

# An Analysis of Drivers Affecting the Implementation of Environmental Management System in Indian Automotive Industries



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**Abstract:** Due to various government regulations and many other environmental related problems industries have to focus on these issues if they want to make business in the competitive market. Implementation and certification of Environmental Management System (EMS) is very important for industries as it will help to remove many environmental related issues and for sustainable development. Environmental related issues play different role in developed and developing countries. Developed countries have set up their own environmental standards and regulations which should be fulfilled by industries of other countries to have business with them. Regulatory pressure play important role to save environment but other factors like customer awareness, competitor's pressure, societal pressure etc. are also important. Environmental issues related to automotive sectors need appropriate investigations in developing countries. Various drivers which create pressure on companies to adopt EMS practices are identified by extensive literature review which is the main objective of this paper. It includes providing a background on related concepts, literature review on various environment related issues and the concluding remarks for this review to save environment to some extent.

**Keywords:** Regulatory Pressure, Sustainable development, Environmental management system, Environmental issues.

## I. INTRODUCTION

World is facing severe environmental problems due to industrial revolution and advancement in automotive sectors of various countries. To fight with these problems all countries made numbers of legislations according to their needs. In addition to this environmental legislations, government regulations, customer pressure etc. organizations need to reduce various environmental related issues of their products by developing advanced strategies. Many countries have already taken initiatives to minimize the production of hazardous waste to comply with government rule and regulations.

The first environment related standard was made in 1996 to show environmental awareness and motivations. ISO established its ISO14000 environmental series standard in this year which aims at the environmental issues of the industries / organizations. Under ISO 14000 standard, organizations are audited and only those organizations are given ISO 14000 certifications which meets its requirements. ISO 14001 certified an organization fulfills various requirements of government and they can improve their image by advertising ecofriendly products. ISO14000 certified companies can take competitive advantage over their competitors in this way. Environmental Protection Agency's (EPA) and many other external agencies have stressed on reduction of hazardous waste. Environmental management system standard (ISO 14001) is already implemented by more than 40,000 companies in china which is a big initiative for environment protection. Due to raising awareness about environmental issues various EMS related research are getting attention nowadays. In this paper EMS drivers are identified through literature review on global point of view. Reducing cost and maximizing profits is the main attention of manufacturer in developing countries by taking care of various environmental related issues. This paper mainly focuses on identification of important drivers which are necessary for implementing EMS practices in Indian automotive industries.

## 2. Literature Review

Many researchers of this field have focused on Environmental Management System over the past few decades that make EMS as important research topic nowadays. The first automotive manufacturing plant in Europe which has implemented environment management system is Volkswagen in 1995. Most of industries of developed countries will focus on Design For Environment (DFE) activities and invest a big portion of their budget in these activities in order to make ecofriendly products. They have already implemented the EMS to cope with government regulations, customer demands and to remain competitive in market but industries of developing countries have started implementing it by imposing various legislative rules and regulations of environment.

### 2.1 Literature review on drivers of Environmental Management System Implementation

In the last few decades India's economy has grown rapidly due to industrialization and created many environment related problems.

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In this particular scenario to minimize these problems environmental management system (EMS) play important role in various industries and becomes an arising research field nowadays. EMS addresses various environmental issues, efficient resource utilization from start of product manufacturing to that of finishing point. Old EMS practices will have to be updated as per the government requirement time to time to get competitive advantage in the market. It will also help to increase sales by green labeling of ecofriendly product which in turn improves the image of firm. Strict environmental emission norms from various authorities will force automotive industries to produce eco friendly products to remain in business. Henriques and Sadorsky (1996) found customer pressure and regulatory pressure as most significant drivers for adopting an environmental plan in any industrial firm. Driver customer pressure stand on second position after regulatory pressure. According to Sarkis (1998) various green manufacturing practices are life cycle analysis, total quality management, ISO14000 standards, design for environment and green supply chain management. Bansal and Roth (2000) identified competitiveness, social responsibility and legitimation as three basic environmental motivations that lead firms to achieve ecological responsive initiatives focusing on minimizing firms impacts on natural environment. Bowen (2000) found positive and significant correlation by developing various relationships between environmental performance and firm size by reviewing related research work. He also told that comprehensive EMP is found in larger firms having more resources as compared to smaller firms. Chirstmann and Taylor (2001) focused on Chinese industrial sector in his research and found foreign business market as main drivers for improving the environment performance. Coglianese and Nash (2001) reported that adoption of proactive environmental practices will be greatly influenced by important determinants like top management, shareholders and employees as they create internal pressure on firms. They also reported that most of environmental related studies do not explain the reason why firms choose different environmental strategies with the firms engaging with similar group of stakeholders. Delmas (2002) focused on the importance of regulatory authorities to adopt ISO 14001 while making decision about environmental issues, as government bodies are most obvious stakeholder and it can force organizations to get aware from environmental regulations. Benarjee et al., (2003) found that when regulatory pressure, public concern and environmental orientation combines with each other then it will become an important driver of firm's environmental strategy. Melnyk et al., (2003) identified that environmental benefits are considered as first and main outcome of any EMS practice. It may also like to bring significant changes in an organization's operations, performance and its strategic decisions. The impact of producing environmentally sound products on firm performance has basically examined in environmental, social and market areas. Sarkis et al., (2003) evaluated comprehensiveness of adopted environmental practices according to plan-do-check-act (PDCA) model by using integrated effect of

policy planning, implementation, checking and taking corrective actions. Delmas and Toffels (2004) found that effectiveness of adopted EMS policies will be clearly explained by different type of market pressures as compared to various non-market pressures. so, overall environmental performance of the firm have significant positive effect from market pressure because to take competitive advantage in business, every firm needs to present green image to attract consumers.

Zutshi and Sohal (2004) recognized that success and continuity of EMS related activities will depend on management leadership, related training, process analysis, management support etc. They also told that role of top management is very important to understand various environmental issues of organisation and they assure to realize these issues in their system. Potoski and Prakash (2005) confirmed that government regulations and enforcement are the drivers which significantly affect firm's environmental policy. Various regulations and legislations of government made for environmental protection will force firms to be more environmentally sound.

Gonzalez Benito and Gonzalez Banito (2006) summarized different factors in to three groups (Firm characteristics, External factors and stakeholder's pressure) to understand various drivers. They suggested that pressure exerted by various stakeholders will be the fundamental and centre of all other factors and argued that variables of other factors will affect either its intensity or firm capacity to perceive this factor. According to Zhu and Sarkis (2006) it is necessary for companies to eliminate various environmental hazards while making their products to sustain their market. Etzion (2007) focused on company size, stakeholder pressure and environmental regulations and found that these are interrelated drivers which are mostly discussed in EMS related research. He also told that most of the researchers explained various environmental related issues using their own theories and models. This has created difficulties in synthesizing and collecting various theories that they have developed. Zhu et al. (2007) identified market pressure as the most effective driver in Chinese automotive supply chain to adopt green manufacturing. According to Miller et al. (2008) period between 1970 to 1984 is called "Compliance Era" as many environmental rule and regulations are made in this period. Few countries like USA, Japan, and European Union were already motivated towards environmental issues and taken initiatives to protect environment from these issues.

Johnstone and Lebonne (2009) found that all firms need to implement EMS practices to increase their environmental performance and their image by producing eco friendly products. They also investigated various motivations which play important role in adopting EMS practices in seven countries. Darnall et al., (2010) suggested that firms need to develop various capabilities to comply with regulations of different sectors. it will help them to compete in foreign business markets. So, if any firm wants to have business with international market, they need to adopt various EMS practices.

Massoud et al., (2010) found economical and organizational factors as most significant in their research while identifying various barriers to implement ISO 14001 in developing countries.

Luthra et al. (2011) identified various barriers faced by Indian automotive industries to implement Green strategies. These are market competition, lack of green practice implementation, cost implications, unawareness of customers about environmental issues, lack of government support, lack of organization encouragement, resistances to adopt advance technology , lack of skilled manpower etc.

Pandya and Mavani (2012) found that many pharmaceutical companies in Gujarat state are forced to implement green manufacturing practices by environmental regulations, suppliers, consumers and community stakeholders etc.

Prajogo et al., (2012) explained comprehensively the benefits and motives of implementing ISO 14001 in New Zealand and Australian enterprises. They worked on enterprises adopted EMS practices for environmental, social and market benefits and indicated that various aspects of benefits have different results with internal and external motives. Bhoon and Narwal (2013) analysed various drivers for implementing green manufacturing strategies in Indian industries. They identified employee’s motivation, Government rules & regulations, customer awareness, health & Safety of employees, organizational capabilities and awareness etc. as important and crucial drivers for adoption of green manufacturing strategies.

Khanna and Liao (2014) told that strong environmental groups and environmentally aware citizens will create public pressure to undertake environmental improvements in firms of developing countries (especially in SME sector). SME sector is facing this problem due to lack in technology, capital investment and lack of knowledge to take control measures about environmental problems. Singh et al., (2014) identified important factors which create pressure to

adopt environmental management practices in Indian firms and found shareholders, employees and market pressures as significant factors.

Chang and Sam (2015) found that numbers of environmental patents were significantly increased by adopting proactive environmental practices in manufacturing sectors that make proactive environmentalism as a catalyst for investment in cleaner technologies. Massoud et al., (2015) investigated various drivers and barriers in the Lebanese pharmaceutical industries while implementing ISO 14001 and found that regulatory frameworks and enforcement is required for proper implementation of these practices. Sunil Dhull and M.S. Narwal (2016) identified various drivers and barriers of green manufacturing adaptation and found that in manufacturing sector of developing countries number of environmental issues are not properly investigated.

**2.2 Various drivers to implement environmental management system in automotive industries.**

Drivers of Environmental management system are defined as various factors which motivate organisations to minimize various environmental hazards produced by them to protect environment from various problems. Numbers of motivations are there which creates pressure to implement EMS practices on firms. Due to industrialization, our environment is facing number of problems like water pollution, air pollution, waste related problems, noise pollution etc. In order to minimize these problems number of policies and regulations are developed by the governments of all countries due to which most of companies throughout world have begun to become environmentally conscious. Stakeholders, employees, trade associations, neighborhood occupants etc. also affect company’s environmental policies and their operations in addition to government regulations.

**List of Various Drivers identified from the literature review for the Implementation of Environmental Management System in automotive industries (EMS)**

Sr. No.	Drivers	Description
1.	Corporate headquarters	Exerts pressure on company management to adopt EMS practices for benefits of the firm.
2.	Shareholders	Exerts pressure on the company to be environmentally responsive if they are aware of financial liabilities associated with poor environmental performance and benefits of adopting environmental management system practices.
3.	Non-management employees	Will help to fulfill the commitment of management employees related to environmental strategy.
4.	Environmental Policies of Firm	Firms Internal Environmental policies will motivate employees and workers to make firm environmentally responsive.
5.	Cost of disposal of harmful material	As adoption of EMS practices improves environmental performance; it will help to reduce the cost of disposing harmful material which in turn will create economic opportunities for the firm.
6.	Regulatory pressure	It involves legal mandate for organizations to use pollution control technologies, concerns about pollution limits and their pollution emissions reports. organizations which fails to comply with these regulations may risk legal sanction, operating permits including fines and penalties.
7.	Improvement in firm performance are easily adopted and	Most of companies adopt those green practices which



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8.	Customer Pressure	improve the firm performance of firm. Demands of customer will create pressure on company to make eco- friendly products .
9.	Central Govt. Environmental regulations	Central government rule and regulations may be different from state government but company have to comply with both.
10.	Regional Environmental regulations	Regional environmental regulations may be different form central government regulations as the above case.
11.	Legislative Regulatory of compliance	Compliance with legal regulations also create pressure on firms to implement environmental management system.
12.	ISO 14001 certification	Adaptation of Environment Management system is necessary in most cases for those companies who wish to take ISO 14001 certification which is a basic requirement in today's business scenario.
13.	Foreign market Regulations	Foreign market regulations may create pressures on the company to comply with them as their regulation may differ from national regulations.
14.	Taking competitive advantages	Firms producing eco friendly vehicles may take competitive advantages in market by advertising it among customers.
15.	Competitors green strategies	Number of adopted EMS Practices play important role to compete with core competitors in market.
16.	Potential to receive publicity by green	Firms may take the benefits of increased publicity by advertising their eco friendly products and services.
17.	Company size	It is the most structural driver and related to number of employees or turnover. it also affect the implementation of various green practices in the firm.
18.	Business sector	This driver will focus on different polluting potential of industries for which they are subjected to various polluting control measures and scrutiny by various drivers.
19.	Age of firm	Older firms are less willing to adopt EMS practices compared to younger firms as they find it difficult to utilize capital equipments and mature technologies.
20.	Internationalization	Forming part of international business will exerts more pressure to implement EMS practices as international market requires environmental friendly products.
21.	Managerial attitude and motivations	Commitment and support of top management is an important factor while implementing EMS practices in industries.
22.	Strategies attitude of firm towards environmental issues	Company's strategic attitude is closely related to adoption of EMS practices because product sale and benefits were depend on this driver.
23.	Geographical location	The location of production facility will be greatly depends on environmental regulations and social pressure. management decide location of company only after being complied with government regulations and social pressure otherwise it will have to shift from one location to another.
24.	Industry concentration	As per industry concentration is considered, most concentrated sectors are have less willing for environmental investment so they may take more benefits by adopting EMS practices.
25.	Environmental risk	This driver will focus on related damage to environment caused by company's product. for example oil, chemical, paper industries are sector with poorest environmental performance and greatest environmental risk.
26.	Industry self regulations	Industry self regulations play important role to comply with many regulators.
27.	Market pressure	Pressure from market will also create pressure to produce ecofriendly products to remain in the market with competition.
28.	Resource availability implementation of	Availability of resources will positively affects the environmental practices.



- 29. Age of EMS  
It focus on the time period of adopted EMS practices. if it is too early adopted then it needs to be revised, so age of EMS also creates pressure on the firm to implement latest EMS practices.
- 30. Nature of corporate ownership  
Whether the company is of private sector or is having government collaboration. Both receive different pressure from various regulators.
- 31. State of EMS  
It means "what is the status of ISO 14001 in the company?" either formal or informal. Creates pressure on the firm to get formal certified EMS.
- 32. Better Disposal of waste streams  
Disposal of waste stream is big problem for industries. This problem can be removed by implementing EMS practices.
- 33. Green building certification  
This will also create pressure on industries to go green. It is also a part of EMS practices.
- 34. Conservation of natural resources  
Main purpose of implementing EMS practices is to save environment and to conserve the natural resources. It can be done by producing eco friendly products to some extent.
- 35. Decrease in waste materials  
The cost associated with waste material and there disposal is very high. To reduce this cost firm needs to have minimum waste materials which can be done by implementing EMS practices.
- 36. Low insurance premium  
Firm which adopt EMS practices have to bear low insurance premium as they get relaxation in premium compared to those not adopting EMS strategies.
- 37. Government Support / Encouragement  
It will exerts pressure on industries to go green and to get EMS certification.
- 38. Environmental Subsidies by Government  
Various subsidies given by government to firms adopting EMS certification will force them to implement the same.
- 39. For getting operational benefits  
Implementation of EMS practices will focus on Ecofriendly technology and processes which in turn give the operational and economic benefits to the firm.
- 40. Societal Pressure  
Various environment related pressure from society will force the firm to implement EMS practices.

This is the list of various drivers which are identified from literature review. These drivers create pressure on automotive industries to implement Environmental management system. Some drivers from above list are removed after the brainstorming as they are already included in other driver or they are not discussed by number of authors. After brainstorming and experts opinion from industries final list of drivers is made which include twenty numbers of drivers. These drivers are important drivers which motivate industries to implement environmental management system.

**Final list of drivers for implementation of EMS in automotive industries**

Sr. No.	Name of driver	Sr. No.	Name of driver
1.	Corporate headquarters	11.	Potential to receive publicity by green image of products
2.	Shareholders	12.	Company size
3.	Environmental policies if firms	13.	Age of firm
4.	Cost of disposal of harmful materials	14.	Managerial attitude and motivations
5.	Customer pressure / market pressure	15.	Resources availability
6.	Central government rule and regulations	16.	Better disposal of waste streams

7.	Regional environmental regulations	17.	Conservation of natural resources
8.	Legislative regulatory of compliances	18.	Decrease in waste material
9.	Foreign market regulations	19.	Govt. support / encouragement
10.	Competitors green strategies	20.	Societal pressure

**II. CONCLUSION**

Various drivers of EMS which can have impacts on environment performance of automotive industries are reviewed and identified in this paper. It may be a step towards better understanding various EMS related researches. Also consciousness about the environment has increased in recent years which is an encouraging step towards environment related issues. In order to prevent environment from various problems many resource conservation act and waste minimization act are made by government (Financial Express, 7th April 2015) recently. Government also issued new quality index in some cities of country.

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Even though important drivers are identified in this paper, many researchers working in this area may further review and study these factors in the industries to help them in adopting EMS. This paper can become a good foundation for researchers want to work in this area and can help them to find various industries which are adopting or not adopting EMS. Various tools and methodologies can be considered and used to explore the EMS practices. Due to increased awareness about environmental concern significant research and development activities may be carried out to get more benefits of EMS. This makes environmental-based organizational research fields as an important research area.

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