The Effect of Environmental Regulations Performance of Firms: A Case Study of Small and Medium Rubber Manufacturing

Akhila Murali
Department of Management, Kochi
Amrita Vishwa Vidyapeetham India
akhilamurali999@gmail.com

Abstract

Environmental regulations are aimed at improving the quality of environment, controlling and reduction of pollution from various sources, and restricting or prohibiting all the activities or operations of the industry based on environmental grounds. Historically, manufacturing of rubber and latex based products from processed raw-rubber have been considered as posing serious environmental challenges in the form of carbon emissions as well as environmental pollution. The level of firm’s compliance with environmental regulations in the manufacturing of rubber allied products is expected to have a positive impact on the sustainable economic and environmental performance of the rubber products manufacturing firms. Following prescribed industry standards will lead to less pollution and less harm to environment. In this context, this paper aims at understanding the localized impacts of the recent environmental policy changes as well as regulations at the global scenario on the sustainable performance of rubber manufacturing small and medium firms in India, with reference to Kerala. Kerala is the largest producer of natural rubber in India. This paper will capture the important compliance of environmental regulations being adopted by the rubber manufacturing firm and their impacts.

Keywords:
Environmental pollution, Workers health, Firm Efficiency, Productivity, environmental policy

Introduction:

Rubber Industry plays a major role in the Indian economy. India occupies fourth position in the production of natural rubber and occupies third position in polymer consumption. For the consumption of natural and synthetic rubber together country occupies fourth position. India kick started...
rubber manufacturing in the year 1920. In India, the Natural Rubber Industry enjoys diverse rubber products. The rubber goods industry manufactures about 35,000 items spanning over 5,000 units, employing half a million workers directly and more than 5 million workers. Rubber manufacturing industries have to follow various policies for the environment regulations. Small and Medium manufacturing industries mainly follow the regulations put forward by Kerala State Pollution Control Board and Factories Act 1918. Firms should abide to Air (Prevention and Control of pollution) Act 1981, Water (Prevention and Control of pollution) Act.

More than 70% percentage of rubber in India is being contributed by Kerala. The industry in this field has a flourishing growth but this growth doesn’t have direct relation to the employees’ growth. Wages and other facilities provided in these industries are low as they are exposed to high degree chemicals in open air; these are affecting their health.

**Characteristics of the Indian Rubber Industry:**

The various characteristics of Indian Rubber Industry are prescribed as follows:

- India is the world’s largest producer and third largest consumer of natural rubber
- The Indian manufacturing sector is mainly focusing on the domestic market
- India has been entered into global market in exporting natural rubber and various rubber products
- India has also importing rubber products from various nations
- Natural and Synthetic rubber has been major raw-material used in rubber manufacturing process
- Presently 75:25 is the consumption of natural rubber / synthetic rubber in the country
- Country tyre companies and other foreign companies have production plants in India (MRF – Kottayam Kerala, Apollo – Thrissur Kerala)
- Non-tyre manufacturing also contributes to the income for the nation like Chappals, Glowes etc.

Rubber is mainly classified as natural rubber and synthetic rubber. Natural and synthetic rubber is the main raw material used in manufacturing process. Natural rubber is extracted from rubber trees where as synthetic rubber is formulated through various monomers after polymerization. The performance of synthetic rubber is very similar to natural rubber.

Small and Medium enterprises are mainly in to production of tread rubber which is used in the production process of tyre. The industries involved in tread manufacturing has to follow various environmental practices since the production process harm environment.

The production process as follows:

**Natural rubber, synthetic rubber, chemicals, stearic acid, zinc oxide, two variations of carbon** are mixed in a ratio and processed in plant avoiding water contact and Mother batch is produced. Mother batch is again processed and soap oil is added to mother batch for cooling. Since the production process involves the generation high degree of heat.
Approximately 4000l of water has been used daily for production purpose which is pumped from near local bodies and which is recirculated in the factory. Pipes are connected to factory and this water is pumped to a tank and recirculated to the factory. The production process is continuous that is the plant won’t shut down and workers work in 3 shifts. The production process involves high volume of sound to avoid disturbances to local people the factory is located in distance away from road. Carbon which is very harmful is the major raw material in the production process. Carbon is in the form powder, there is high chance of flying of carbon to near locations which is being hindered by proper filters placed in factory.

**Literature Review**

The Effects of Environmental Regulations on the Productivity of Large Companies: An Empirical Analysis of the Spanish Case published in *Journal of Management and Governance* by Conchita Garces Ayerbe and Carmen Galve Gorriz explains complying to various environmental standars may favour or damage the performance of firms. Analysis was done on a panel information model that panel refers to fiftythree giant Spanish companies quoted on the securities market which have participated in an exceedingly backed environmental protection program throughout the 1990–1995, amount specifically within the Industrial and Technological Program for the surroundings (PITMA). Traditionally, the theoretical and empirical literature on the repercussions of environmental regulations on business efficiency has maintained the belief that there is a trade-off between achieving the environmental objectives and competitiveness. Recently, however, a counter-argument called the “Porter Hypothesis” suggests that regulation may spur innovation in firms that in sum leads to competitiveness gains, and not losses.

The Effect of GHG Emission, Environmental Performance, and Social Performance on Financial Performance of Listed Manufacturing Firms in Indonesia published in 2nd *Global Conference on Business and Social Science* by Andewi Rokhmawati, M examine and understand the effect of Green House Gas emissions (GHG), environmental performance (EP), and social performance (SP) on financial performance (FP) of listed manufacturing firms in Indonesia. Firms annual report and Interview data was used to measure the firms performance relationship with GHG emission, environmental performance, social performance. CO2 intensity and social performance scores have a positive and significant effect on Return on Assets (ROA).

The Effect of Environmental Performance And Corporate Social Responsibility Disclosure Towards Financial Performance (Case Study to Manufacture, Infrastructure, And Service Companies That Listed At Indonesia Stock Exchange) published on 2nd *Global conference on Business and social science*. This paper examine the relationship between environmental performance, CSR disclosure and financial performance. It was observed that environmental performance has a positive effect on Return on Assets and Return on equity.
Tri HariIrfani explains about the organizational hazards in the paper Occupational injuries and illness in rubber factory: Profile, Potential, Hazards and Possible Prevention. This study explains the various injuries, illness and hazards happening in rubber factory. The various occupational problems faced by workers in Indonesia has been identified which are respiratory diseases, muscle and skeletal diseases, gastrointestinal, skin and skin tissue diseases. Skin cancer and various skin allergies are faced by workers due to direct exposure to chemicals. Continuous work in factory in smoke and dust make them unhealthy at their 50 age.

Empirical Model of chemical exposure in the rubber manufacturing industry by Hans Kromhout Paul Swuste Jan S. M Bolieij published in The Annals of Occupational Hygiene, Volume 38, Issue 1, 1 February 1994, focus on Netherlands rubber manufacturing plants working conditions and chemical exposure. Exposure to airborne particulates, chemicals, carbon, various gases affects the person and production function. Usage of chemicals in powder form was one if the main factor affecting the exposure. This powder directly enters to the respiratory system which leads various health issues to the workers.

**RESEARCH QUESTION**

To know the environmental regulation effect on firms performance. Environmental regulation on small and medium rubber manufacturing Industries in Kerala and its effect on the firms performance in terms of revenue generation and its impact on the human resources that is employees working in the firm and people residing near the factories. This paper also focuses on health of the employees got in any compromise during production process or contamination of any resources which affects the people residing.

**Motivation for the study**

To know whether there is a trade-off between achieving the environmental objectives and firms performance. The relationship between compliance to regulation and firms performance (positive/negative) is being studied and also the compliance to these regulations are voluntary or under compulsion. How the firm is adopting the regulations and its impact on the employees in the manufacturing firm and people residing near the factory.

**RESEARCH METHODOLOGY**

A research framework has been formulated which explains the relationship between dependent and independent variables.

**Research Framework**

![Research Frame work](image-url)
Data

This study uses primary data and secondary data to measure the firms performance relationship with environmental regulations. Primary data is collected through observation of the manufacturing process, interaction with workers, local people’s opinion, and Kerala Pollution control Board’s Regulation report of the firm. The secondary data were collected from various literatures, news paper articles, which gives a generalized view regarding the firms activities and how it affects on human resources.

Methodology

**Dependent variable**

**Firms performance**, whether the firms performance is increasing or decreasing after investing on environmental regulations

**Independent Variables**

**Release of Green house gases and dust**: carbon and various other chemicals are used in the process so there is an emission of green house gases. Production process involves various raw materials and chemicals in powder form results in release of dust.

**Employees performance and working conditions**: Various regulations enacted can directly affects employees performance and the facilities provided by firm also affects the performance which has influence on the growth of firm.

**Firms productivity**: compliance to environmental regulation has an effect on firms productivity

Analysis

**Percentage Analysis**

Graph 1: Shows the growth of polymer factories in Kerala, India after the compliance of environmental policy

Growth of the firm has been increasing after abiding to the environmental policy and also gained support from local authority.

Results and Discussion

Firms are following to the prescribed regulations put forward by Kerala state pollution control Board but most of the factories are not provided safety equipments like mask, glows for workers since the processing of natural and synthetic rubber for thread rubber includes the use of chemicals, carbon, sulphur, Rubber anti-oxidants, soap oil, steric acid. Workers are exposed to these chemicals without proper protective devices various skin allergies, various respiratory diseases. Most of the workers are suffering from these diseases and are still working as there is no other source of employment.
Factories have set green belt and are maintained to improve the environment. For protecting water various arrangements has been set up to reuse the treated effluent and set up for rain water harvesting but most of the factories are set up near river and using the water from local bodies using a 4500l per day.

**Managerial Implications**
Various environmental regulations are enforced by the State pollution control but there is no proper inspection by the authority. Reducing the gap between the inspection years should be minimized for the effective practice by firms.

**Limitation of the study and agenda for future research**
The study is limited in its present scope because it has been confined to the southern part of India. Firms are not will to reveal the environmental regulations which should be enforced. Further research can focus on big rubber manufacturing firms since they have more regulations to follow.

**Conclusion**
Large numbers of regulations are formulated by Government for the firms to comply but there is no proper inspection of authorities this may lead to non-compliance of regulations. No survey or reports are collected from local people residing near to the factory. Various provisions were given to employees but more are needed since there is high exposure to chemicals and air-borne particulates.

**Bibliography**


