



IMPACT OF GREEN HUMAN RESOURCE FACTORS ON ENVIRONMENTAL PERFORMANCE IN MANUFACTURING COMPANIES: AN EMPIRICAL EVIDENCE

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ABSTRACT

The social concern about environment has led companies to adopt environmental management practices at an increasing rate. Companies voluntarily implement environmental management system (EMS) for this purpose. But only deploying EMS will not be effective in enhancing environmental performance until and unless employees are motivated for their environmental endeavors. Very few studies exist to guide managers in motivating employees to maximize their efforts in successful implementation of EMS. So the purpose of this paper is to determine the relationship between green human resource factors i.e. factors pertaining to environmental issues and organizational environmental performance as perceived by the organization's employees. Through literature review seven human resource factors –Top management commitment, employee environmental communication, employee environmental trainings, environmental teams, employee involvement, employee environmental rewards, green programs has been established. The impact of these factors on environmental performance is measured in ISO 14001 certified manufacturing organizations as perceived by the employees. A questionnaire was distributed to 150 employees working at managerial and non-managerial positions in various departments within 9 manufacturing companies with ISO 14001 certification in Delhi-NCR region. A total of 133 complete questionnaires were received. The results of regression analysis suggest that top management commitment, employee trainings and green programs have a significant positive relationship to perceived environmental performance. However, the relationship between environmental communication, environmental teams and employee involvement was statistically insignificant. No significant difference was found in the perceptions of managers and non-managers with respect to different human resource factors affecting environmental performance.

KEYWORDS: EMS, ISO 14001, Human resource factors, Environmental performance, green management.

INTRODUCTION

The social concern about environment has led companies to adopt environmental management practices at an increasing rate. Companies voluntarily implement environmental management system (EMS) for this purpose. Environmental Management System is the most used tool of environmental management in companies. An EMS is a set of management processes that requires firms to identify, measure and control their environmental impacts (Bansal and Hunter, 2003).It provides a management framework for achieving environmental objectives. So companies implementing environmental management systems conduct environmental activities to better control the company's environmental impacts. It helps the company in preventing pollution and saving company's money by reducing wastes, reducing energy consumption, carrying recycling activities and overall enhancing the corporate image. It contributes to environmental and economic benefits to the organizations.

One of the major area that have gained prominence as target for environmental management in literature is human resources. Human resource is the key resource of any organization and can have a significant impact on how

the organization operates. Thus the support of human resource management practices is considered fundamental for adopting environmental management practices (Govinda rajulu and Daily, 2004). Researches affirm that a greater integration between human resource management practices and environmental issues helps firms to implement EMS effectively. This process of support from HR to EM objectives is called Green Human Resource Management (GHRM) (Renwick et al, 2008).Companies can use various people management policies and practices for achieving the objective of environmental management. It can manage the behaviors of people and can contribute to the green movement. It can provide a guiding platform to engage employees in environmentally sustainable ways at work to reduce their carbon footprint and embed an eco-friendly culture within the organization. Very few studies exist in literature to guide managers in considering the human resource factors in order to maximize their efforts in successful implementation of EMS (Daily and Huang, 2001; Govindarajulu and Daily, 2004; Wee and Quazi, 2005). In particular, authors have espoused the need for examination of issues such as top management commitment, employee training, empowerment, rewards,

supervisor support, and teamwork within the context of environmental management (Beard, 1996; Daily et al., 2007; Daily and Huang, 2001; Govindarajulu and Daily, 2004; Kitazawa and Sarkis, 2000; Ramus, 2001; Ramus and Steger, 2000; Sarkis, 2001). However, only a few empirical studies have considered these variables in this context (Daily et al., 2007; Wee and Quazi, 2005; Kaur(2011)). Hence, these studies provided a new and important direction for researchers interested in issues that impact environmental management. We feel it is worthwhile to extend this stream of research among firms in Indian manufacturing sector.

REVIEW OF THE LITERATURE

Walter Wehrmeyer (1997), "Going green is good for business....and HR staff" an article of in an annual survey of top management graduates in Europe with respect to environment has come up with four most important factors for these graduates: (1) green image helps recruitment (2) more support from employees to changes linked with improvement in environmental performance than to cutting costs or raising competitiveness (3) Bonuses tied to environmental performance (4) Pay attention to work place.

Quazi's (1999) seven case studies in Singapore revealed that companies attained substantial monetary savings from EMS implementation/ISO14001 through recycling activities, product and process modification, reduced energy consumption, reduction in chemical use, improvement in pollution prevention processes but difficulty in securing employee commitment was found in most of the companies.

Beard & Rees (2000) describes "green teams" used in Kent County Council a UK local authority. It states that the teams were used to: generate ideas, enhance learning experiences, explore issues, identify conflict and focus action to enhance understanding about why, what, how, where and when to pursue the best practicable environmental options.(p.27)

Daily and Huang (2001) proposed a conceptual model of various HR factors and their relationship with EMS implementation. The basic elements of ISO14001 has to have an interface with HR factors for its implementation like Policy & teams, Planning & training, implementation and Empowerment ,Checking corrective action & rewards, Mgt. review and top mgt. Limitation given was to quantify the impact of HR factors for the deployment of EMS.

Ramus (2001) found that companies that want to improve their environmental performance can increase their employee's willingness to eco-innovate through supportive behaviors from line managers. It showed how firms can encourage line managers to adopt behaviors that employees perceive to be supportive of environmental actions and which behaviors and policies are most effective at supporting environmental innovation.

Massoud et.al. made a comparative analysis of environmental management systems in Mexican manufacturing sector and measured environmental constructs like supervisor environmental training, supervisor environmental empowerment, perceived environmental performance, employee environmental training, employee environmental teamwork and employee

environmental empowerment. Firms implementing EMS and that too having some certification were rated higher than the firms without an EMS.

Govindarajulu & Daily (2004) presented a theoretical framework on "motivating employees for environmental improvement" by integrating top management commitment, employee empowerment, rewards, feedback and review and environmental performance.

Wee and Quazi (2005) developed and validated a set of seven critical factors of environmental management that could be used by managers in assessing and improving their own environmental practices. A survey methodology was used. A pre-tested questionnaire was mailed to the managing directors or the chief executive offices of 848 electronic and chemical manufacturing companies in Singapore and 186 completed responses were received. The seven critical factors established through reliability and validity analyses were top management commitment, total involvement of employees, training, green product/process design, supplier management, measurement and information management which showed higher performance measure scores for ISO 14000 certified companies than non-certified companies.

Daily, Bishop & Steiner (2007) examines empirically the relationship between HR factors and employee perceptions of environmental performance of 437 employees of a large organization in the aerospace field in South Western U.S. which was ISO 14001 certified. Mgt support, EMS training, EMS rewards, Empowerment are related to perceived environmental performance. EMS teamwork plays a mediating role between some of the independent variables leaving top mgt support & Employee empowerment which was perceived to be related to their individual jobs.

Uusi-Rauva and Nurkka(2010)conducted study on a multinational company KONE regarding the kind of internal communication within the organization that would be effective in engaging employees in implementing an organization's environmental strategy. Four main themes considered were: 1) Employees understanding of the company's environmental policy.2) Meaningfulness of that policy in the employees own job.3) Employees views on the content and channel of environmental communications.4) Employees views on the barriers to communication &action in environmental issues. Findings from 12 interviews and 1386 responses from survey resulted that the overall barrier is less considerate about environment when they think they are busy. The important considerations included 1) Tailoring environmental messages to different employee groups based upon its relevancy to their jobs.2) Messages should be clear, practical and easy to implement 3) Assign environmentally active employees as contact persons to each department who everybody could approach with environmental initiatives.

Kaur Harjeet(2011) examines the relationship between HR factors and perceived environmental performance using a sample of middle and lower level employees in five ISO14001 certified Malaysian manufacturing companies. A sample of 223 was analyzed using SPSS 16 version. The results revealed that management commitment, feedback and review and

empowerment have a significant positive relationship to perceived environmental performance. The relationship between rewards and perceived environmental performance was found statistically insignificant.

Jabbour (2013a) assessed the relationship between environmental training (ET) and environmental management maturity (EMM) using survey and statistical analysis of 95 Brazilian companies with ISO14001 certification. Structural equation modeling based on Partial Least Squares, more specifically smart PLS 2.0 was used to process the data. The results indicated that the construct environmental training relates positively and significantly with the environmental management maturity.

Jabbour (2013b) presented the results of a systematic literature review on environmental training in organizations. The main studies in this area were classified and coded and a research agenda with 9 recommendations were presented. Analysis revealed that most environmental training studies were quantitative and used survey method. The next most numerous studied were purely conceptual followed by qualitative studies based on case studies. Majority of the studies focused on manufacturing sector as it generates greater environmental impacts than the service sector. Most of the studied considered environmental training to be an independent variable rather than a dependent or mediator variable. Mostly beneficiaries of environmental training were top managers and other employees of the company but less trainings were provided to customers and suppliers.

Environmental training was found to be a fundamental requirement for any successful activity of environmental management, conservation and recycling of resources but further studies should be done considering mixed methodologies and comparative perspectives.

Jabbour et al. (2013) verified the influence of Environmental Management (EM) on Operational performance (OP) in Brazilian automotive companies. They also analyzed whether Lean manufacturing (LM) and Human resources (HR) interfere in the greening of these companies. A conceptual framework was proposed and based on theoretical background a questionnaire was developed and sent to the managers occupying highest positions in production/operations areas. The data was collected from 75 companies and data was analyzed using structural equation modeling. The following results were revealed: (1) The model tested an adequate goodness of fit showing that the overall relationship between Environmental Management and Operational performance; between Human resource, Lean manufacturing and environmental management tend to be statistically valid. (2) Environmental Management tends to influence Operational Performance positively but statistically in a weak manner. (3) Lean manufacturing had a greater influence on Environmental management compared to the influence of Human resource on Environmental Management. (4) The relationship between Human resource and Environmental Management was found to be positive but its significance was less as compared to other evaluated relationships.

Jabbour (2013) evaluated the main characteristics of green teams in Brazilian companies and analyzed the

relationship between green teams and maturity level of Environmental Management in those companies. A survey of 94 companies with ISO 14001 certification and a multiple case study of four industrial companies was done based on the conceptual background of environmental management and green teams. The results indicated that 82% of the studied companies had cross functional green teams (members from different departments) and 65% had functional green team's i.e. individual department teams. Moreover organization with more advanced environmental management systems used green teams more intensively than organization with less advanced environmental management systems.

Jabbour et al.(2008) analyzed the theoretical model proposed by Jabbour and Santos(2008) regarding the relationship between human resource dimensions and environmental management in companies based on the data collected from four ISO 14001 certified Brazilian companies from manufacturing sector. Experts responsible for the areas of environmental management, human resource management, production management were interviewed between 2006 and 2007.the results revealed (1) the experts responsible for human resource management did not have substantial knowledge about the way this area could support environmental management system(2)not all the interactions between human resource practices and environmental management system was practiced in the companies as proposed by the model.(3) companies which presented more contribution of human resource practices to the environmental management system tend to have a continuous improvement of the environmental performance.

Jabbour et al.(2010) Addressed the issue of environmental training in organizations, presented a literature review and proposed a model that highlights the importance of environmental training for organizations. It emphasized the need to devote more attention to an adequate training programs design. Different trainings at different levels i.e. strategic, tactical and operational should be provided. It can create value for the stakeholders and can differentiate organizations that are pioneers from their direct competitors by creating a competitive advantage.

Rothenberg (2003) used data from an automobile plant i.e. New United Motor Manufacturing (NUMMI) which was well known for its participative work structures to look more closely at the dynamics of worker participation in environmental management. It was found that workers possess contextual knowledge but with knowledge of intra-organizational processes, external knowledge makes the role of workers important for environmental improvement.

Massoud(2011)studied organizations with certified environmental management system(EMS),informal EMS and no EMS and reported variations in the perceptions of managers regarding environmental and human resource constructs in Mexico. The various environmental constructs were: Supervisor environmental training, supervisor environmental empowerment, employee environmental training, employee environmental teamwork employee environmental empowerment and perceived environmental performance. It was found that

there was significant differences in environmental management practices and environmental performance across all levels of EMS with certified EMS facilities being the highest ,informal EMS second and no EMS being lowest.

Jabbour(2011) surveyed 94 brazilian ISO certified companies to investigate the involvement of human resource management practices(analysis and description of job positions, recruitment and selection, performance appraisal, rewards) and organizational dimensions that depend upon these practices(teamwork, organization culture and organizational learning) in environmental management of companies. It was found that workers will assume responsibility towards environment only if HR practices motivate their engagement which will affect the good performance observed in the formation of teams, organizational culture and organizational learning. Only then the organizations can move from reactive to proactive stage of environmental mgt.

OBJECTIVE

To determine the relationship between human resource factors pertaining to environmental issues and organizational environmental performance as perceived by the organization's employees.

HYPOTHESES

H1: Top Management Commitment for environmental management will be positively related to perceived environmental performance.

H2: Employee environmental Communication will be positively related to perceived environmental performance.

H3: Employee environmental training will be positively related to perceived environmental performance.

H4: Employee involvement will be positively related to perceived environmental performance.

H5: Rewards will be positively related to perceived environmental performance.

H6: Green programs will be positively related to perceived environmental performance.

RESEARCH METHODOLOGY

Research Design

A descriptive research was conducted in 9 randomly selected manufacturing companies with ISO 14001 certification in Delhi-NCR region. These companies were Maruti Suzuki India Ltd, ,Sona Koyo Steering Systems Ltd., Rico Auto Industries Ltd.,Sunbeam Auto Pvt Ltd, Hindustan Sanitary wares and Industries Ltd, Merino Panel Products Ltd, Somany Ceramics Ltd, Paramount Surgimed ltd. and Polymed Pharmaceuticals Pvt ltd.

Sample

A research coordinator (i.e. staff) from each company served as a liaison between researchers and company respondents. The coordinator was asked to get the data filled randomly from employees of various departments to achieve heterogeneity. The coordinator was responsible

for selecting employees, distributing and collecting questionnaires from the company. A questionnaire was distributed to 150 employees working at managerial and non-managerial positions. A total of 133 complete questionnaire were received out of which 65 were of managers and 68 of non-managers.

Tools

A copy of the questionnaire is attached in Appendix. Items of questionnaire pertaining to various constructs were developed based on items from Wee &Quazi (2005), Daily et. al. (2007), Padma et.al (2008), Kaur (2011), Jacob et. al. (2011) depending upon the current context of study. The items were measured using 5-point Likert scale (1=strongly disagree, 5=strongly agree).The variables studied are mentioned underneath.

- a) **Top Management Commitment:** Top management is responsible for setting an environmental vision or corporate policy. It establishes an overall strategy to guide the company's effort to achieve the vision. Top management should propagate the philosophy that quality should be given higher priority than cost and allocate sufficient resources for implementing quality practices.(Zeithaml et al.,1996).
- b) **Employee environmental communication:** It is the kind of internal communication within the organization that would be effective in engaging employees in implementing an organization's environmental strategy. (Uusi-Rauva and Nurkka,2010).
- c) **Employee environmental training:** Employees to be trained in skills that are required to fulfill their environmental responsibilities and achieve their environmental goals. Educate employees to increase their environmental awareness.(Wee and Quazi,2005; Zutshi and Sohal,2004). Regular trainings should be imparted to employees. It provides opportunities for employee's engagement in environmental issues. It makes employees more aware of the need for environmental control, increase their ability to adapt to change, and develops a proactive attitude towards environmental issues (Rothenberg, 2003).
- d) **EMS teamwork:** While individual contributions are important, EMS teamwork is necessary for a successful environmental management system. EMS teamwork provides an opportunity for individuals to come together to find solutions to complex problems (Daily et al.2007).
- e) **Employee Involvement:** Employees are actively involved in environmental management system for achieving environmental goals. They participate in environmental management decisions related to their job and are encouraged to give suggestions.(Zutshi and Sohal,2004)
- f) **Employee environmental rewards:** Employee are recognized and are given rewards for their contribution to environmental goals. It can motivate and increase employee's commitment to be more environmentally responsible which can help both the company and its workers and environmental performance will be enhanced.(Daily et al.2007)

- g) **Green Programs:** The “Greening of HR Survey” conducted by Buck Surveys in January 2009 had found that companies incorporate certain green programs which are environmentally sensitive and resource efficient like reduction of paper usage, telework or work from home, company information online for reducing printing, ride or share programs. We have included these programs in survey to find whether Indian companies incorporate these practices to improve environmental performance.
- h) **Environmental Performance:** Savings in energy, recycling activities, pollution prevention, environmentally desirable impact of product or service.

FINDINGS AND DISCUSSIONS

In order to ensure Content validity the questionnaire was reviewed by academicians and management representative of ISO 14001 certified company. Reliability of the items was measured using Cronbach alpha. The values are reported in table 1.

In order to check for mean difference in the perceptions of managers and executives Independent-Samples T test had been performed. The Levene’s test for equality of variances showed that the sig.values were greater than 0.05 which meant that the variability in the two conditions was not significantly different. Further looking at sig.(2-tailed) values which were greater than 0.05, reveals that there was no significant difference in the mean scores of managers and non-managers as shown in table 2.

In regression analysis linear regression was carried out, results in table 3. Overall our model explained 33% variation in perceived environmental performance as explained by the other independent variables. As a check of multicollinearity, the results of Pearson’s correlation matrix of independent variables and VIF values were examined. Multicollinearity is present if paired correlation values among independent variables exceeds 0.80 and VIF values exceeds the threshold of 10. The results reveal that there was no problem of multicollinearity as the paired correlation values for all independent variables were less than 0.8 as shown in table 3. And the VIF values were in the range of 1.835-3.375. The correlation matrix indicates that the HR factors were moderately correlated with environmental performance: Top management commitment ($r = 0.363, p < 0.01$), Environmental communication ($r = 0.332, p < 0.01$), Environmental trainings ($r < 0.380, p < 0.01$), EMS teams ($r < 0.280, p < 0.01$), Employee involvement ($r < 0.309, p < 0.01$), rewards ($r < 0.348, p < 0.01$), Green programs ($r < 0.515, p < 0.01$). EMS teams showed the lowest correlation with environmental performance. There was no problem of autocorrelation as the Durbin Watson value was 1.818 which lies within the range of 1.50-2.50.

As the values of standardized beta shows the influence of independent variables on dependent variable, it was greater for Top management commitment (0.227), Environmental trainings (0.272) and green programs (0.419). Highest influence found was of green programs. The statistical results demonstrate that there is significant positive relationship between Top Management commitment, Employee trainings and Green Programs to Environmental performance. But no significant

relationship was found between Environmental communication, Employee involvement & EMS teamwork to environmental performance. The results imply that employees in environmentally proactive organizations in India are rarely rewarded for good environmental practices.

CONCLUSION

The statistical results support some of the internationally proposed research hypotheses. Specifically, Top management commitment, Employee trainings and Green Programs were found positively related to perceived environmental performance thereby supporting hypothesis H1, H3, H7. The results of H1 and H3 hypothesis are in continuity with the studies conducted by Kaur (2011). The results reveal that employees perceive that top management is committed to environmental management, employees are provided with environmental trainings before their joining or during their job as and when required and companies implement green programs which have an impact on environmental performance.

Four of our hypothesis i.e. H2, H4, H5, H6 failed to receive support. Environmental communication, EMS teams and Rewards were not found positively related to environmental performance. Although the studies conducted by Uusi-Rauva and Nurkka (2010) related to environmental communication, Beard and Rees (2000) related to EMS teams and Daily et al. (2003, 2007) measuring the factors of employee involvement and reward, showed a positive relationship of these factors to environmental performance. But our results are not in favor which shows that organizational environmental initiatives, goals, policies and results of environmental audits are not frequently communicated within the organizations. Moreover companies are not motivating employees by involving them in environmental improvement activities. Less number of companies employee green teams to generate ideas, upgrade experiences and foster organizational learning to pursue best options for environmental management practices. Even monetary or non-monetary rewards are linked less to environmental performance which supports the results of Kaur (2011).

MANAGERIAL IMPLICATIONS

It could help the managers in determining the role of each HR factor in implementing an environmental management system in an organization. In this sense it is essential that human resource management develop strategies to foster proactive environmental management through strong and highly visible top management commitment, development of training programs, strong internal environmental communication, development of green teams (individual or cross functional teams), creation of performance evaluation and reward systems, implement green programs, for continuous improvement in the area of environmental management.

REFERENCES

1. Bansal, P. Hunter T. 2003. Strategic explanations for the early adoption of ISO 14001. *Journal of Business Ethics*, 46(3): 289-299.

2. Beard, C. and Rees S. (2000), "Green teams and the management of environmental change in a UK county council", *Environmental Management and Health*, Vol. 11, pp. 27-38.
3. Buck Surveys (2009), "Greening of HR Survey". Retrieved from http://buckimplementsgreen.com/pdfs/Go_Green_Survey.pdf
4. Daily, B. F. and Huang, S., (2001) "Achieving sustainability through attention to human resource factors in environmental management", *International Journal of Operations & Production Management*, Vol. 21, pp. 1539-1552.
5. Daily, B.F., Bishop, J., & Steiner R. (2007) , "The Mediating Role of EMS Teamwork as it pertains to HR Factors and Perceived Environmental Performance", *Journal of Applied Business Research*, Vol. 23 No. 1, pp. 95-109.
6. Govindarajulu, N. and Daily, B. F.(2004), "Motivating Employees for Environmental Improvement", *Industrial Management and Data Systems*, Vol. 104, pp. 364-372
7. Jabbour (2006), "Relationships between human resource dimensions and environmental management in companies: proposal of a model", *Journal of cleaner production*, Vol. 16, pp. 51-58
8. Jabbour et al.(2013) "Environmental management and operational performance in automotive companies in Brazil: The role of human resource management and lean manufacturing". *Journal of Cleaner Production*, 47, 129–140. doi:10.1016/j.jclepro.2012.07.010
9. Jabbour(2008) "Environmental management system and human resource practices: is there a link between them in four Brazilian companies?"
10. Jabbour, C. J. C. (2013a). Environmental training and environmental management maturity of Brazilian companies with ISO14001: empirical evidence. *Journal of Cleaner Production*, 1–8. doi:10.1016/j.jclepro.2013.10.039
11. Jabbour, C. J. C. (2013b). Environmental training in organizations: From a literature review to a framework for future research. *Resources, Conservation and Recycling*, 74, 144–155. doi:10.1016/j.resconrec.2012.12.017
12. Jabbour, C. J. C., & Santos, F. C. a. (2008). Relationships between human resource dimensions and environmental management in companies: proposal of a model. *Journal of Cleaner Production*, 16(1), 51–58. doi:10.1016/j.jclepro.2006.07.025
13. Jabbour, C. J. C., Santos, F. C. A., & Nagano, M. S. (2008). Environmental management system and human resource practices: is there a link between them in four Brazilian companies? *Journal of Cleaner Production*, 16(17), 1922–1925. doi:10.1016/j.jclepro.2008.02.004
14. Jabbour, C. J. C., Santos, F. C. A., Fonseca, S. A., & Nagano, M. S. (2013). Green teams: Understanding their roles in the environmental management of companies located in Brazil. *Journal of Cleaner Production*, 46, 58–66. doi:10.1016/j.jclepro.2012.09.018
15. Jabbour, C. J. C., Teixeira, A. A., Oliveira, J. H. C. De, & Soubihia, D. F. (2010). Managing environmental training in organizations: Theoretical review and proposal of a model. *Management of Environmental Quality: An International Journal*, 21(6), 830–844. doi:10.1108/1477783101107767
16. Kaur (2011) "Impact of Human Resource Factors on Perceived Environmental Performance: an Empirical Analysis of a Sample of ISO 14001 EMS Companies in Malaysia", *Journal of sustainable development*, Vol.4 No.1, pp. 211-223.
17. Kitazawa and Sarkis(2000)The relationship between ISO 14000 and continuous source reduction. *International Journal of Operations & Production Management*, 20(2): 225-248.
18. Massoud (2011) "Perceptions of environmental management systems: An examination of the Mexican manufacturing sector", *Industrial Management & Data Systems*, Vol. 111 No.1, pp. 5-19.
19. Padma, et. al (2008) "A study on the ISO 14000 certification and organizational performance of Indian manufacturing firms", *Benchmarking: An international journal*, Vol.15 No.1, pp.73-100.
20. Quazi's(1999) "Implementation of an environmental management system: The experience of companies operating in Singapore" *Industrial Management & Data Systems*, Vol. 99 No. 7, pp. 302-311.
21. Ramus and Steger (2000) "The Roles of Supervisory Support Behaviors and Environmental Policy in Employee "Eco initiatives" at Leading-Edge European Companies". *Academy of Management Journal*,43:4 605-626
22. Ramus,C.A. (2001), "Organizational support for employees: encouraging creative ideas for environmental sustainability", *California Management Review*, Vol. 43 No. 3, pp. 85-105.
23. Renwick et al(2008)"Green HRM: A review, process model, and research agenda", *Discussion Paper Series, University of Sheffield Management School*, The University of Sheffield
24. Rothenberg (2001) "Knowledge content and worker participation in environmental management", Working Paper, Rochester Institute of Technology, Rochester, NY.
25. Sarkis(2001). Manufacturing's role in corporate environment sustainability: concerns for the new millennium. *International Journal of Operations and Production Management* 21 (5/6), 666–686.
26. Unnikrishnan, S., & Hegde, D. S. (2007). Environmental training and cleaner production in

- Indian industry-A micro-level study. *Resources, Conservation and Recycling*, 50(4), 427–441. doi:10.1016/j.resconrec.2006.07.003
27. Uusi-Rauva and Nurkka (2010), “Effective internal environment-related communication An employee perspective”, *Corporate Communications: An International Journal*, Vol. 15 No. 3.
28. Wee, Y.S. and Quazi, H.A. (2005), “Development and validation of critical factors of environmental management”, *Industrial Management & Data Systems*, Vol. 105 No. 1, pp. 96-114.
29. Wehrmeyer (1997), “Greening people”, *Journal home, Greenleaf Publishing*, Vol.6 No. 1, pp 416.
30. Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1996), “The behavioral consequences of service quality”, *Journal of Marketing*, Vol. 60 No. 2, pp. 31-46.
31. Zutshi, A. & Sohal, A.S. (2004), “Environmental management system adoption by Australasian organisations: Part 1: Reasons, benefits and impediments”. *Technovation*, 24(4), 335–357. doi:10.1016/S0166-4972(02)00053-6

Table1.Measures of reliability

Construct	No. of items	Cronbach alpha
Top management commitment	07	0.85
Communication	06	0.90
Trainings	06	0.93
EMS Teams	04	0.90
Employee Involvement	05	0.85
Rewards	04	0.86
Green Programs	16	0.86
Environmental Performance	07	0.89

Table 2: Test results of independent sample t-test

		Sig.	t	Sig.(2-tailed)
Top Management commitment	Equal variances assumed	0.688	-1.006	.316
Env.Communication	-do-	0.940	-.265	.791
Env.Trainings	-do-	0.387	-.418	.676
Env.Teams	-do-	0.539	-.539	.591
Employee Involvement	-do-	0.460	-1.014	.312
Rewards	-do-	0.473	-.939	.349
Green Programs	-do-	0.351	-.828	.409
Env.performance	-do-	0.390	.714	.476

Table3: Test results of regression analysis

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.580 ^a	.336	.299	3.32009	1.818

a. Predictors: (Constant), GreenPrograms, Topmgtcommt, Env.Teams, Rewards, Env.trainings, Emp.Involvement, Env.communication

b. Dependent Variable: Env.Performance

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	697.853	7	99.693	9.044	.000 ^a
	Residual	1377.876	125	11.023		
	Total	2075.729	132			

a. Predictors: (Constant), GreenPrograms, Topmgmtcommt, Env.Teams, Rewards, Env.trainings, Emp.Involvement, Env.communication

b. Dependent Variable: Env.Performance

Variables	Standardized Beta	t	Sig	VIF
Top Management commitment	0.227	2.303	0.023	1.835
Env.Communication	-0.144	-1.075	0.284	3.375
Env.trainings	0.272	2.110	0.037	3.121
EMS teams	-.055	-0.470	0.639	2.561
Employee Involvement	-.022	-0.187	0.852	2.539
Rewards	.012	0.125	0.901	1.875
Green Programs	.419	4.751	.0000	1.465

Table 4: Results of Correlation matrix

	1	2	3	4	5	6	7
1.TopMgtCommt	1						
2.Env.Communication	0.652	1					
3.Env.trainings	0.442	0.759	1				
4.EMS teams	0.371	0.552	0.633	1			
5.Emp.Inv.	0.429	0.525	0.565	0.732	1		
6.Rewards	0.316	0.473	0.577	0.493	0.549	1	
7.Green Programs	0.322	0.374	0.375	0.401	0.449	0.510	1

Exogenous constructs	Environmental performance
TopMgtCommt	0.363
Env.Communication	0.332
Env.trainings	0.380
EMS teams	0.280
Emp.Inv.	0.309
Rewards	0.348
Green Programs	0.515