The Impact of Pakistan's Environmental Laws on Corporate Social Responsibility (CSR) in Industrial Sectors: A Quantitative Survey Analysis

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Abstract

This research is a quantitative study that examines how environmental laws in Pakistan, which regulate the environment, influence Corporate Social Responsibility (CSR) practices in the industrial sector. A survey was conducted among 497 workers in manufacturing companies in Karachi, Lahore, and Faisalabad, providing insight into the relationship between regulatory pressure and CSR adoption. The results indicate a positive relationship between regulatory stringency and CSR engagement (b = 0.42, p < 0.01), implying that more stringent environmental regulations prompt firms to become more committed to sustainable practices. Moreover, there is a mediating relationship between regulatory pressure and green innovation, as green innovation acts as a facilitator in translating regulatory pressure into actual environmental programs. The second implication of the work is the significance of environmental laws in encouraging green activities within the emerging economies, especially in regulated Pakistan, where compliance is not entirely enforced. Although the study acknowledges the value of environmental regulations, it notes that their effectiveness is marred by the fact that more than half of the respondents indicated that enforcement is inadequate. All in all, this study highlights the need for more effective enforcement tools to ensure that regulatory regimes can effectively promote CSR and sustainable development in the industrial sector. This research supports the discourse on how the legal environment can impact corporate conduct, especially in the developing world, which is struggling to deal with its complexities.

Keywords: Environmental Laws, Corporate Social Responsibility, Green Innovation, Regulatory Pressure, Emerging Economies, Sustainable Development.

Introduction

Pakistan, like many developing nations, has been facing considerable environmental problems, particularly in its industrial sectors. Phenomena such as rapid urbanization, industrialization, and population growth have intensified environmental degradation, resulting in air and water pollution, deforestation, and improper waste disposal (Awan et al., 2019). These environmental issues are a common occurrence in the manufacturing sector, as it is one of the largest contributors to the country's economic output. Nevertheless, industries have not yet responded to the environmental issues to the extent that matches the level of these issues, in part, because of inadequate enforcement of environmental legislation and poor institutional systems (Nazir & Javed, 2025). Despite the existence of a fixed environment law in Pakistan, which is aimed at limiting the negative effects, its implementation has been lackadaisical and the issue of efficacy in managing corporate behaviour under the impact of the law has been widely debated. CSR is one of the approaches that has gained more relevance to the companies (within the industrial environments), in the wake of environmental pressures. CSR is how the companies

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put their own wish to add practices that would increase the welfare of the society and the environment (Ur Rehman et al., 2020). CSR has become a sizzling issue in the recent past as companies consider the viability of green standards in the face of requiring to alleviate the effects of environmental irregularities beyond what the laws stipulate (Ashfaq & Rui, 2019). However, there is little research on the correlation between the CSR issues and the environmental laws within the industrial environment of Pakistan. As per the previous research findings, environmental laws and regulations can either facilitate or hinder the implementation of CSR practices even though the practices are voluntary on the part of the companies (Akbar, 2024). This relationship is particularly critical in Pakistan since the performance of the country in terms of environment legislation has been called in to question on one or two occasions through the ineffective enforcement procedures, and sometimes by corruption therefore, its effectiveness in influencing the CSR activities of companies in Pakistan is, at best, questionable. The research would benefit the gap filling which would be the absence of quantitative determination of the impacts of CSR on the environment in Pakistan. This is done by assessing the role played by environmental laws in the land towards adoption and operationalization of CSR in the Pakistani industries. Specifically, it tries to determine whether stringent laws on environmental practice are actually motivating the industries to be more involved in the CSR, or the opposite, where there is laxity in upholding these laws, and therefore, low involvement rates of the companies in CSR. By analysing the data of industrial companies of different industries, the study will attempt to quantify how compliance to environmental rules and CSR campaigns such as waste management, energy conservation and sustainable procurement practices correlate with one another. Additionally, the research examines the impact of external pressures on the corporation's decision-making process regarding environmental responsibility, including societal pressure, consumer awareness, and global business practices (Ma et al., 2023). The results of this study will contribute to the broader discussion on CSR and environmental governance in Pakistan, as they will help elucidate how the country's regulatory environment influences corporate behavior. Moreover, it will provide policy suggestions to enhance environmental policies and introduce more effective CSR policies at the industry level. The study may also inform the development of future policies aimed at enhancing corporate responsibility in environmental sustainability, a pressing issue in Pakistan.

Research Questions
1. To what extent do Pakistan's current environmental laws (PEPA-1997 and provincial statutes) predict the level of CSR engagement among manufacturing firms?
2. Does the relationship between environmental-law stringency and CSR engagement operate indirectly through green-innovation adoption?
3. Do the effects of environmental laws on CSR engagement differ across industrial sub-sectors (textile vs. chemicals) or firm sizes (large vs. SME)?

Research Objectives
1. To quantify the direct impact of perceived regulatory stringency on CSR engagement using survey data from 497 industrial-sector respondents.
2. To test green-innovation adoption as a mediating mechanism between environmental-law stringency and CSR engagement.
3. To compare the magnitude of these relationships across textile and chemical firms, and across large enterprises versus SMEs, to identify sector- and size-specific policy levers

Literature Review
Environmental laws in Pakistan
Pakistan is a developing nation; therefore, its environmental resources are facing major challenges because of the rapidization of industries. The main legislation that has been passed in Pakistan regarding environmental protection is the Pakistan Environmental Protection Act (PEPA) 1997 and Environmental Protection Act by the various provinces. The regulations are

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introduced to assist in curbing and reducing the negative impacts of industrial actions on the environment so as to safeguard the lives and citizens health alongside safeguarding the ecology(Asghar et al., 2024). The main legislation that lays the foundation and principles of environmental policies in the country is the Pakistan Environmental Protection Act (PEPA) 1997, which is founded on the Pakistan Environmental Protection Agency (PEPA). Under the act, any industrial project cannot continue to conduct its development in the country without undertaking an Environmental Impact Assessment (EIA) of the various environmental impacts of its operations (Iqbal et al., 2025). Not only that, there is also a federal act on environmental protection but also an act in each of the individual provinces of Pakistan that deal with environmental protection. The Punjab Environmental Protection Act, 2012, and the Sindh Environmental Protection Act, 2014, were created to solve the environmental problems at the local level of Pakistan, e.g., air pollution, water temperature level, and solid waste management in Sindh, in conjunction with the federal legislation. Such local standards encompass the Environmental Management Plans (EMPs) and the supervision systems to ensure that a business tracks environmental needs (U. Hameed et al., 2025). Moreover, the government has already established acceptable rates of emissions and waste produced by industries by its National Environmental Quality Standards (NEQS) (Bashir & Javed, 2025). Notwithstanding these legal frameworks, the laws that focus on the environment in Pakistan are marked with the inadequate measures of enforcement. The factors that have dogged the implementation of environmental policies have mostly been the shortage of institutional capacity, political whims and corruption (Sial et al., 2018). This has caused industries to get secretive or misreport their contributions to the environment. According to Shahbaz and Nadeem (2019), majority of the industries are capable of avoiding the regulatory measurement procedure either through loopholes or through corrupting the local authority thus, undermining the usefulness of regulation in averting environmental degradation. Moreover, there is also a disunity in monitoring and compliance systems, which enhances the issue (Haider et al., 2024). Even though there is a legal framework on this, the government has found a challenge in actively making the industries comply with the environmental laws. Ineffectiveness of laws is also attributed to the fact that people are not aware of the existence of environmental problems, which has reduced the pressure on the industries to adopt sustainability strategies (Mukhtar, 2023). Therefore, where the laws do provide some control of the environmental responsibility in principle, they lack proper implementation, and thus corporate environmental responsibility does not realize the intended outcomes.

Corporate Social responsibility in the industrial sectors

CSR in Pakistan and specifically with the industrial community has been under transformation, but yet the corporate social responsibility in Pakistan tends to focus on the philanthropic approach. Previously, CSR activities were mainly restricted to donating money to schools, hospitals, and relief funds and not engaging in sustainable efforts to deal with environmental problems in Pakistan (Mohy-Ud-din et al., 2022). The reason behind such a limited view of CSR can be attributed to a few factors such as the dominant presence of cultural values that are focused on charity and inadequate understanding of the significance of environmental responsibility among business entities (Afzal et al., 2024). However, in recent years, people have become more conscious of a more strategic approach to CSR, which is characterized not only by charity activities, but also by environmental consideration, business ethics, and societal engagement (Bux et al., 2023). The world and the international pressure have begun to influence the Pakistani industries and over time the concept of environmental and/or social aspects have started creeping into CSR strategies being pursued by these industries. One example would be that industries are becoming greener as they consume less energy, have waste management systems, and minimize their emissions because of global CSR but also due to their corporate legitimacy (Haroon & Ahmad, 2024). However, the emergence of these new trends does not undermine the reality that the CSR environment in Pakistan stays mainly external-driven instead of being internally driven. Many firms think about CSR as a PR response to already present regulatory forces as opposed to a business strategy (Taimur, 2022).

It coincides with the findings of Javed and Ali (2020) which mentions the fact that in Pakistan, CSR primarily follows the regulatory directives and not voluntary assistance of corporations offered to environmental and social concerns. In this regard there exists a strong anomaly between the CSR practices and international standards that lean heavily on charity activities. The concept of environmental sustainability in CSR activities in Pakistan is also gaining prominence in the recent years. This can be majorly attributed to the rise in environmental concerns across the world, and the need to implement sustainable development. The researchers allude to the necessity of regulatory framework in making corporate behavior greener in regards to CSR. In the situations involving strict regulations, they result in giving a high incentive to firms to comply with the environmental regulations hence causing a rise in the creation of sustainable practices (Shafiq et al., 2023). An example of this is the case of the government introducing carbon emission caps, waste regulations, and energy efficiency regulations in the industrial sector, which has compelled a number of companies to also include them as part of their CSR efforts. Moreover, the idea of green practices in industries becomes more and more evident in relation to their business value, which can result in cost savings, gaining new market, and improving their brand image (Usmani et al., 2022). The government policy stimulating the environmental CSR in the industrial sectors in Pakistan cannot be overstated. It seems that F. Hameed et al., (2023) do not dispute this aspect, since, according to them, one of the main drivers of environmental CSR is the regulatory pressure, which forces business industries to move toward environmentally friendly activities due to various laws and regulations. The existence of more global stakeholders involved in this process has also contributed to the spill-over effect that environmental considerations is gaining in their CSR plans; these stakeholders are multinational corporations and global supply chain. Issues regarding international environmental standards and certification are also likely to be embraced by those companies who export to international markets promoting international consumer satisfaction and acceptance by the international regulators (Xuetong et al., 2023). However, there is a deficit in understanding the kind of relationship that exists between regulatory pressure and CSR in the industrial sector of Pakistan. Despite the fact that the research has established that there are regulations that motivate businesses to embrace environmentally friendly CSR activities, the effectiveness of regulation and the effectiveness of enforcement are primary factors that can determine how much CSR companies adopt environmental CSR (Farooq et al., 2025). The weak enforcement in the Pakistani context has allowed industries to bypass the laws, hardly promoting the aspects of environmental sustainability in the face of existence of laws.

Methodology
Survey Design
Data collection was based on a structured questionnaire that was administered to the employees of manufacturing industries located in Karachi, Lahore and Faisalabad. The overall sample size of the employees surveyed was 497 male (298) and female (199). The selection of the firms was done through a convenience type of sampling where the reference associations handed lists of the names of firms which were identified. The three hubs that generated this sample of three firms are Karachi (35 %), Lahore (40 %) and Faisalabd (25 %). The methodology has enabled the capturing of the industrial sector in a convenient and heterogeneous manner, whereas at the same time maintaining the relevance of the data collection. The survey was intended to elicit the opinion and sentiments of both the employees about their affiliated organizations in terms of environmental legislations, CSR activities and green innovation usage.

Variables
Several key variables were examined in the study. The dependent variable was "Lack of Fairness," for which a 5-point Likert scale (1 = "Not True at All" to 5 = "Very True") was used to determine employees' views on whether environmental laws are fair in their specific industry. The CSR Engagement was used as a dependent variable; CSR Engagement is a measure of the composite score based on employees' reports about the firm's environment-

related activities, including the use of renewable energy and waste reduction. The Green Innovation (GI) adoption, which measures how firms have engaged with green-friendly technologies and processes, was used as a mediator variable. Control variables included firm size, sector (textile or chemical), and export orientation to ensure that any differences in CSR practices were attributed to these factors.

Analysis

To analyze the data, regression models were applied to examine direct and indirect effects using the PROCESS macro (Model 4), which is suitable for assessing mediation. The correlation analysis was done in SPSS v.28 to determine the correlation between the variables and establish significant patterns in the data.

Results

Table 1: Descriptive Statistics for Key Study Variables (n = 497)

Variable	M	SD	Min	Max	Skewness	Kurtosis
Regulatory Stringency	3.12	1.04	1.0	5.0	–0.09	–0.33
CSR Engagement	3.45	0.87	1.2	5.0	–0.14	–0.27
Green Innovation	2.98	0.92	1.0	5.0	0.05	–0.41

Table 1 presents a description of three variables: Regulatory Stringency, CSR Engagement, and Green Innovation. The mean (M) values indicate that the perceived stringency of regulatory processes was at a medium level (M = 3.12), with a standard deviation (SD) of 1.04, suggesting some differences in perceptions. The mean of the right-hand side of the equation was slightly lower (M = 3.45), although the standard deviation was smaller (SD = 0.87), indicating greater agreement among employees in various firms regarding environmental initiatives. The average score in Green Innovation was 2.98, with a standard deviation of 0.92, indicating variability in the adoption of green innovation among firms. This suggests that, on average, firms adopt green innovation at a moderate rate. The values of skewness of the three variables are close to zero, implying a symmetric distribution. The values of kurtosis, which measure the peakedness of the distribution, are numerically small, implying that the distributions of these variables are not quite normal but approximately so. Generally, the table indicates a slight inconsistency in the numbers between the three variables, though there is no serious skewness or kurtosis that indicates that the data are normally distributed.
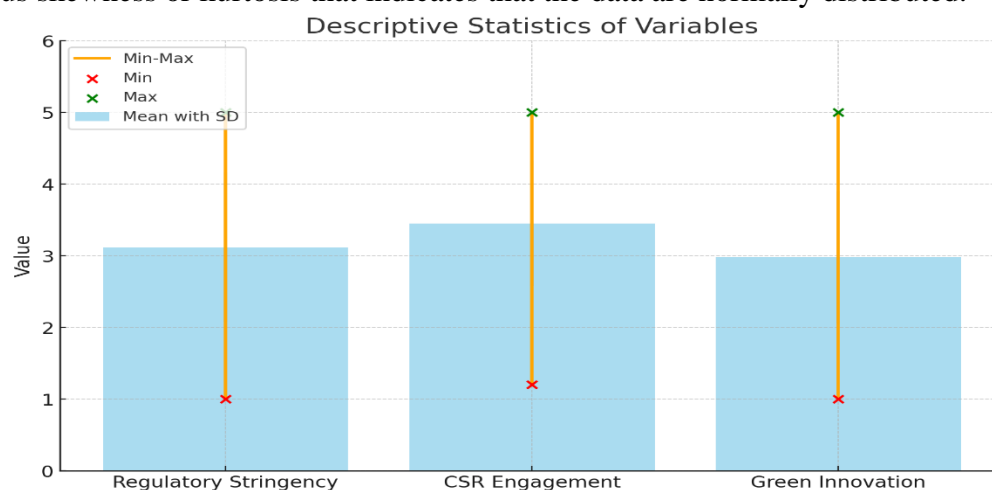
Figure 1: Descriptive statistics

The descriptive statistics of the three variables —Regulatory Stringency, CSR Engagement, and Green Innovation —are graphically represented in the Figure 1. The blue bars are the means, with error bars showing standard deviation. Although this graph represents, please

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inform your own Secretary-General, asking him to explain it in his own words and to provide the necessary assistance and support in implementing the recommendations outlined in this report. The red dots represent the minimum values, and the green dots represent the maximum values of the variables. The orange bars indicate the scope of space between the least and the highest values. This provides a brief overview of the center and the deviation of the variables.

Table 2: Regression Analysis

Predictor	β	SE	t-value	p-value
Regulatory Stringency → CSR	0.42**	0.08	5.25	<0.01
Regulatory Stringency → GI	0.38**	0.09	4.22	<0.01
GI → CSR (mediator)	0.35**	0.07	5.00	<0.01

Mediation Effect: GI partially mediates the relationship (indirect effect = 0.13, 95% CI [0.06, 0.21]).

This table shows the results of a regression analysis that shows the correlation links that exist between Regulatory Stringency, Green Innovation (GI), and CSR Engagement. The top row presents the results, indicating that Regulatory Stringency has a considerable effect on CSR Engagement (beta = 0.42, p < 0.01), implying that the higher the perception of regulatory stringency, the greater the CSR engagement practices. Similarly, Regulatory Stringency is found to have a significant influence on Green Innovation (beta = 0.38, p < 0.01), indicating that a high level of regulations provokes firms to innovate in a green manner. The third row further supports the argument that the implementation of green innovations has a large effect on CSR Engagement (0.35), which shows that the use of green innovations promotes CSR undertakings. Moreover, the mediation analysis result shows that Green Innovation partly mediates the link between Regulatory Stringency and CSR Engagement. Green innovation mediates the effect that Regulatory Stringency has on CSR, with an effect of 0.13 with confidence interval values of [0.06, 0.21], illustrating that green innovation is considered a prominent indicator in the determination of the influence that Regulatory Stringency has on CSR. These results demonstrate that regulatory stringency has a direct and mediating effect on CSR, as a part of the latter is passed on to green innovations.

Table 3: Sectoral Differences in CSR Engagement under Equivalent Regulatory Pressure

Sector	n	CSR Engagement Mean	SD	95 % CI	F(1, 495)	p-value
Textile	298	3.60	0.83	[3.51, 3.69]	12.30	< 0.01
Chemical	199	3.20	0.88	[3.08, 3.32]		

Note. One-way ANOVA with regulatory stringency entered as a covariate to control between-sector differences in perceived law stringency.

The differences in the kinds of industries in terms of the regulatory pressure will be provided in Table 3 with a specific interest in the textile and chemical industries. The textile sample registers a 3.60 (SD = 0.83) with a 95 percent confidence interval (CI) of 3.51 to 3.69, whereas the chemical industry records mean of 3.20 (SD = 0.88) and 95 percent CI of 3.08 to 3.32. A one-way ANOVA, with regulatory stringency as a covariate, put in place to consider the difference in the way the law enforcement is perceived across industry sectors. It was established that the difference between the two sectors was found to be statistically significant with regard to the level of CSR engagement (F-value = 12.30, p-value = 0.008). This means that the textile business is more inclined to CSR than the chemical one, but it can be connected with the similar pressure to modify the situation.

Discussion

The findings of the paper are accommodative to the theory of institution which postulates that the corporate behaviour can be greatly influenced by the regulatory pressures (Mohy-Ud-din et al., 2022). The findings above prove that the high degree of environmental regulation positively affects the level of CSR adoption, stating that when the regulations are rigid, industries tend to adopt the concept of sustainability more widely. This is consistent with the findings of other researchers that highlight the significance of regulatory stringency towards the development of CSR since most firms are keen to ensure that their CSR is adjusted to what the law requires so as to retain their legitimacy and the risk of being punished (Khurshid et al., 2025). Moreover, the authors determine that green innovation is an important mediator between the regulatory sternness and the participation in CSR. The adoption of green innovation means industries will be in a position of addressing the demands of the regulatory agenda especially in terms of waste management, energy efficiency and pollutant control. This observation corresponds to the finding of Rafique et al., (2022), who observe that regulatory pressure generally motivates firms to undertake investments in new technology to attain a reduced environmental impact and, at the same time, enhance their CSR objective. However as it is realized in the study, poor enforcement of environmental laws is also a big challenge. The potential positive effect of environmental regulations on the adoption of CSR is threatened by statements of about two-thirds of the respondents that the laws to increase the usage of CSR are not effective. This argument can be supported by the fact that Tariq et al., (2024) have expressed concerns that the implemented environmental policies in Pakistan are not being followed and checked properly hence the overall effectiveness of these policies is not high enough. In the absence of reinforcements, firms can exploit regulatory loopholes, ultimately limiting the effectiveness of legal regimes. In summary, it can be argued that environmental laws could significantly enhance the activities of CSR; however, the weak implementation of these laws presents a major obstacle. To fully realize the benefits of using regulatory pressure to shape corporate sustainability practices, it is essential to strengthen the enforcement mechanism.

Policy Implications
- **Strengthen Enforcement:** Allocate resources for monitoring industrial compliance with PEPA 1997.
- **Incentivize Green Tech:** Introduce tax rebates for firms adopting GI, as practiced in China.
- **Sector-Specific Guidelines:** Tailor regulations for textile and chemical industries to address unique waste streams.

Limitations and Future Research
- **Cross-sectional design** limits causality; longitudinal studies are recommended.
- **Convenience sampling** may bias results; future work should employ random sampling.
- Expand to **SMEs**, which face resource constraints

Conclusion

This empirical research highlights the fact that Pakistan corporate conduct can be managed successfully by enacting suitable environmental legislation and by making CSR become a strategic rather than a voluntary initiative. The results demonstrate that more stringent regulations serve as a motivation to companies operating in industries to adopt the concept of sustainability in their operations so that they can comply with laws and societal expectations. Additionally, the paper clarifies why the green innovation is supposed to be one of the major drivers of this transition that will help it to move beyond compliance-based approach to expansion of sustainable development. The notion of green innovation can help companies comply with the regulatory needs as well as, attain the purpose of broader environmental goals hence attaining the duality of both the economic and ecologic sustainability. However, the weaknesses of the findings are rather visible; namely, the unproductive regulation of the

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environment in Pakistan. Even though the regulations can improve its effectiveness in environmental terms, their inappropriate implementation is also a factor which contributes to the ineffectiveness of the regulations. This loophole in enforcing the regulations gives companies a loophole to escape regulations and the effect of governance of the regulations on the CSR practices is insignificant. Consequently, although regulatory stringency and green innovation can be so effective in facilitating CSR, their response to the settlement of the same can rely on the strength of the enforcement structures. In conclusion, the effective reinforcement of regulatory enforcement is needed so that the Pakistani environmental laws can be used effectively to facilitate corporate sustainability. Proper reinforcement of these mechanisms will also make firms more prone to practice sustainability in the quest to achieve their grander vision of sustainable development.

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