

# The Role of ISO 14001 Standard in upholding of Environment

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**Abstract-** ISO 14001 :2015 is essential for an organisation. Organisation can prove its commitment to environment responsibility. The standard is internationally recognised. It outlines requirements for environmental Management System

Obtaining an ISO 14001 certificate demonstrates to stakeholders, clients, and regulators that a company takes its environmental responsibilities seriously by implementing an environmental management system that complies with international standards.

By reducing waste, increasing energy efficiency, and improving resource management, organizations can minimize operational costs and improve their bottom line. With the growing importance of environmental concerns, achieving an ISO 14001 certification is becoming increasingly crucial for companies that want to stay competitive in a changing market.

## I.INTRODUCTION

Implementing an ISO 14001 Environmental Management System can be highly beneficial for businesses, ensuring not only that environmental regulations are met but also committing to continual improvement and efficiency savings over time. Getting certified involves following a series of key steps. Firstly, evaluating the organizational context and understanding applicable legal and other requirements. This requires assessing what existing systems are in place and how these may need modifying to meet ISO standards.

Secondly, implementing internal policies such as assigning roles and responsibilities, documenting the system's components, and planning the operational activities necessary for conforming with established procedures. Thirdly, verifying operation according to these policies by checking that measurements have been taken correctly, external audits must be completed, corrective action when needed and taking relevant customer feedback into account. Finally,

management review is required for assuring ongoing performance throughout the process.

### 0.1 What Actions Do You Need to Take to Achieve ISO 14001 Certification

To achieve ISO 14001 certification, there are several crucial steps that you need to take. First, you need to identify and analyse the environmental impacts of your business operations. By doing so, you can implement effective measures to reduce your organization's carbon footprint. Second,

### 0.2 Legal and Regulatory Requirement

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### 0.3 What Actions Do You Need to Take to Achieve ISO 14001 Certification

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Third, you should establish environmental management objectives and targets, and allocate resources for achieving them. Fourth, you need to regularly monitor, measure, and evaluate your environmental performance to ensure ongoing compliance with ISO 14001 standards. With these key actions, you can not only achieve ISO 14001 certification but also create a sustainable business that reduces its impact on the environment.

#### 0.4 Why Should Manufacturers Have an Environmental Management System in Place

Manufacturers have a crucial responsibility towards the environment and implementing an environmental management system (EMS) is not only ethical but also beneficial for their business. An EMS is a practical framework to identify, manage, monitor, and minimize environmental impacts caused by manufacturing processes.

It helps manufacturers to reduce waste, conserve resources, and comply with environmental regulations. Besides, an EMS can also contribute to enhancing the company's image and reputation, as well as improving their bottom line by reducing costs and increasing efficiency. Therefore, implementing an EMS should be a top priority for all manufacturers, as it not only protects the environment but also enhances their business practices.

#### 0.5 Why ISO 14001 Certification for Manufacturing?

ISO 14001 certification is an invaluable tool for organizations looking to set up a strong Environmental Management System. The standards and processes associated with ISO 14001 certification help companies understand their responsibilities, reduce risks, and meet customer requirements. As businesses of all sizes continue to adjust to the challenges posed by climate change, having effective systems in place becomes increasingly important.

Working towards achieving ISO 14001 certification can help organizations gain recognition while providing tangible benefits that are both readily identifiable and substantial in the long run. Could your organization benefit from ISO 14001 certification? If you want to stay ahead

of the competition, take control of your environmental impact, and make effective use of methods such as industrial costing systems, now is the time.

#### 0.6 Why does ISO 14001:2015 need to be reviewed?

ISO management system Standards are reviewed and, when necessary, revised every 5 years to ensure they remain relevant to the marketplace. The latest ISO 14001 revisions resulted from a number of recent trends, including an increase in organisations recognising the need to factor in both external and internal elements that influence their environmental impact, including climate volatility.

#### 0.7 How ISO 14001 clauses changes – what do they mean?

ISO 14001:2015 follows the Annex SL framework that is now used for all new ISO management system Standards. This means new Standards will be easier to understand and far more compatible, and the benefits of this mean you'll save lots of time during internal and external audits of your management systems.

Clauses 4-10 are the main focuses of the latest version, so let's take a look at the changes in more detail for each of those clauses and what they mean.

##### 1.0 Clause 4 – Context of the Organisation

This was a new clause introduced which requires top management to understand how internal and external issues affect your organisation's ability to meet the expectations of interested parties. The organisation needs to determine who are the relevant interested parties, i.e. stakeholders, and their expectations. These could include particular requirements for how the organisation manages its responsibilities towards the climate, availability of resources and applicable legislation.

Reflecting upon the internal and external issues enables a more accurate definition of the Scope of the Management System. The guiding principle of Clause 4 is therefore to unite the environmental management system with the organisation's strategy. It encourages the development of processes that fit the organisation's purpose and objectives. The Plan-Do-Check-Act (PDCA) methodology is now intrinsic in all processes, so each one should be monitored to ensure that it fits with the organisation's purpose and objectives.

##### 1.1 Clause 5 – Leadership

This clause describes how top management now needs to be able to demonstrate a greater involvement in the Management System. Your management team must take leadership and not simply manage its implementation.

They need to ensure the management system is at the core of the business, not at the periphery. As part of this process, top management has to encourage participation throughout your business to ensure the management system is operated effectively and fully integrated into your organisation's processes.

### 1.2 Clause 6 – Planning

Clause six offers details on enhanced requirements for planning, considering the potential for change, emergency situations and the response to abnormal conditions. There are enhanced requirements for determining the environmental aspects over which the organisation can exercise control, including a requirement to define the criteria used to identify environmental aspects.

A new requirement to consider the life cycle of products and services was introduced in clause six. The importance of considering legal obligations is also highlighted in the clause, specifying the requirements for addressing risks and opportunities, and replacing the need for preventive action. Your organisation needs to understand the environmental threats and benefits presented by its environmental aspects; to identify the risks faced and decide how they will be addressed. On the other hand, the organisation needs to consider possible environmental benefits and how to maximise such opportunities.

### 1.3 Clause 7 – Support

As part of the changes, Clause 7 includes a communications strategy with equal emphasis on external and internal communication. This includes a requirement for communicating consistent and reliable information so that employees can make suggestions about improving the EMS. Clause 7 also considers how your organisation should report upon external communications in respect of the requirements of regulatory bodies and external interested parties.

### 1.4 Clause 8 – operations

Clause 8 specifies requirements for consideration of the product life cycle. The organisation needs to ensure environmental requirements are addressed during any design and development activities. The idea that a product may eventually be disposed of should be considered and opportunities for recycling should therefore be designed into the product from the outset to reduce or avoid waste to landfill.

The organisation also needs to consider whether and how customers should be provided with guidance about environmental best practices when using its products and services. Clause 8 also features enhanced

controls over the ‘value chain’, which includes outsourcing to manufacturers and sub-contractors.

Change control is being applied to changes in engineering controls and procedures. This is because change needs to be managed both during environmental design and development, as well as the documented information required by the Environmental Management System.

### 1.5 Clause 9 – Performance evaluation

One of the new clauses added as part of the ISO 14001 revisions is an entirely new clause made up of existing clauses. These include ‘Monitoring and measurement’ and ‘Management Review’. This new clause will guide organisations in the effective collection and assessment of evidence to prove their environmental management system is meeting business objectives.

Once the EMS is implemented, ISO 14001 requires permanent monitoring of the system as well as periodic reviews to:

- Evaluate the effectiveness of the implemented EMS
- Objectively evaluate how well the minimal requirements of the standard are fulfilled
- Verify the extent to which the organizational, stakeholder, and legal requirements have been met;
- Review the suitability, adequacy, effectiveness and efficiency of the EMS;
- Demonstrate that planning has been successfully implemented;
- Assess the performance of processes;
- Determine the need or opportunities for improvements within the environmental management system.

### 1.6 Clause 10 – Performance evaluation

A structured approach for Clause 10 that was introduced that retained the principle behind the ‘Non-conformity and corrective action’ clause, but offers more detail in consideration of nonconformity.

With so many different ISO 14001 considerations to think about when developing your EMS, enlisting the help of a certification body can help you along.

Partnering with us gives you the chance to demonstrate your commitment to environmental management. And, we'll be with you every step of the way to make sure you all the criteria of the Standard you need. management.

## II. THE DRIVING FACTORS FOR THE ISO 14001 CHANGES

Several key factors are pushing for updates to this vital environmental standard. Understanding these driving forces will give businesses better insight into how these changes will affect their sustainability practices. Let's take a closer look at what is fuelling the need for the ISO 14001 changes.

**Strategic Necessities for Update:** Organizations are shifting from sustainability as a regulatory requirement to a competitive advantage, necessitating stronger, data-driven frameworks. The 2025 revision aims to support this by offering more flexibility, advanced tools, and a stronger focus on measurable, impactful outcomes in environmental management.

**Global Feedback Integration:** ISO has collected feedback from global businesses, governments, and stakeholders to understand evolving environmental challenges better. This input highlights the need for proactive climate action and supply chain sustainability, ensuring that the 2025 revision addresses real-world business needs while maintaining international consistency.

**Study Group Recommendations:** ISO's technical committees and study groups have conducted extensive studies on areas like risk management, digital tools, and climate action. Their findings have shaped the 2025 revision, ensuring the standard evolves to meet current and future environmental management trends, supporting long-term sustainability goals.

The latest review of the ISO 14001 Standard came in 2021, with no changes made during that review. Therefore, ISO 14001:2015 remains the current version of the Standard.

But, ISO 14001 has evolved over the years, with several revisions to bring the Standard to where it is today. So, we've provided an in-depth overview of the

latest version of ISO 14001, so you can understand all the benefits certification can bring to your business.

### 2.1 Updates about The latest version of ISO 14001

The latest version of the ISO 14001 Standard offers many benefits that the previous version ISO 14001:2004 didn't cover in much detail, if at all. As it stands, the latest version offers the following:

- Increased prominence of environmental management
- More leadership responsibilities
- Greater emphasis on protecting the environment
- Stronger focus on improving environmental performance
- Addresses environmental impact at all stages within product life cycle
- Better communication strategy
- More modern approach to documentation management

ISO 14001 certification can provide countless benefits to any manufacturer, not the least of which is peace of mind that you're adhering to internationally recognized codes of practice and effective environmental control measures. Beyond compliance improvements and quality assurance, manufacturers who obtain this certification can gain tangible financial incentive from more efficient resource use and significant cost savings from improved waste management processes. In this article we'll dive into why ISO 14001 certification should be an essential part of any successful manufacturing enterprise for these reasons, as well as many others. Read on to learn more about the value that ISO 14001 certification can bring.

### 2.2 Research Methodology for Calculation of Average Performance of companies quality of training, working conditions and safety, quality of environmental information, legal compliance, encouragement of innovation, improved procedures, strategic overview of environmental responsibility), financial benefits (cost savings from material, energy and waste reductions), and people benefits (increased employee motivation, enhanced skills, better company image among employees, forum for dialogue between staff and For knowing impact of ISO9001 and 14001 on companies study was made about performance of

companies, before certification and after certification through various parameters like Legal and Regulatory Compliances, Cost reduction, , Enviornmental risk and liability, CSR, in companies

In all above parameters it was observed that there is reduction in above parameters in all companies after certification absentism, Safety, Knowledge for sustainability of enviornment etc. Where as improvement in parameters after certification like Improvement in CSR, Share of business, Customer Satisfaction Level, Quality Improvement, enviornment Responsibility, Reduction in pollution, Product Improvement, and work satisfaction

Parameters showing Average Reduction in parameters after implementation of ISO9001 -Chi square Test,  
Chi square test =  $\sum [( \text{Observed} - \text{Expected})^2 / \text{Expected}]$

Expected: Avarage values of 10 companies before certification

Observed : Avarage values of 10 companies after certification

For testing null hypothesis, it is assumed that there is no change in performance of companies before and after ISO certification. Rating before ISO is considered expected, and after ISO is considered observed.

		Values			
Srno	Row Labels	Sum of before Expected	Sum of After Observed	o-E	o-E <sup>2</sup> /E
1	Absenteeism	30	15	15	7.5
2	Working Conditions	80	29	51	32.51
3	Cost of Poor Quality	68	38	30	13.23
4	Logistic cost	70	45	25	8.92
5	Environmental risks and liabilities	75	25	50	67.33
6	Non compliance of legal essentials	70	28	42	25.2
7	environmental incidents (actual and potential)	75	25	50	33.33
8	Grievance	70	24	46	30.22
9	organizational in efficiency	78	25	53	36.00
10	Lead time for Development	75	35	40	21.00
11	Rejection to sales ratio	60	20	40	26.00
12	Waste Reduction	75	27	50	33.33
	Grand Total	826	336	490	290.67

Calculated value is 290.67.

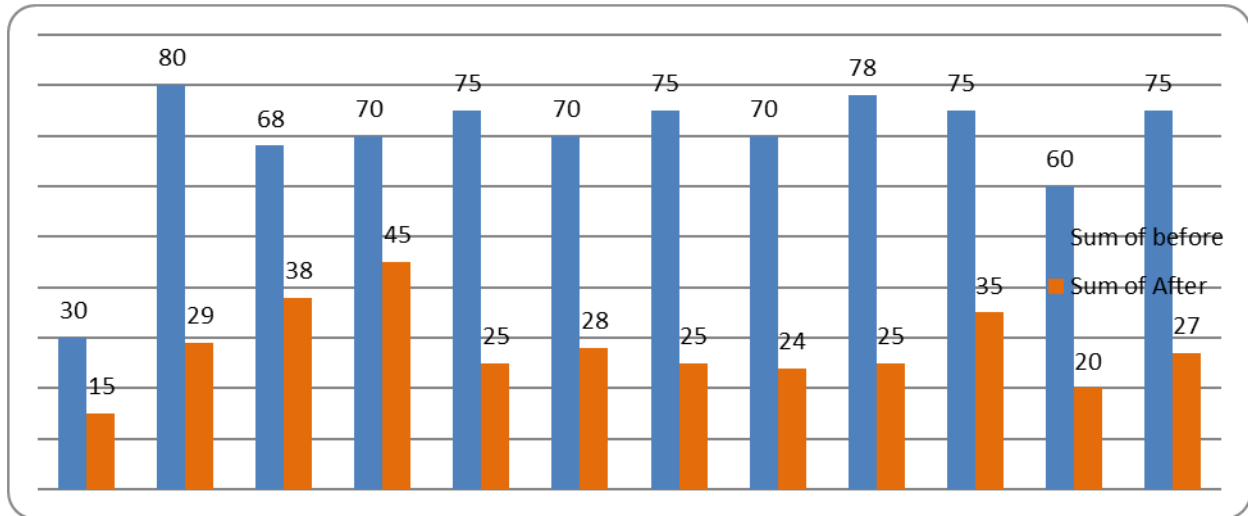
Degree of freedom = n-1(12-1) = 11

At 5% level value of Chi square =19.6

Calculated value is more than tabulated vaue

H<sub>0</sub> Null hypothesis is rejected. ISO 9001:2015 standard is essential for the best performance and continual improvement in companies in automotive industry. Continual Improvement is observed in companies after ISO Certification.

H<sub>a</sub> (alternative hypothesis ) is accepted.



reducing waste, increasing energy efficiency, and improving resource management, organizations can minimize operational costs

Parameters Showing Average Improvement after implementation of ISO

Chi square test

$$= \sum [(Observed - Expected)^2 / Expected]$$

For testing null hypothesis, it is assumed that there is no change in performance of companies before and after ISO certification. Rating before ISO is considered expected, and after ISO is considered observed.

Expected are average values observed before certification

Observed are average values after certification

Srno	Parameters	X Expected	Y observed	O-E	O-E <sup>2</sup> /E
1	Productivity	40	87	47	55.22
2	Work in Progress	30	77	47	73.63
3	Environmental Awareness	35	75	40	45.71
4	Improvement in CSR	40	88	48	50.85
5	Customer Satisfaction Level	50	95	45	40.50
6	Quality Improvement	25	84	59	139.24
7	Legal Compliances	50	86	36	25.92
8	Communication	40	85	45	50.62
9	Attitude	30	70	40	53.33
10	Product Improvement	40	86	46	52.9
11	Work satisfaction	35	88	53	
				506	665

Degree of freedom is  $n-1 = 10$ ,

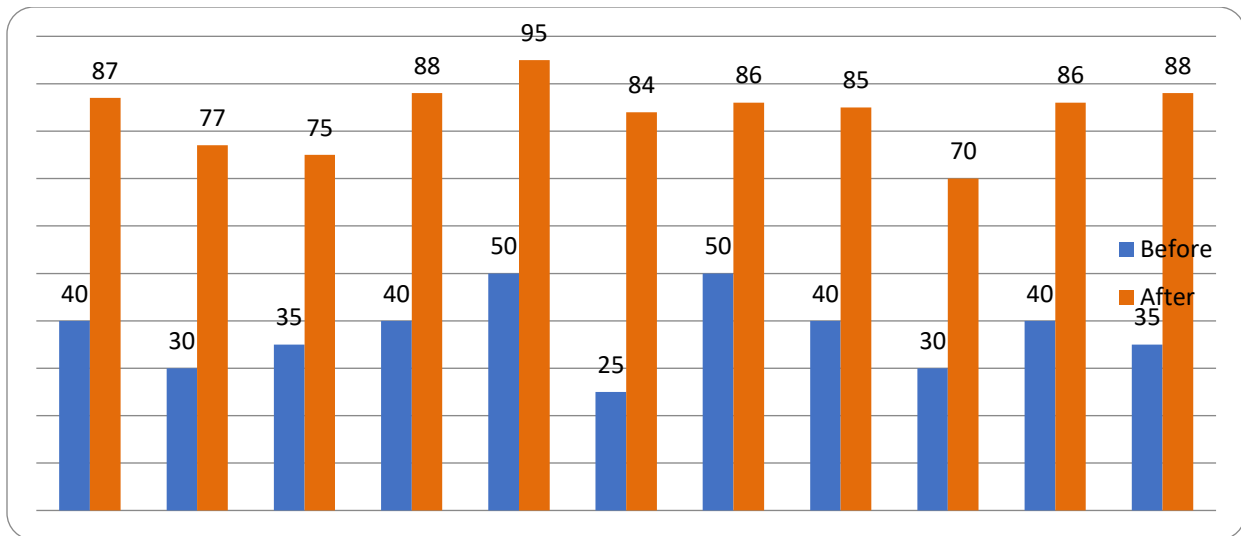
Tabulated Value of Chi square at 5% level = 18.30

Calculated Value is greater than tabulated value.

Null hypothesis is rejected.

It can be concluded that there is improvement in companies after ISO Certification Standard.  $H^0$  is

accepted. ISO 9001:2015 and ISO 14001 :2015 standard is essential for the best performance and continual improvement in companies in industrial sector.



### III.INTERPRETATIONS, CONCLUSIONS AND SUGGESSTIONS

The data was collected by way of questionnaire is analysed and interpreted in this chapter. The response to each question has been analysed and comments on them are prepared. The interpretation of statistical data has helped in giving at some concrete findings in present study.

50 questionnaires were administered to medium size companies which are situated in and around Pune Metropolitan City, which are having ISO 14001 certification. After receiving the filled questionnaire coding was done. Then the questions are classified and tabulated from different angles. Answers to some questions were suggestive informative and open ended. Views on such questions are given. The respondent's opinions were considered as base for analysis and interpretation of questions on the answers. Selected companies' products are Service industries, IT companies, Electronic, Automotive like breaks, Axel, clutch, Rubber springs, Gear, Automotive composite, foundry, forging industry, etc. Companies which were certified for ISO 9001:2015 are taken for study purpose.

It was observed that before certification process, companies have followed processes and procedures from at least last three years. There is improvement in Environmental Awareness, Legal Compliances profitability, productivity, inventory turnovers ration as well as reduction in cost of poor quality, internal and external rejection, and expenditure on sales,

breakdown time, and. These factors indicate the success of certification process in automotive companies.

From Analysis and Interpretation of data it can be observed that effects of certification are positive In all companies. Out of which majority companies are showing 25% to 50% of improvement in performance where as few of the companies are showing 50% to 75% improvement after certification.

Conclusions: It is observed that improvement is there on following areas after certification of standard and ISO 14001

- Cost savings: Effective implementation often leads to quantifiable cost savings through reduced waste disposal expenses, lower resource and energy consumption, and fewer fines.
- Enhanced company reputation: Certification can boost corporate social responsibility (CSR) and build trust with customers, suppliers, investors, and the public.
- Improved stakeholder relationships: Demonstrating environmental responsibility can strengthen relationships with all stakeholders, including government regulators and the local community.
- Competitive advantage: Having ISO 14001 certification can increase market opportunities and provide a competitive edge, especially when tendering for business with environmentally conscious partners.
- Employee awareness and engagement: Success is shown by an increase in employee environmental

knowledge, involvement, and commitment to EMS practices, which can also improve morale.

- Operational efficiency: A well-implemented EMS can streamline internal processes, reduce production and logistics costs, and improve overall organizational efficiency.
- Risk management: The standard provides a framework for identifying, assessing, and proactively managing environmental risks and liabilities, which protects the organization from potential disruptions.

#### IV.SUGGESTIONS

- 1) Focus on performance: focus has to be there on performance of the company
- 2) Focus on Customer specific requirements
- 3) Reduce cost of certification
- 4) Perform surprise assessment/checking audits
- 5) Include commercial department like finance and accounts for profitability purpose
- 6) Share best practices during audits
- 7)Try to benchmark process internally and externally

#### REFERENCE

- [1] ISO Standards International Standards Organization International Standard ISO 9001 –
- [2] Author Bulakh CK, what everyone needs to know about ISO, Publisher: The productivity Group
- [3] Publisher: BVQI ISO9001:2015 ISO 14001 :2015