

DRIVERS OF ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM IN INDIAN MANUFACTURING FACILITIES: INSTITUTIONAL PERSPECTIVE

Heena Sunil Oza

Associate Professor at SPB English Medium College of Commerce, Surat, India

ABSTRACT

Responding to the need for business firms to be environmentally responsive, many Voluntary Environmental Programs (VEPs) are practiced by business firms. ISO 14001 is one of the most widely VEP meant for improving environmental performance by business firms. India is one of the top ten countries in the world in the adoption of ISO 14001 standard. However the empirical research on drivers for adoption of the standard in India is missing. This paper, identifying the research gap, studies the external drivers for adoption of ISO 14001 standard by manufacturing facilities in India taking institutional theory lens. Institutional theory explains that organizations operating within similar social frameworks or norms, values and assumption often behave similarly to gain social approval known as institutional isomorphism. The findings from 150 respondents from 144 manufacturing facilities support that institutional isomorphism plays an important role in adoption of ISO 14001.

Key words: Coercive Pressure, Drivers of Adoption of ISO 14001, India, Institutional Theory, Institutional Isomorphism, ISO 14001, Mimetic Pressure, Normative Pressure.

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1. INTRODUCTION

Industrial revolution brought commendable economic development and improvement in living conditions of people but at the same time brought environmental degradation, depletion of natural resources, and pollution to a great extent posing a big challenge of environmentally sustainable business practices. Responding to the need of making the business practices environmentally sustainable, apart from regulatory provisions, many voluntary environmental programs (VEPs) are available.

One of the most widely used such VEP is ISO 14001 standard. It is an international standard for environmental management system applicable to business firm of any size. India with 7725

number of ISO 14001 certificates in year 2016 (www.iso.org) is one of the top ten countries in the world in adoption of ISO 14001 standard. The core purpose of ISO 14001 standard is to improve environmental performance. The genesis of ISO 14001 is in international trade to ensure trade of environmentally safe products and therefore it leads to believe that external forces like market pressures due to export and globalization of trade leads to adoption of ISO 14001 in India. There are many other external pressures like regulatory pressures, pressures from media and NGO can lead to adoption of the standard. The purpose of this paper to know empirically the external drivers for adoption of ISO 14001 standard by manufacturing facilities in India taking institutional theory as lens. Delmas and Montes- Sacho (2011) remarked that the various institutional pressures are country specific and therefore needs to be studied in Indian context.

2. DRIVERS FOR ADOPTION OF ISO 14001

2.1. Institutional Theory

Institutionalization involves “the process by which social processes, obligations or actualities come to take on a rule like status in social thought and action”. (Mayer and Rowan 1977: 41). Tolbert and Zucker (1996) have suggested three basic stages of institutionalization of a management practice namely pre-institutionalization, semi-institutionalization and full institutionalization. In this typology, the pre-institutionalization stage is characterized by few adopters and by limited knowledge about the practice, in semi-institutionalization stage, the practice is fairly diffused but not yet permanent and stable and, in the third and final stage of full institutionalization, the practice is said to have become taken for granted by members of a social group as necessary. (Abrahamson and Fairchild 1999, Tolbert and Zucker 1996 in Delmas and Montes- Sacho (2011).

The ISO 14001 diffusion data show that it reached 3,46,147 number of certification in the year 2016 since its issue for the first time in the year 1996. The period of 1996-2000 can be considered the take-off period, whereas the period of 2001-2006 can be considered the semi-institutionalization period. (Delmas and. Montes-Sancho (2011) and the period from year 2006 therefore as full institutionalization stage.

Tolbert & Zucker (1996) argue that the movement toward a more permanent and widespread status rests heavily on what the authors call the "objectification" that accompanies the diffusion of a management practice. According to these authors, objectification involves the development of some degree of social consensus among organizational decision makers concerning the value of a practice, and the increasing adoption by organizations on the basis of that consensus. Institutional theory explains that organizations operating within similar social frameworks or norms, values and assumption often behave similarly to gain social approval (Meyer & Rowan 1977; Scott 2001 in Delmas and. Montes-Sancho (2011). The concept that best captures the process of homogenization is isomorphism. It is a process that forces one unit in a population to resemble other units that face the same set of environmental conditions. There are three mechanisms of institutional isomorphic change, namely coercive, normative and mimetic pressures (DiMaggio and Powell 1983).

2.2. Mimetic pressures

Mimetic pressures arise when organizational environments are poorly understood. To cope with environmental ambiguity, organizations are likely to imitate other successful organizations in their field (DiMaggio and Powell 1983). In other words it is adopted due to market forces (Liu et. al. 2010) ; The empirical findings show that diffusion of ISO 14001 was from west to east due to supply chain dynamics and change in the volume of total exports (To, W.M. Lee, P.K.C.

2014). Zhu et.al. (2013) study for China found that manufacturing organizations experiencing internationalization with a greater extent of adopting ESCM practices. The other market forces include - supply chain pressures from MNC asking supplier companies in developed countries to adopt ISO 14001 standard ; international customers from developed countries demanding ISO 14001 certification in developed countries especially while importing from developing countries (Nishitani 2010) ; the demand for environmentally safe products in international trade by GATT / WTI (Sawhney 2012) ; entry in international operations, global connections (Sandhu et. al. 2012)

The first objective of study therefore is know whether mimetic pressures play role in adoption of adoption of ISO 14001 for manufacturing facilities in India?

2.3. Coercive Pressures

Finding from developed countries show that regulatory pressures played an important role in adoption of ISO 14001. In the context of developed countries regulations are often better developed , and more importantly better enforced, and are often cited as as a driver of for level one corporate environmentalism (Sharma and Henriques 2005 in Sandhu et.al. 2012). Delmas and Montes- Sacho (2010) remarked that regulative or coercive pressures tend to havr greater impact on the adoption of ISO 14001 in the initial phase of diffusion but fade over time, whereas normative and cognitive forces become more prominent for adoption of ISO 14001.

Sandhu et.al (2012; p 212) remarked that in the absence of regulatory enforcement, regulations are not reported as a drivers for corporate environmental responsiveness in India. The findings from developing countries view point done in Maxico by Allen Blackman (2011) show that plants recently fined by environmental regulators were more likely to be certified, all other things equal, but that certified plants were subsequently fined just as often as similar uncertified plants. These results suggest that in Mexico, the ISO 14001 program attracts dirty plants under pressure from regulators—not just relatively clean ones—but does not have a large, lasting impact on their regulatory compliance. However study by Liu Yong (2009) showed that that pressure from the governmental regulation was the most important factor on environmental defensive behaviour of firms in China. In similar findings from study in Ethopia by Fikru (2014) the results also indicated that pressure from the governmental regulation was the most important factor on environmental defensive behaviour of firms. In case of India, India has been the first country in the world that made environmental protection a fundamental constitutional duty of every citizen in the year 1976. There after number of environmental regulations are enacted for pollution control, energy savings, and life cycle assessment and so on. Also to encourage the consumption of natural resources, water and energy there are number of provision –like energy audit, star rating of products, and responsible care program of chemical industries and so on.

Therefore, the second objective is to know whether coercive pressures play role in adoption of ISO 14001 for manufacturing facilities in India.

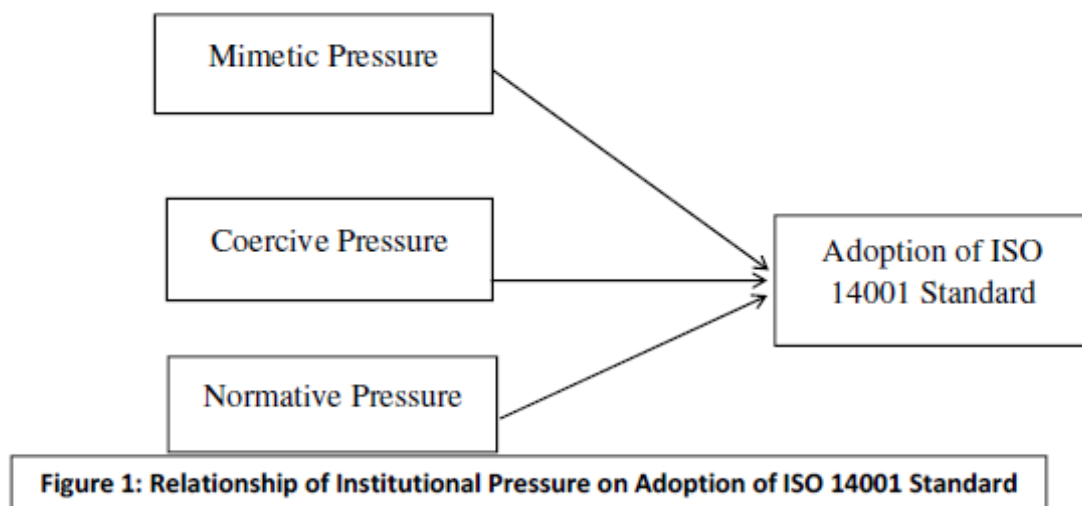
2.4. Normative pressures

Normative pressures primarily emerge from educational processes and professional network (Dimaggio and Powell 1983) Academic institutions such as universities and colleges train managers and staff to follow socially legitimate values and norms. Professional networks such as professional associations and industry trade associations spread taken for granted values and norms to their member organizations and this contributes to shaping organizational structures and behaviours. (Baek 2014); The professionalism spread through education institutions, employees association. Trade association , media, local community play a role in adoption of ISO 14001 ; Delmas and Montes-Sancho (2010) remarked that in the later phases of diffusion

of ISO 14001, normative forces, such as the diffusion of other management standards, as well as factors related to trade, play a more important role.

The findings from study by Liu (2009) for China show that pressure from community and NGOs was the most important factor on their environmental enthusiastic behaviour. Fikru's (2014) study showed that sources of finance such as credit from local banks or local customers, and manager's human capital as significant determinants of IC in Ethiopia.

The third objective of the study is to know whether normative pressures play role in adoption of adoption of ISO 14001 for manufacturing facilities in India?



3. RESEARCH METHODOLOGY

The data is used from a Survey made to collect empirical data by way of questionnaire. The Questionnaire included 41 statements to know the drivers, the EMS practices and EMS performance from manufacturing facilities in India during December 2017 to mid-April 2018 along with other demographic details of manufacturing facilities.

4. MEASUREMENT

The external drivers were identified by extensive literature review and the measurement instruments of prior studies. For external drivers ten statements were included in the questionnaire. The response was requested to know “the extent to which the each factor have influenced your unit’s focus on environmental issues”, asking the response on 5 point Likert scale where “No Influence at all” =1; “No influence” =2; “Neutral” = 3; “Influence to some extent” =4 and “Influence to great extent” =5 scale was assigned. The ten statement included were : Compliance with national / state regulations^{a,b,c,d}; Compliance with national/ state resource savings and conservation regulations^a ; Pressures from international customers / partners /clients / suppliers with respect to environmental issues^d ; Pressures from domestic customers / partners /clients / suppliers with respect to environmental issues^d ; Competition in the industry / The green strategies of competitors^{a,b,d} ; Benchmarking of the best practices at global level^c ; Our company’s International connections by way of head office/ subsidiaries / export / first chain suppliers to MNCs^e ; The extent of media focus/ NGO / neighbourhood on our unit / industry^{a,c,d} ; The legitimization of our unit’s activities^a and To meet the requirements of Banks/ Financial institutions / Insurance Companies^d. (The statements adopted from various prior studies are marked as ^{a,b,c,d,e} where ^a= Phan and Baird (2015) study ; ^b = Prajogo et. al. ((2012) study ; ^c= Castka & Prajogo (2013) study ; ^d= Boiral & Henri (2012) study and ^e= self-made).

5. FINDINGS

Exploratory factor analysis was done using principal component method using varimax rotation to extract 3 factors (coercive, mimetic and normative pressures) as explained in earlier paragraphs. 3 factors were extracted as shown in Table 1. The KMO statistics .832 is satisfactory. The approximate chi-square statistics is 879.158 with 45 degree of freedom significant at .000 level of significance. Overall variances are explained by factors are 73.45 %. Factor 1 consisted of 2 items named as coercive pressures, factor two consisted of 4 items named as mimetic pressures and factor 3 consisted of 4 items named as normative pressures as shown Table 2.

Table 2 Principal Component Analysis Score

| | Rotated Component Matrix ^a | Component | | |
|--|--|-----------|------|------|
| | | 1 | 2 | 3 |
| IT_1 | Compliance with national / state regulations | | | .899 |
| IT_2 | Compliance with national/ state resource savings and conservation regulations | | | .821 |
| IT_3 | Pressures from international customers / partners /clients / suppliers with respect to environmental issues | .784 | | |
| IT_4 | Pressures from domestic customers / partners /clients / suppliers with respect to environmental issues | .797 | | |
| IT_5 | Competition in the industry / The green strategies of competitors | .785 | | |
| IT_6 | Benchmarking of the best practices at global level | | .566 | |
| IT_7 | Our company's International connections by way of head office/ subsidiaries / export / first chain suppliers to MNCs | .671 | | |
| IT_9 | The extent of media focus/ NGO / neighbourhood on our unit / industry | | .835 | |
| IT_10 | The legitimization of our unit's activities | | .565 | |
| IT_16 | To meet the requirements of Banks/ Financial institutions / Insurance Companies | | .746 | |
| Extraction Method: Principal Component Analysis. ; Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations. | | | | |

6. RELIABILITY TEST

The reliability of a variable is measured by Cronbach's alpha. It shows the internal consistency of the various statements of a measurement instrument (Questionnaire). Hair et. al. (1998) suggested that alpha values range between 0 and 1 with higher values indicating higher reliability among the indicators. In exploratory research alpha values of .60 is sufficient (Nunnally 1978). An internal consistency analysis has been performed separately for each factor of the study. Results of reliability test measured in Cronbach's alpha. The Cronbach's alpha for the three factors were coercive .862 (2 items, mimetic .846 (4 items) , and Normative .816 (4 items).As the for all factors, Cronbach's alpha is more than threshold limit of .6, the scale is reliable and fit for further analysis. As the kaiser- Mayer _Olkin (KMO) measure and Cronbach's Alpha is greater than 0.50 than the data is considered reliable for research.

7. CONTENT VALIDITY

According to Saunders et.al. (2009), content validity is the agreement that a question, scale or measure appear logically to reflect accurately what it has intended to measure. Content validity of this study is achieved through inclusion of various statements from earlier studies conducted for the similar purpose by Phan and Baird (2015); Prajogo et. al (2012) ; Castka & Prajogo (2013) and Boiral & Henri (2012). An instrument has content validity if it contains a representative collection of items and if sensible methods of test construction were used (Nunnally 1978).

8. MIMETIC PRESSURES

The findings show that the mean value of 3.86 on 5 point Likert scale with standard deviation of .97, meaning, the facilities adopt the EMS considering the coercive pressures in between neutral (3) and important (4).

| | Mimetic Pressure | N | Min | Max | Mean | s.d |
|------|--|------------|-------------|-------------|-------------|------------|
| IT_3 | Pressures from international customers / partners /clients / suppliers with respect to environmental issues | 150 | 1.00 | 5.00 | 3.95 | 1.19 |
| IT_4 | Pressures from domestic customers / partners/clients / suppliers with respect to environmental issues | 150 | 1.00 | 5.00 | 3.69 | 1.24 |
| IT_5 | Competition in the industry / The green strategies of competitors | 150 | 1.00 | 5.00 | 3.69 | 1.21 |
| IT_7 | Our company's International connections by way of head office/ subsidiaries / export / first chain suppliers to MNCs | 150 | 1.00 | 5.00 | 4.11 | 1.05 |
| | Mimic pressures total | 150 | 1.00 | 5.00 | 3.86 | .97 |

As the findings show manufacturing facilities adopt ISO 14001 for market pressures – which include (1) pressures from domestic and international customers / clients (2) the firms's international connections and (3) the competition in the industry.

The genesis of ISO 14001 is in international trade to safeguard export of safe products, not having toxic emissions. Thus the international trade, is one of the important market pressure for ISO 14001 certification. Apart from that, the competition within the industry is one of the important market pressure that determines the ISO 14001 adoption. The manufacturing facilities under study are all red category and there is likely that manufacturing units adopt ISO 14001 due to competition also in environmental responsiveness. Thus, the findings are in line with theory of institutional isomorphism market forces.

9. COERCIVE PRESSURES

The findings show that the mean value of 4.35 on 5 point Likert scale with standard deviation of .92, meaning, the facilities adopt the EMS considering the coercive pressures in between important (4) and very important (5).

| | Coercive pressures | N | Min | Max | Mean | s.d |
|------|---|------------|-------------|-------------|-------------|------------|
| IT_1 | Compliance with national / state regulations | 150 | 1.00 | 5.00 | 4.45 | .93 |
| IT_2 | Compliance with national/ state resource savings and conservation regulations | 150 | 1.00 | 5.00 | 4.26 | 1.00 |
| | Coercive pressure – total | 150 | 1.00 | 5.00 | 4.35 | .92 |

It is a general belief that the developing countries, having resource constraints differ the strict monitoring of regulations (Sandhu et. al.). A mentioned earlier, India has been the first country in the world to include environmental protection as the fundamental duty of citizen.

There are host of environmental regulations applicable and to be monitored by state pollution boards and central pollution board. The environmental compliance audit also is being done in state like Gujarat for polluting industries. Also there are various natural resource saving program like energy audit etc. applicable. The manufacturing units covered under most heavy polluting industries like chemicals, colour, textile, fertilizer, iron and steel, cement etc. The findings show that the national and state regulations and resource saving regulations both are having influence as drivers for adoption of ISO 14001 based EMS in manufacturing facilities in India under study.

The findings are very important for regulatory authority showing the role it can play in encouraging and providing incentives for adoption of ISO 14001 standard.

10. NORMATIVE PRESSURES

The findings show that the mean value of 3.87 on 5 point Likert scale with standard deviation of .97, meaning, the facilities adopt the EMS considering the normative pressures in between neutral (3) and important (4).

| | Normative pressures | N | Min | Max | Mean | s.d |
|-------|---|-----|------|------|------|------|
| IT_6 | Benchmarking of the best practices at global level | 150 | 1.00 | 5.00 | 3.90 | 1.13 |
| IT_9 | The extent of media focus/ NGO / neighbourhood on our unit / industry | 150 | 1.00 | 5.00 | 3.65 | 1.34 |
| IT_10 | The legitimization of our unit's activities | 150 | 1.00 | 5.00 | 3.99 | 1.09 |
| IT_16 | To meet the requirements of Banks/ Financial institutions / Insurance Companies | 150 | 1.00 | 5.00 | 3.93 | 1.26 |
| | Normative Pressures – total | 150 | 1.00 | 5.00 | 3.87 | .97 |

These group of pressures are mainly related with professional pressures coming from stakeholders like Banks / Lending institutions / Insurance companies, Media, and adopting the social pressures for legitimization of unit's environmental activities, and benchmarking of best practices work in manufacturing facilities in India under study.

11. CONCLUSION

The findings of the study shows that Indian manufacturing facilities under study have adopted ISO 14001 attributed to external drivers as pressures coming from regulatory, market and professionalism forces supporting the intuitional theory.

The findings of this study are in line with previous studies supporting the prevalence of various coercive, mimetic and normative pressures mentioned in this paper.

12. CONTRIBUTION OF THE STUDY

This study contributed in terms of empirical findings about drivers of corporate environmentalism, taking institutional isomorphism lens for manufacturing facilities in India, a developing country where the research in this field is very scant.

13. LIMITATION OF STUDY

The findings of the study shall however be extrapolated with care as it is based on convenient sampling and therefore cannot be considered conclusive study. However it provides a insight about the drivers of adoption of ISO 14001 in India empirically.

14. FUTURE RESEARCH

The further study can further check how these drivers affect the effectiveness of EMS practices and does it bring direct benefits of improved environmental, business and social benefits.

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