

Correlating Environmental Forces and Levels of Change in ISO-14001 Certified Companies

Dr. Anubhuti Gupta*
Dr. Shalini Srivastav**
Dr. Vikas Garg***

Abstract

India has approximately 3000 ISO-14001 certified companies spread over eight major industrial sectors like automobile, oil, power, textile, cement, manufacturing, consumer and service. A study carried out on few companies in each of these sectors has brought out that these companies have undergone major changes while adopting environmental management systems (ISO-14001) compared to non-ISO certified companies.

Adoption of Environmental Management System necessitates changes in the plant, technology, strategy, operations and the very philosophy of the organization and its successful implementation requires support from top management and cooperation from employees and customers. Depending upon the relative magnitude of these factors, a company takes initiatives to change to one of the four levels called selectively- reactive, reactive, pro-active and value seeking. This paper analyzes the relative strength of these factors on different ISO-14001 companies in India and finds out the levels of change achieved by them.

Keywords: Environmental system, ISO 14001, Change Management, Corporate Social Responsibility.

Introduction

The numbers of ISO-14001 certified companies in India have increased gradually from 138 in 2001 to approximately 3000 in 2010. ISO-14001 certification requires an organization to plan its activities in such a manner that reduces the adverse effect of its operation on the environment. The organization experiences environmental pressures forcing it to consume minimum natural resources, save energy at every stage as well as cause minimum damage to the environment. To achieve these objectives, an organization needs to introduce major changes in its plants, technology, processes and procedures. These changes are costly, time and resource consuming and full of uncertainties. An organization would adopt changes depending upon the strength of these pushing forces called pressures.

On the other hand, the very philosophy of environmental management system (ISO-14001) is based on reduction of wastages in raw material, energy and resources at every stage of production. Reduction in wastages amounts to generation of resources. Also, adoption of green initiatives reduces penalties as well entitles it to various national and international grants. By creating an image of a green company, an organization can extract environmental as well as economic benefits. Therefore, an organization is tempted to adopt changes under the influence of these motivating forces called benefits.

Apart from pressures and the benefits, other forces acting on an organization are the costs and support from management and the employee. As brought out earlier, change of plant and technology requires finances. Also, required technology may not be readily available. The change of procedures and processes may not be positively accepted by the managers as well as the employees. Therefore, management support towards meeting the costs as well as towards preparing managers and the employees for the successful change forms a critical factor in deciding the level of change in the company.

Review of literature and findings

There are researches in the current literature on the elements adding to fruitful ISO 14000 usage and advantages acquired through EMS certification. Chin et al. (1999) figured a proper model to assess achievement factors and created methodologies to actualize ISO 14001-based EMS. The model utilized logical progression process approach to play out the cost/advantage analysis. The discoveries inferred that EMS usage by assembling organizations would improve their natural execution and continue their aggressive position, paying little mind to the expenses acquired from its execution.

*Associate Professor, Amity Business school Amity University, Greater Noida, India

**Associate Professor, Amity Business school Amity University, Greater Noida, India

***Associate Professor, Amity Business school Amity University, Greater Noida, India

Quazi (1999) found that commitment from top management (TMC), teams for inter-departmental implementation, involvement of employee and stakeholder and focus on business needs were some of the critical success factors (CSFs) in ISO 14000 implementation.

Rondinelli and Vastag (2000) added to the proof about the potential preferences of ISO 14000 EMS for a plant that had been already performing admirably well environmentally. As indicated by them, when the organizations pursue the soul of these principles, ISO 14000 could give judicious rules to investment funds from waste reduction, pollution prevention and improved environmental quality.

Ball (2002) found that implementation of ISO 14000 appeared to be a greatly improved method for guiding the development business towards improved environmental performance. The discoveries additionally uncovered that issues, for example, sustainability, regionality and materiality, and ecological rebuilding were still to be addressed to.

A few authors studied the integration of ISO 14000 guidelines with other existing measures in a firm. Renzi and Cappelli (2000) broke down the likelihood of working out a coordinated quality-environment framework, likewise underlining its drawbacks and opportunities, with a specific Italian case. They reasoned that such coordination must concentrate on business the board improvement and on deliberate utilization of information getting from framework control, to accomplish high-advertise intensity.

According to Brio et al. (2001), for the most part, any quality management system that is different from ISO 9000 norms does not present synergies with the ISO 14000 norm. However, the existence of synergies between ISO 9000 and ISO 14000 is recognized because they have common procedures. The study also detected compatibilities between ISO 14000 and occupational risk prevention. Based on the results of descriptive analysis, they enunciated that the company's preferred to coalesce the standards, as there is a possibility of sharing documentation, sharing objectives and providing the system with more consistencies.

Brio and Junquera (2003) studied the influence of external pressure on obtaining ISO 14000 certification. They found that when managers perceive the influence of external environmental pressures as opportunities, more advanced environmental actions are implemented to obtain the certification.

Matias and Coelho (2002) underlined that not just the organizations expected to incorporate the ISO 9000, ISO 14000

and ISO 18001 standards (benchmarks for work related health and safety), yet additionally needed to incorporate ergonomics certification in the reconciliation. Motivations to get EMS certification and pitfalls in doing so have also been researched. Brio and Junquera (2003) considered the impact of outer weight on getting ISO 14000 confirmation. They found that when administrators see the impact of outside natural weights as circumstances, further developed ecological activities are actualized to get the confirmation.

Vastag (2004) completed out a research to distinguish the variables adding to the development of ISO 14000 accreditations and uncovered that at national dimension ISO 14000 affirmation densities could be clarified by the introduced base of ISO 9000 certificates and the quantity of natural arrangements marked and endorsed. The research likewise reasoned that ISO 14000 certification went a long ways behind ecological contemplations, and corporate picture assumed a significant job in the affirmation choices.

Factors Responsible for Causing Change in an Organization

Pressures

An organization resorts to change when subjected to external environmental pressures. According to the three pressure theory, an organization adopts change due to normative pressures (pressures from internal and external stake holders), coercive pressures (pressures from law enforcing agencies, local community and NGO's) or under mimetic pressures (need to follow the successful competitors). Lately a large number of organizations have become environmental conscious and are adopting environmental management as a part of corporate social responsibility (CSR). During a recent study, it was found that the environmental pressures faced by different industrial sectors vary in magnitude. The automobile sector faces high pressures as it is bound by stringent exhaust emission laws (Euro-IV). These laws are well defined and are very strictly enforced, for example every automobile manufacturer has to produce engines conforming to these laws and every customer has to get the pollution certification done once in 3/6 months. Similarly, the oil, power, textiles and cement industries also face high pressures. Oil industry has to invest heavily to prevent spillages. Power stations have to deal with the disposal of huge quantities of fly-ash. Chemical industries are to avoid excessive consumption of water as well as to resolve the problems of toxic wastes. Compared to this, electronics, manufacturing and service sectors face lower pressures. Electronics industry is mainly concerned with disposal of radio-active materials at the end of product life-cycle.

Benefits

An organization is motivated to adopt EMS as this brings in numerous benefits in the form of environmental and economic benefits.

Environmental benefits. An organization aims to reduce its risk to business by adhering to the laid down environmental laws. Reduction in air-liquid pollution reduces penalties on the organization. Additionally, the organization can seek grants from various national and international agencies. A green image of the organization reduces irk some visits from various agencies. Improvement in environmental performance through reduction of solid/liquid waste as well as in air and water pollution results in resource savings indirectly leading to resource generation.

Economic benefits. An organization is motivated to adopt green status as this opens up new markets for it. The present markets being global, an organization needs to design products for all markets. However, non-green products may not be allowed in developed countries. By making the product green, an organization is able to enter all such markets. A green product is sold at a premium and helps an organization to increase its profit margins and market share.

Automobile, power and electronics sectors have been able to extract high benefits. The Manufacturing sector is seen to experience moderate benefits while oil, cement and textile industries gain low benefits. Consequently, the motivating forces on these different sectors are also different.

Costs

As brought out earlier, to effect a change in the organization, major modifications in terms of plants, technology, procedures

and strategies is required. Change of plant is a costly proposition and requires considerable time. In certain cases new plants and technology may not be readily available or may require high amount of foreign exchange which may deter a management to effect this change. Change of plant and technology is normally accompanied by change in the policies, procedures and the skill level of the workers. This creates a feeling of uncertainty in the minds of employees who resist such changes.

The oil, cement and textile sectors incur high costs to effect the required changes while adopting EMS. On the other hand power, automobile, manufacturing, electronics and service sector incur moderate costs for adopting the required EMS.

Management Support

High costs of the equipment and technology along with uncertainty and chances of failure may deter a management to adopt required changes. The management also has to dispel the fears in the minds of employees regarding retrenchment; promotions etc and have to prepare them to meet the challenges of change. This needs strong support from the management to effect this change successfully. Lately, organizations have adopted EMS as a part of their corporate social responsibility (CSR).

Research model

On the basis of above discussions, the following model was adopted to assess the factors affecting change management in any organization:-

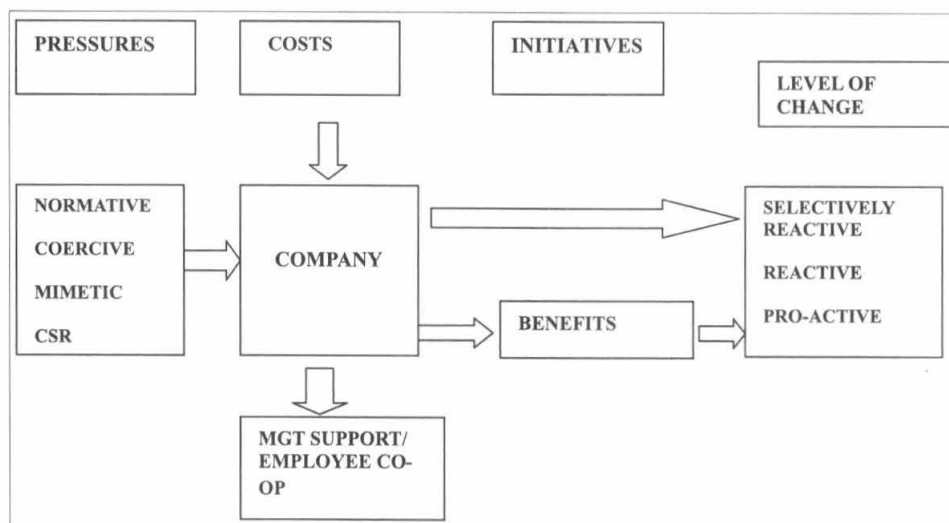


Figure1. Research Model

Depending upon the relative strengths of the above mentioned factors, an organization tends to achieve four different levels of change as shown below:-

Selectively Reactive :

Organizations which adheres to only those environmental laws which are strictly implemented and tries to by-pass the others. Commits minimal resources towards EMS. Actions are half-hearted without active management support. This is the lowest level of EMS. Practiced in under developed/developing countries.

Reactive :

Organizations which respond to the changing environmental laws. Commit minimum resources which are sufficient to escape serious penalties or risk to the closure of business. The EMS has some support from management as well as the employees.

Pro-Active :

Organizations which monitor the laid down environment laws and take actions in anticipation of likely changes. Commit sufficient funds for maintaining EMS. Has active support of management and full cooperation from employees.

Value-Seeking :

Organizations which undertake developmental activities to find innovative methods to reduce wastages in the consumption of

raw material, energy and other resources at every stage of life. Believe that investments in R&D would result in resource generation and value addition in the products. Seek to extract environmental and benefits through well developed EMS. This is the highest level of EMS practiced in developed nations.

Research Methodology

To ascertain the initiatives taken by ISO-14001 certified companies in India in the above eight industrial sectors, a study was carried out on 4- 5 companies in each sector during Jan-Sept 2018. The research methodology consisted of both primary and secondary research. Secondary research was carried out through the companies’ web sites and annual reports. The primary data was collected through personal interviews of top level managers.

Sample Size: 4-5 companies in each industrial sector were taken for carrying out this research. While selecting the above mentioned companies, care was taken to ensure that the group in each sector contains Indian companies, Joint venture companies as well as MNCs and thus constitutes a realistic sample. The details of companies along with the method used for studying are as explained.

Sector	No of Companies Surveyed	Method of Obtaining Data		
		Reports/Journals	Personal Visits	Discussions
Automobile	5	2(General Motors, Mahindra)	2(Honda-SIEL Power Products Limited , Maruti Udyog Limited)	1(Tata Motors)
Power	4	3(Reliance, Tata -Powers, JSW Energy)	1(National Thermal Power Corporation (NTPC(Dadri))	
Oil	4	4 [Oil and Natural Gas Corporation (ONGC),RIL(Reliance industries Limited),BP(Bharat Petroleum),IOC(Indian Oil Corporations Limited)]	-	-
Chemical	4	3(Arvind,Raymond,Bombay Dying)	1(U-Flex,Noida	-
Cement	5	5(ACC Limited ,Shree Dalmia, Ambuja and JK Cement)	-	-
Electronics	4	2(Samsung, Videocon)	1 LG (Gr.Noida)	1(Videocon)
Manufacturing	4	2(Cummins, Sarita Fabrics)	1(HUL, New Delhi)	1
Service	5	2(ITC,SOTC)	2(SBI, Headstrong)	1

Table-2: DETAILS OF COMPANIES SURVEYED

Initiatives taken by Companies

The summary of the initiatives taken by various ISO-14001

certified companies in the above eight industrial sectors are placed at Table-3.

Automobile	Oil & Petroleum	Power	Cement
Reduction in Exhaust Emission	Controlling oil spillage	Reduction in CO ₂	Restoration of land destroyed due to mining
Reduction in air, water, energy and material consumption	Restoration of Contaminated soil	Reduction of air, water and energy during power generation	Reduction in air pollution created during cement production
Waste Handling	Conservation of Energy	Disposal of large quantities of Fly-Ash	Reduction in energy consumption
Locating dealers in close proximity	Waste minimization	Pollution reduction during coal transportation	Power generation from agriculture waste or fossil fuel
Use of solar and wind energy	Use of wind and solar energy	Optimization of Processes	Use of solar and Wind Energy
Product Recycling	Use of water as input to cement industry	Closed conveyer belt for coal transportation	Use of waste of other industry
Textiles	Electronics	Manufacturing	Services
Reduce Water Consumption	Reuse, Repair, and recycle material at End of Life	Reuse, Repair, and recycle material at End of Life	Encourage use of electronic Media like SMS at Bank
Treatment of Solid and Liquid before Disposal	Reduce Use of toxic and hazardous materials	Reduction in the components and material	Option to work from home(IT Industry)
Reduction in chimney exhaust which is carcinogenic	Proper disposal of unserviceable radio active materials	Lean/ JIT inventory Modular design with reusable components	Tourism promotion through E -Mails, Group Travels, Tourism Industry
Reduction in Environmental Pollution	Treatment of empty ink cartridges	Use of bio -degradable material in construction	Control of electricity in hotels (key used to unlock doors)
Reduction in water consumption during cotton growth	Reduction in energy ion during production. Use of solar/wind energy.	Reduction in energy during production. Use of solar and wind energy.	Automatic switching to stand by mode of computers when not in use(saves energy)
Reduction in use of dyes and bleaching material	Reduction in the use of components and material	Reduction in air, water, energy and material consumption	Sustainable buildings using natural light. Use of solar energy.
Reduction in the use of detergents/lubricants	Increased use of green marketing	Treatment of air and water before disposal	

TABLE3. INITIATIVES TAKEN BY VARIOUS COMPANIES

Correlation between External Forces and the Levels of Change

The table given below highlights the correlation between various forces acting on companies operating in different sectors and the level of change achieved.

Pressures	Benefits	Costs	Management Support	Level	Type of Sector
High	High	Low	High	Value Seeking	Automobile, Electronics
High	Low	Low	High	Pro-active	Oil, Power, Cement, Textiles
Medium	Medium	Medium	Medium	Reactive	Manufacturing Service
Low	Low	High	Low	Selectively-reactive	Industries in under developed Nations

TABLE 4: CORRELATION BETWEEN VARIOUS FORCES ACTING ON COMPANIES AND THE LEVEL OF CHANGE ACHIEVED

Findings

This research has brought out following conclusions:-

- a) There are wide variations in the change management efforts taken by different companies in different industrial sectors. The relative strength of forces acting on the organization determines the levels of change achieved by the organization.
- b) The change management efforts differ from company to company even in the same industrial sector.
- c) Change management is more successful in companies which are subjected to higher pressures, specially the coercive pressures.
- d) Management support for change is stronger in companies where economic and environmental benefits are higher.
- e) Companies subjected to low pressures as well as having low economic benefits show resistance to change management.
- f) High costs of change and delay in procurement of technology deters a company to go in for change management.
- g) A successful change management is possible only with proper training and cooperation of employees and support of customers.

Recommendations

- a) The study has been carried out on limited samples in each category. The findings of this study will help in formulating a suitable questionnaire.
- b) The study need to be extended to at-least 40-50 samples in each sector and the findings need to be proved through suitable null hypothesis.

Conclusion

The adoption of green initiatives by various industrial sectors in India has been gradual. A large number of industrial sectors except those eight listed sectors are subjected to moderate to low pressures. Also majority of the industrial sectors except these eight have not been able to extract substantial benefits by adopting green initiatives. Consequently, majority of the organizations have generally changed slowly.

On the other hand, the eight industrial sectors discussed above have been subjected to moderate to high pressures, have

extracted similar benefits and thus have been strongly supported by their managements. This has resulted in major changes in them whose degree varies between selectively reactive to value seeking.

However, it is clear that by suitably changing these parameters for other industrial sectors, it is possible to effect similar changes in them which can get them both environmental and economic benefits.

References

1. Chin, K.S., Chiu, S. and Tummala, V.M.R. (1999), "An evaluation of success factors using the AHP to implement ISO 14001 based EMS", *International Journal of Quality & Reliability Management*, Vol. 16 No. 4, pp. 341-61.
2. Quazi, H.A. (1999), "Implementation of an environmental management system: experience of companies operating in Singapore", *Industrial Management & Data Systems*, Vol. 99 Nos 7/8, pp. 302-11.
3. Rondinelli, D. and Vastag, G. (2000), "Panacea, common sense, or just a label? The value of ISO 14001 environmental management systems", *European Management Journal*, Vol. 16 No. 4, pp. 499-510.
4. Ball, J. (2002), "Can ISO 14000 and eco-labeling turn the construction industry green?", *Building and Environment*, Vol. 37 No. 4, pp. 421-8.
5. Renzi, M.F. and Cappelli, L. (2000), "Integration between ISO 9000 and ISO 14000: Opportunities and limits", *Total Quality Management*, Vol. 11 Nos 4/5/6, pp. 849-56.
6. Brio, J.A.D., Fernandez, E., Junquera, B. and Vazquez, C.J. (2001), "Joint adoption of ISO 14000-ISO 9000 occupational risk prevention practices in Spanish industrial companies: a descriptive study", *Total Quality Management*, Vol. 12 No. 6, pp. 669-86.
7. Matias, J.C.D.O. and Coelho, D.A. (2002), "The integration of the standards, systems of quality management, environmental management and occupational health and safety Management", *International Journal of Production Research*, Vol. 40 No. 15, pp. 3857-66.
8. Brio, J.A.D. and Junquera, B. (2003), "Influence of the perception of the external environmental pressures on obtaining the ISO 14001 standard in Spanish industrial companies", *International Journal of Production Research*, Vol. 41 No. 2, pp. 337-48.
9. Vastag, G. (2004), "Revisiting ISO 14000 diffusion: a new look at the drivers of certification", *Production and Operations Management*, Vol. 13 No. 3, pp. 260-7.