement, 28.3% of the respondents neither agreed nor disagreed to the statement, 48.9% of the respondents agreed to the statement whereas 13.3% of the respondents strongly agreed to the statement, with a mean of 3.66 and standard deviation 0.827. On the statement "The customer retention in the organization has been high over the years" 21.3% disagreed to the statement, 9.2% of the respondents neither agreed nor disagreed to the statement, 50.8% of the respondents agreed to the statement whereas 18.7% of the respondents strongly agreed to the statement, with a mean of 3.67 and standard deviation 1.012. About the statement "The organization has been achieving its target goals in the last five years" 25.4% disagreed to the statement, 5.1% of the respondents neither agreed nor disagreed to the statement, 50.8% of the respondents agreed to the statement whereas 18.7% of the respondents strongly agreed to the statement, with a mean of 3.63 and standard deviation 1.058.

Concerning the statement "The market share of our company has increased consistently over the past 5 years" 30.8% disagreed to the statement, 14.3% of the respondents neither agreed nor disagreed to the statement, 30.5% of the respondents agreed to the statement whereas 24.4% of the respondents strongly agreed to the statement, with a mean of 3.49 and standard deviation 1.166. This signified that majority of the respondents agreed that the market share of the company has increased consistently over the past 5 years. The average mean score was 3.61, with a standard deviation of 1.042. This pointed out that most of the respondents agreed with the survey statement regarding the performance of large manufacturing firms. 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

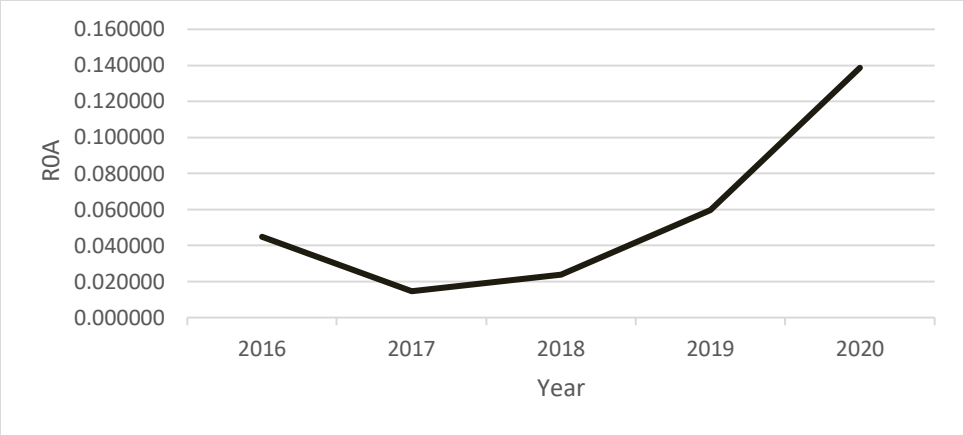

Figure 2: Trend Analysis of ROA

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

A correlation matrix was run in order to identify the existence of association between variables. Mugenga (2003) posit that the value of r ranges between -1 and +1, with r = 0 implying no correlation, r = positive values implying positive correlation and r = negative values implying negative correlation. Table 4 presents the Correlation analysis for environmental regulations compliance and performance.

Table 4: Correlation analysis for Environmental regulations compliance

		Performance	Environmental regulations compliance
Performance	Pearson Correlation	1.000	
Environmental regulations compliance		404**	1.000
	Sig. (2-tailed)	.001	

The correlation analysis presented in Table 4 reveals a positive and statistically significant positive association between environmental regulations compliance and performance among large

manufacturing firms in Kenya. The Pearson correlation coefficient of 0.404 suggests a positive correlation between the two variables.

REGRESSION ANALYSIS

The study results on the model summary are presented in Table 5

Table 5: Model Summary (Environmental regulations compliance)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.404[a]	.163	.161	.88310	.163	61.148	1	314	.001

a. Predictors: (Constant), Environmental regulations compliance

The R Square value of .163 implies that about 16.3% of the variation in the firms' performance can be explained by their compliance with environmental regulations. This suggests a moderate, yet significant impact of regulatory compliance on firm performance. The high F-value of 61.148 and the very low significance (Sig. F Change) value of .001 further reinforce this finding. The low significance value, much below the standard threshold of 0.05, indicates a very low probability that this relationship occurred by chance.

Table 6: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.687	1	47.687	61.148	.001[b]
	Residual	244.097	313	.780		
	Total	291.784	314			

a. Dependent Variable: Performance of large manufacturing firms

The significance (Sig.) value is .001, which is much lower than the conventional threshold of 0.05. This low significance value suggests a very high likelihood that the observed relationship between environmental regulations compliance and firm performance is real and not due to random chance. In other words, the study robustly supports the idea that how well these large manufacturing firms comply with environmental regulations is closely tied to how well they perform. This reinforces the notion that environmental responsibility is not just a legal obligation but also a key factor in the business success of these firms.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.321E-006	.050		.001	1.001
	Environmental regulations compliance	.580	.074	.404	7.820	.001

a. Dependent Variable: Performance

The beta coefficient value from Table 7 for environmental regulations compliance (0.580) meant that for every one (1) unit increase in the dimension of environmental regulations compliance in large manufacturing firms, it leads to 0.580 increase in performance of large manufacturing firms. From hypothesis 3 (three) of the study, **H_{03}**: Environmental regulations compliance does not have significant influence on performance of large manufacturing firms in Kenya, and based on the findings, the study revealed that there was positive significant relationship between environmental regulations compliance and performance of large manufacturing firms in Kenya.

The results were fitted in the Model $\mathbf{Y= \beta_0 + \beta_3 X_3 + e}$

The study therefore rejected the null hypothesis **H_0**: Environmental regulations compliance does not have significant influence on performance of large manufacturing firms in Kenya) and concluded that environmental regulations compliance significantly influenced performance of large manufacturing firms.

The Model equation therefore became Y= 9.321E-006 + 0.580X

Where,

Y is performance of large manufacturing firms

X_3 is environmental regulations compliance.

The research findings were in congruent with findings by Kimaku, Omwenga and Nzulwa (2019) that environmental regulations compliance significantly influenced the implementation of strategic change in state corporations in Kenya. Similar conclusions were made by Azadi, Ho, Hafni, Zarafshani & Witlox (2020) who found out that the main indicators that significantly influenced urban green space performance were the multi-environmental regulations compliance viz. state,

society, implementation and regulation. Further, the study conclusions agreed with findings by Nederhand and Klijn (2019) that the involvement of stakeholders leads to more innovative projects but not necessarily to better performing projects. On the contrary, the findings disagreed with findings by Schalk (2021) that the involvement of professional stakeholder organizations is related to policy performance, with negative returns on policy performance at higher levels of involvement.

CONCLUSION

The study concludes that environmental regulations compliance had a positive influence on the performance of large manufacturing firms. Involvement of stakeholders at all levels in matters concerning the environment has a positive impact on the performance of large manufacturing firms. positive relationship between compliance and performance underscores the value of integrating sustainable practices into the core business strategies. This finding challenges the traditional view that environmental regulation is a cost burden, suggesting instead that it can be a catalyst for innovation and improved business outcomes. The study decisively rejects the notion that environmental compliance does not impact firm performance, establishing that proactive environmental management is indeed beneficial for business success.

RECOMMENDATIONS

The study recommends that large manufacturing firms should comply with environmental regulations as it positively affects performance. It is recommended that manufacturing firms take proactive steps to ensure full compliance with all relevant environmental laws and regulations. This involves not only understanding and adhering to existing regulations but also staying informed about any changes or updates to environmental legislation that may affect their operations. Firms should establish robust systems and processes for regular reporting, ensuring that they meet all required reporting standards and deadlines, which will aid in transparency and accountability. Additionally, obtaining and maintaining all necessary environmental permits should be prioritized, as these are fundamental to legal operations and can prevent costly disruptions or penalties associated with non-compliance. Beyond mere compliance, firms are encouraged to adopt best practices in environmental stewardship, going above and beyond regulatory requirements to minimize their environmental footprint. This could involve

implementing more efficient resource use, investing in cleaner technologies, and engaging in corporate social responsibility initiatives related to environmental conservation. By doing so, firms not only contribute positively to the environment but also enhance their reputation, stakeholder relationships, and potentially, their market performance.

REFERENCES

Achuora, J. O., Guyo, W., Arasa, R. &Odhiambo, R., (2020), Effect of Green Supply Chain Management Practices on the Performance of Manufacturing firms in Kenya, Ph.D. (SCM). Dissertation. Jomo *Kenyatta University of Agriculture and Technology: Kenya.*

Ayres, I., & Braithwaite, J. (1992). Responsive Regulation: Transcending the Deregulation Debate. Oxford University Press.

Baldwin, R., Scott, C., & Hood, C. (2012). A Reader on Regulation. Oxford University Press.

Dayuan, L, Cuicui,C, Zhang, L., Xiaohong, C., Shenggang, R. & Yini, Z. (2021). Effects of Corporate Environmental Responsibility on Financial Performance. Journal of Cleaner Production, 166 (3), 1323-1334

Dyduch, J., & Krasodomska, J. (2021). Determinants of corporate social responsibility disclosure: An empirical study of Polish listed companies. *Sustainability*, *9*(11), 1934.

Emuebie, E. M. E. K. E., Olaoye, S. A., & Ogundajo, G. O. (2021). Effect of Social and Environmental Disclosure on the Performance of Listed Consumer Goods Producing Companies in Nigeria. *International Journal of Applied Economics, Finance and Accounting*, *11*(1), 35-47.

Hsu, H. (2021). Environmental awareness and firm performance. *Advances in Economics, Business and Management Research (AEBMR)*, *26*, 483-487.

Kibogy, J. C. (2021). *The Effect of Corporate environmental responsibility on Organizational Performance: A Case of Bamburi Cement Limited* (Doctoral dissertation, Daystar University, School of Business and Economics).

Levi-Faur, D. (2005). The global diffusion of regulatory capitalism. The Annals of the American Academy of Political and Social Science, 598(1), 12-32.

Makori, D. M., & Jagongo, A. O. (2020). Environmental accounting and firm profitability: An empirical analysis of selected firms listed in Bombay stock exchange, India.

Menike, L. M. C. S. (2020). Impact of Environmental Disclosure on Firm Performance: An Empirical Analysis of Food, Beverage and Tobacco Sector Companies Listed in Colombo Stock Exchange, Sri Lanka. International Journal of Academic Research in Business and Social Sciences. 10(10), 518-536.

Mikial, M., Marwa, T., Fuadah, L., & Meutia, I. (2019). The Effects of Environmental Performance and Environmental awareness on Financial Performance in Companies Listed on the Indonesia Stock Exchange.

Muloli, M. M. (2020). Effects of Corporate Social Responsibility on Firm Performance: Implication for Banking Sector in Tanzania.

Mwangi, M., & Mwiti, J. K. (2020). The effect of voluntary disclosure on stock market returns of companies listed at the Nairobi securities exchange. *Journal of Finance*, 2(16),42-57

Nawawi, M. N., Samsudin, H., Saputra, J., Szczepańska-Woszczyna, K., & Kot, S. (2022). The effect of formal and informal regulations on industrial effluents and firm compliance behavior in Malaysia. *Production Engineering Archives*, *28*(2), 193-200.

Nederhand, J., & Klijn, E. H. (2019). Environmental regulations compliance in public–private partnerships: Its influence on the innovative character of projects and on project performance. *Administration & Society*, *51*(8), 1200-1226.

Ntiamoah, E. B., Egyiri, P. O., & Kwamega, M. (2020). Corporate social responsibility awareness, firm commitment and organizational performance. *Journal of Human Resource and Sustainability Studies*, *2020*.

Orodho, J.A. (2019). *Elements of Education and Social Sciences, Research Methodology* (2nd Edition), Maseno; Kenzja Publishers.

Sendawula, K., Turyakira, P., Ikiror, C. M., & Bagire, V. (2021). Regulatory compliance and environmental sustainability practices of manufacturing entrepreneurial ventures in Uganda. *Asia Pacific Journal of Innovation and Entrepreneurship*, *15*(1), 62-74.

Somjai, S., Fongtanakit, R., & Laosillapacharoen, K. (2020). Impact of management responsibility, environmental management accounting and green innovation on firm performance: An empirical investigation. *International Journal of Energy Economics and Policy*, *10*(3), 204.

Stigler, G. J. (1971). The theory of economic regulation. The Bell Journal of Economics and Management Science, 2(1), 3-21.

TATA CHEMICALS MAGADI LIMITED (2021). Annual Report And Financial Statements For The Year Ended 31 March 2021. Retrieved from https://www.tatachemicals.com/upload/content_pdf/18-tata-chemicals-magadi-limited-march-2021.pdf

Wang, L., & Yan, Y. (2022). Environmental regulation intensity, carbon footprint and green total factor productivity of manufacturing industries. *International Journal of Environmental Research and Public Health*, *19*(1), 53-67.

Yoo, S., & Heshmati, A. (2019). The effects of environmental regulations on the manufacturing industry's performance: a comparison of green and non-green sectors in Korea. *Energies*, *12*(12), 22-39.

Zubcic, J., & Sims, R. (2020). Examining the link between enforcement activity and corporate compliance by Australian companies and the implications for regulators. *International Journal of Law and Management*, *53*(4), 299-30.