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A Study on Factors Influencing the Adoption of Green Management Practices by Granite Processing Units in Madurai District of Tamil Nadu, India (RUSA-Phase II, MKU)

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Abstract: The toll that industrialization had on the environment became more apparent after the Industrial Revolution. The increased demand for natural resources led to the exploitation and depletion of the non-renewable resources. Improper mining practices also led to toxic pollutants. It started a trend of wastefulness and overconsumption that would continue to affect the environment for decades. One such mining industry is Granite sector. Today, realizing the alarmingly increasing threat to the planet, the industry has no choice but to practice Green Management initiatives to positively impact the environment, society, and all the stakeholders compounding the triple bottom line (TBL) profit, people, and the planet. The operational definition of Green Management has been conceived as the organizational process where eco friendly practices are fully integrated into the operation in order to gain competitive advantage through waste disposal, sustainability, productivity and social responsibility. The present research work investigates the factors that determine the levels of adoption of green management practices by the owners of the granite polishing units in Madurai District. It also aims at contributing to the promotion of more green practices among the owners of the granite polishing units in the study area for the purpose of preserving the natural resources. The study concludes that owner's attitude, owner's awareness on environment and firm size have positive and significant influences on the adoption of green practices in the granite polishing units in Madurai District. The study has implications for achieving sustainable granite sector through recognizing, developing and rewarding green practices.

Keywords :*Green Management, Sustainability, Competitive Advantage, Granite sector*

I.INTRODUCTION:

Consumers and producers attempt to make the world a cleaner and conducive place to live in (Linnanen, 2012, Sumathi et al., 2014) and growing interest to sustainable principles and want for green products and services can be observed (Gliedt and Parker, 2007, Sumathi et al., 2014). The toll that industrialization had on the environment became more apparent after the Industrial Revolution. The increased demand for natural resources led to the exploitation and depletion of the non-renewable resources. Improper mining practices also led to toxic pollutants. It started a trend of wastefulness and overconsumption that would continue to affect the environment for decades. The first Industrial Revolution in the mid 18th century, introduced new technology to the world that led to faster production and consumption of materials. One of the biggest environmental impacts of the Industrial Revolution was the number of toxic pollutants and carbon foot prints released into the environment. The effects of these emissions were not immediately realized in the early stages of the Industrial Revolution. Many adverse consequences of industrialization deteriorating the Earth were not prominent for a longer period after the second Industrial Revolution. Today, realizing the alarmingly increasing threat to the planet, the industries have no choice but to practice Green Management initiatives to positively impact the environment, society, and all the stakeholders compounding The triple bottom line (TBL) profit, people, and the planet. The operational definition of Green Management has been conceived as the organization process where eco friendly practices are fully integrated into the operation in order to gain competitive advantage through waste disposal, sustainability, continuous learning and social responsibility.

II. Literature Review

Johanna Gast, et al. (2017) in their article revealed that the parameters of ecological sustainable entrepreneurship, the key elements to drive the business in an ecological sustainable way, the strategies adopted by ecological sustainable enterprises, prospects and problems of ecological sustainable entrepreneurship.

Nethaji Mariappan, SoundarRajan, Peter John, (2018) in their article, Environmental Analysis of Quarry Site in Tamilnadu, indicated that concentrations of pH were 5.6 and quarries surroundings as high as noise pollution of 87-88db while inner region exhibited 91 and 92db. These were above standard limits prescribed by National Ambinet Air Quality Standards.

Loknath Yama and Abdul Azeem Annamacharya (2019) discussed the ROAST scale of green management where the extremes are Resistant Organisation and Transcendent Organisation. Resistant Organisation Resists any green behaviour, green intellectual or philosophical argument is viewed as trite views of extremists whereas Transcendent Organisation Internalises sustainable development and Green criteria and Environmental values.

Yasmeen Shamsi Rizvi and Raksha Garg (2021) argues that Green Transformational Leadership (GTFL) and Green Culture (GC) are the determining factors to improve the organization's

environmental performance (EP). To substantiate this statement the study shows how GHRM strategies are integrated under the heading – green ability, motivation and opportunity (GAMO) and GTFL can help accelerate the EP of organizations

III.Objectives

The present research work investigates the factors that determine the levels of adoption of green management practices by the owners of the granite polishing units in Madurai District. It also aims at contributing to the promotion of more green practices among the owners of the granite polishing units in the study area for the purpose of preserving the natural resources.

IV. Methods and Materials

The research paper is completely based on primate data provided by the owners of the granite polishing units in Madurai District of Tamil Nadu, India. The primary data were collected from 89 owners of granite polishing units. A well structure questionnaire was designed by the research herself to capture the respondents' perception of factors determining the adoption of green management practices in granite polishing units. The questionnaire consisted of four parts namely green practices perception of influencing factors profile of the unit. The officials of department of geology and mining, Government of Taminadu, TAMIN and chamber of commerce have been consulted for the preparation of the questionnaire.

A study was performed on 25 owners of granite polishing units in the district during August 2022. After making the necessary additions and deletions I the scale items, a 43 item questionnaire was used for the present analysis. The sample size has been determined using Yamane's formula and the sample respondents have been chosen based on simple random sampling technique. The data have been analyzed using Logistic Regression technique. The Logistic Regression equation fitted for the present study is given below:

$$\text{Logistic (p)} = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \ldots\ldots \alpha_{10} x_{10} + \mu$$

Where,

X_1 = Owner's Age

X_2 = Owner's Education

X_3 = Firm's Age

X_4 = Firm's Size

X_5 = Ownership Type

X_6 = Sawing Technology

X_7 = Number of Skilled Workers Employed

X_8 = Owner's Attitude towards Green Management Practices

X_9 = Owner's Environmental Awareness

X_{10} = Perceived Benefits of Green Management Practices

μ=Disturbance term

V. Results and Discussion

Three key drivers of green practices have been identified from the survey of previous research works on green management practices.These are owner's attitude towards green management practices, owner's awareness on environmental aspects and perceived benefits of green practices. The scores on the adoption of green practices have been generated from the responses of owners to 15 yes or no questions relating to green practices adopted by them in their polishing units. the median value of the scores has been computed. If an owner's score has been more than the median value, he/she has been taken as the case of high level adoption, otherwise low level adoption. The hypothesis that owner's attitude, owner's awareness on environment and firm size have insignificant impact on the adoption level has been tested with the help of the Logistic regression analysis. The results are furnished in the Table 1.

Table 1

Estimated Values of the Logistic Regression Coefficients of Factors

Determining the Levels of Adoption of Green Management Practices (N=89)

Sl No	Factors	Coefficients	Waid Statistics	Odds Ratios
1	Owner's Age	-0.017 (-0.372)	0.002	0.983
2	Owner's Education	1.023 (0.416)	6.047*	2.782
3	Firm's Age	0.596 (0.711)	0.703	1.815
4	Firm's Size	0.462 (0.209)	4.886*	1.587
5.	Ownership Type	-0.832 (-1.193)	0.486	0.435
6.	Sawing Technology	0.327 (0.119)	7.551*	1.387
7	Number of Skilled Workers Employed	0.636 (0.539)	1.392	1.889
8	Owner's Attitude	1.294 (0.823)	2.472**	3.647
9	Owner's Environmental Awareness	0.763 (0.402)	3.602*	2.145
10	Perceived Benefits	0.674 (1.893)	0.127	1.962
	Constant	2.751 (1.093)	6.335*	-

Source: Primary Data

Figures in the brackets are standard errors

Chi-square value = 23.573*

* indicates one per cent level of significance

** indicates five per cent level of significance

The results of the Logistic Regression Analysis bring out the following factors determining the levels of adoption of green management practices. The factors owner's education, firm's size, sawing technology, owner's attitude towards green management practices, and owner's awareness on environmental aspects have been positive and statistically

significant.

The meaning is that the adoption level of technically qualified owners has been 2.782 times higher than that of non-technically qualified owners. It is also inferred from the Logistic regression analysis that the adoption level of owners using diamond-wire saw technology has been 1.39 times higher than that of the owners using single-blade and multi-blade wire saw technologies.

It has also been learnt from the analysis that the adoption level increases with the increase in owner's attitude towards green management practices and his/her awareness level on environmental aspects. The Logistic regression analysis points out that the adoption level of green management practices and firm's size have been positively and significantly related. The Hosmer – Lemeshow test (Chi-square value) indicates that the Logistic regression model fitted for analyzing the factors influencing the level of adoption of green management practices by the owners of granite polishing units in the study area is good.

Table 2

Classification Matrix for Adoption Levels

Sl. No.	Adoption Levels	Predicted Ownership		Total
		Group-I	Group-II	
1.	Low Level	54 (94.74)	3 (5.26)	57 (100.00)
2.	High Level	6 (18.75)	26 (81.25)	32 (100.00)

Source: Primary Data

Overall Efficiency = 89.89 per cent.

The fitted Logistic regression correctly classifies 54 out of 57 owners adopting green management practices at low level under group I and 26 out of 32 owners following green management practices at high level under group II. That is, 80 out of 89 owners adopting green management practices are correctly grouped by the Logistic regression showing that the overall efficiency is 89.89 per cent.

VI. Conclusion

The study concludes that owner's attitude, owner's awareness on environment and firm size have positive and significant influences on the adoption of green practices in the granite polishing units in Madurai District.

The study has implications for achieving sustainable granite sector through recognizing, developing and rewarding green practices. The local government and NGOs may play a proactive role in convincing owners of the small – sized polishing units to adopt the green practices by communicating and highlighting the advantages of such practices.

Furthermore, environmental education is more effective in facilitating behavioural change. Thus, the NGOs and environmental organizations must come forward to organize environmental awareness programmes through training and seminars.

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