

# Universidad del Azuay

# **Faculty of Legal Sciences**

International Studies Undergraduate Program

# Proposal of an evaluation template prior to ISO 14001 certification for hotels.

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## **DEDICATION**

To my parents, Patricio and Laura, who have been my unconditional support throughout this process, who have shown me that despite how complicated life can be, there is always a solution for everything.

## ACKNOWLEDGEMENTS

Thanks to God for the opportunities He has given me.

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# Proposal of an evaluation template prior to ISO 14001 certification for hotels.

#### **Summary**

The present research proposed an assessment model prior to ISO 14001 certification for hotels, highlighting the importance of environmental management systems in the hotel sector to promote sustainable practices. Through a literature review and the development of a qualitative methodology, a diagnostic tool was proposed that allows hotels to evaluate and improve their environmental management before obtaining certification. The study emphasizes continuous improvement and regulatory compliance, providing the essential foundations of the PHVA cycle for the implementation of action plans that benefit compliance with the prerequisites for obtaining ISO 14001 certification, which in turn not only benefits the environment but also improves the hotel's competitiveness and reputation in the market. This systematic approach towards environmental excellence seeks to ensure sustainable development within different industries.

#### **Keywords:**

Environmental Sustainability, Environmental Management, ISO 14001, Ecological Practices, Environmental Certification.

# Proposal of an evaluation template prior to ISO 14001 certification for hotels.

#### Abstract

This research proposed an evaluation model prior to ISO 14001 certification for hotels, highlighting the importance of environmental management systems in the hotel sector to promote sustainable practices. Through a literature review and the development of a qualitative methodology, a diagnostic tool was proposed that allows hotels to evaluate and improve their environmental management prior to obtaining certification. The study emphasizes continuous improvement and regulatory compliance, providing the essential fundamentals of the PHVA cycle for implementing action plans that benefit compliance with ISO 14001 pre-certification requirements, which in turn not only benefits the environment but also enhances the hotel's competitiveness and reputation in the marketplace. This systematic approach to environmental excellence seeks to ensure sustainable development within the different industries.

#### **Keywords**

Environmental sustainability, Environmental management, ISO 14001, Green practices, Environmental certification.

# Proposal of an evaluation template prior to ISO 14001 certification for hotels.

## 1. Introduction.

The environment is fundamental to life, defined as the "Set of physical, cultural, economic, and social circumstances surrounding living beings." . (Cedillo, 2016) Over time, it has faced significant challenges in relation to survival. Environmental management seeks to create and preserve a dignified environment, protecting the quality of life through regulations and legal agreements. That is why we have innovated in the processes of the different areas of production and services. Giving way to new environmental systems adopted in hotels.

The Environmental Management System (EMS) analyzes the business bases, delimiting "responsibilities, processes and functions" (Cedillo, 2016). To minimize their ecological impact and integrate environmentally friendly practices. It promotes resource efficiency and reduction of pollutants, benefiting companies and the environment. This paper proposes an evaluation model prior to ISO 14001 certification for hotels. This research proposes a bibliographic review of academic sources, articles, books, etc. To obtain a critical synthesis of the existing literature. After that, a methodology will be developed to diagnose the initial situation of the hotel. Finally, it proposes guidelines for the model based on the ISO 14001 standard with a comparison to the initial analysis of the company.

#### 2. Theoretical framework.

The ISO 14001 standard, launched in 1996, is a crucial technical specification in environmental management systems (EMS) internationally (Muktiono et al., 2022). Its primary purpose is to provide organizations with a robust framework to protect the environment and respond effectively to changing environmental conditions, all in balance with socio-economic needs (Ahmed et al., 2020).

EMS, such as ISO 14001, is based on the idea that companies can reduce their negative environmental impacts and improve their environmental performance in a positive way through commitments, policies, objectives, goals, programs, and regular management reviews (Johnstone and Hallberg , 2020). These systems seek to systematically consider the environment in an organization's strategic and operational decisions.

The academic literature has identified several benefits associated with the adoption of ISO 14001, such as improvements in legal and regulatory compliance, reduction of emissions and waste, increased efficiency in the use of resources and internal processes, less occurrence of environmental incidents, enhanced corporate image and reputation, greater satisfaction of employees and investors, and better access to environmentally conscious customers (Muktiono et al., 2022).

#### 2.1 Role of ISO 14001 certification.

In addition, there is a growing recognition that good environmental performance can lead to better financial results and shareholder value, by reducing operating costs and legal risks, attracting green investment and new customer interest, positively differentiating from competitors, and innovating sustainable products and processes (Muktiono et al., 2022).

To achieve these benefits, ISO 14001 establishes requirements in key areas such as environmental policy, planning, implementation, operation, management review, and, continuous improvement. Its implementation involves the commitment of senior management, the assignment of responsibilities, the training of employees, the establishment of quantifiable objectives, the follow-up through audits, and the dedication of human and financial resources (Muktiono et al., 2022).

To align ISO 14001 with best practices and new trends in corporate environmental management, the International Organization for Standardization released an updated version in 2015: "ISO 14001:2015 Environmental Management Systems" (International Organization for Standardization, 2015). This version incorporates modifications aiming to facilitate integration with other management systems, keeping the standard up to date and aligned with the latest standards.

Environmental management has acquired a central role in the sustainability and competitiveness of global organizations. In this context, ISO 14001 has established itself as the benchmark standard for corporate environmental management systems. According to data from the International Organization for Standardization (International Organization for Standardization, 2018), the ISO 14001 standard has become the benchmark standard for corporate environmental management systems. (International Organization for

Standardization, 2018), by December 2017, 362,747 ISO 14001 certificates had been issued worldwide. These figures highlight the relevance that this certification holds on the international stage.

#### 2.2 Tourism development

In recent decades, tourism has played a crucial role in the economy of the countries of the Latin American and Caribbean region, being a fundamental basis. Previous research has indicated that this sector generates approximately 67 million jobs in the region corresponding to 10.7% of total exports of goods and services, according to data provided by the World Tourism Organization (UNWTO, 2022). In the specific context of Ecuador, tourism has been a significant contributor to its economy. However, during 2020, tourism did not play a determining role due to the general contraction experienced in the hotel sector, attributable to the COVID-19 pandemic.

#### **2.3 Impact on Ecuador**

According to information from the UNWTO (2021), in 2020, Ecuador registered approximately 659 thousand international tourists, which represented a significant reduction compared to 2019. The international arrivals metric saw a 58% contraction in the country. In addition, revenue from international tourists dropped sharply to \$507 million, marking a negative variation of 52% compared to the previous year. This scenario reflects the significant decrease in tourism activity, evidenced by the global health crisis, and its adverse economic repercussions, especially in the hotel sector (UNWTO, 2021).

Throughout 2021, with the gradual resumption of border operations and the easing of restrictions, the tourism sector in Ecuador experienced a recovery trajectory. The number of international arrivals experienced a significant rebound, reaching 986 thousand, represents an annual increase of 49.6% according to data from the World Tourism Organization (UNWTO, 2022). At the same time, the revenue generated by tourism grew by 52.7%, reaching 774 million US dollars. In addition, exports linked to the tourism industry registered an even steeper increase, reaching an annual increase of 94.6%, according to information provided by the World Bank (2022).

#### 3. Literature review.

The challenges that complicate the situation of hotels and lodging centers before obtaining an Environmental Management System (EMS), under the strict limitations associated with the ISO 14001 standard, can have counterproductive consequences on their hotel business performance (Martínez et al., 2017; Mensah and Blankson, 2013). In this context, several authors highlight the relevance of the internal implementation of eco-friendly policies, given the impact on hotel suppliers and demanders.

One of the first studies published was that of (Muktiono et al., 2022). They analyzed the sustainability benefits of implementing ISO 14001 at a Canadian Army munitions facility during 1998-2004. The results showed significant improvements in waste management, recycling, and energy efficiency. However, they also identified shortcomings such as the limited use of measurable targets and indicators.

Yusof and Jamaludin (2013) carried out the research called VERDI, using a qualitative-quantitative methodology that evaluates managerial readiness, environmental obligations about resources, and the integration of environmental requirements in the fulfillment of own activities. In addition, they analyze the findings found in the initial evaluation of the company, to propose an action plan according to the deficiencies presented by the hotel during the evaluation, after the analysis, a comparison is made with the requirements of the ISO 14001 standard.

Molina et al. (2015) developed a model that examines four stages to facilitate the implementation of internal policies in small hotels. The first stage involves a check-up that addresses significant environmental aspects and operational control measures. Subsequently, priority is given to strengthening or changing the statutes of the hotels to generate continuous improvement actions before consolidating an applicable EMS. As a third point, the Delphi survey revealed the lack of complementary instruments to measure the efficiency in the fulfillment of the action plans, finally, the findings led to the development of the checklist proposed by Mensah (2006). This questionnaire aims to provide a diagnosis that describes efficient and harmful activities for hotels, addressing 29 environmental aspects in the 6 critical areas of a hotel.

The main purpose of the study by Alzate, et.al (2018) is to carry out a comprehensive analysis of the scope and benefits derived from the incorporation of the ISO 14001:2015 environmental management model

into the framework of the business model, as well as to evaluate its contribution to the success of organizations. This approach is based on the premise of understanding the integration of ISO 14001:2015 as a strategic and systematic element that positively influences environmental performance and organizational competitiveness.

The methodology adopted for this study was based on a comprehensive review of the literature addressing the evolution and context of implementation of ISO 14001, including statistical data on its adoption globally and in the Latin American region. In addition, a detailed descriptive analysis of the components and requirements of the environmental management model established by ISO 14001:2015 was carried out. This methodological approach allowed us to obtain a comprehensive understanding of the implementation of the regulation, its trends in terms of certifications at the global and regional level, as well as a detailed evaluation of the structure and requirements of the environmental management model in its most recent version. (Álzate, et al., 2018)

Ortiz and Ramírez (2017) in their technical study present significant progress in the certification of the ISO 9001 and ISO 14001 standards in Colombia. The research focuses on providing an accurate and up-todate view of the certification landscape in Colombia, highlighting specific advances in the adoption of quality and environmental management standards. The methodology used in this technical analysis was based on the use and analysis of data provided by the ISO Survey tool for 2015, specifically for the ISO 9001 and ISO 14001 standards.

To carry out this study, the information collected was organized and exhaustively analyzed, using statistical tools and presenting the results in comparative graphs with respect to the previous year (2014), according to the research of Ortiz and Ramírez (2017). This methodological approach provides a solid basis for the objective evaluation of progress in the certification of ISO standards in Colombia, allowing a detailed understanding of the dynamics of adoption and adaptation to new criteria.

In the analysis by Mocha and Reyes (2021), it is highlighted that the implementation of an Environmental Management System (EMS) based on the ISO 14001 standard makes it possible to improve the environmental performance of companies through the systematic identification of environmental aspects, legal requirements, and objectives (p. 20). This approach focuses on continuous improvement through a comprehensive cycle of planning, execution, verification, and action. ISO 14001:2015 provides a systematic framework that serves as a reference for environmental protection. Among its benefits are cost savings, legal compliance, improved corporate image, and process efficiency, among others (Mocha & Reyes, 2021).

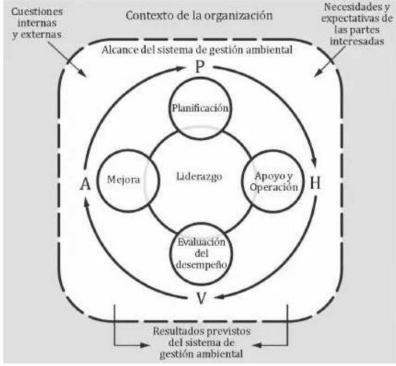
In the design phase of the EMS, the authors carried out an environmental diagnosis of the cardboard industry, identifying aspects such as waste generation, discharges, gaseous emissions, and particulate matter. These aspects were evaluated using the Fernandez Matrix (1993).

The results revealed that the production processes present more significant environmental aspects compared to the support processes, with the most affected factors being water, air, soil, and workers' health. In the planning phase, objectives, goals, and actions were established to address the main environmental aspects identified, along with the development of instructions detailing procedures for the implementation and monitoring of the EMS (Mocha & Reyes, 2021).

#### 3.1 Plan-Do-Check-Act Model

The approach proposed for this EMS is based on the principles of plan, do, verify, and act (PHVA), this system provides an interactive (participatory) process that organizations Adopt to achieve their continuous improvement goals. Planning is establishing, and determining the environmental objectives that the company wishes to achieve in the short, medium, or long term and disclosing the results following the company's environmental regulations. To do, is to set in motion the processes according to the respective of the organization. Acting, monitoring, and measuring processes as established in the company's environmental policy (ISO, 2018).

Figure 1 PHVA Environmental Management Model



Note: Excerpted from ISO 14004 (2016).

#### 3.2 Description of the assessment instrument

ISO 14001 belongs to the ISO 14000 family, which encompasses 12 environmental assessment models. The point that differentiates ISO 14001 from the others is the practicality offered by this standard, which details the specifications of use against an objective panorama presented by organizations. The instrument is based on the requirements of ISO standards for management systems. It seeks an elaborate structure, authentic text and terminology related to fundamental definitions, which are solid bases for the elaboration of the different EMS. This instrument addresses evaluation models based on trying to meet the standards of compliance of clients concerning the services offered by the organization (Monterroso, 2003).

Table 1

Language guide

Verb form	Concept
Must	It gives you a requirement.
Should	It makes a recommendation based on an improvement or adjustment to the Environmental Management System (EMS).
Can	It refers to a permit or possibility.

Note: Based on ISO 19011 (2018).

Figure 3. Factors to be evaluated related to the context of the organization. It presents the description of ISO 14001 and an internal audit system composed of the terminology compliant, partially compliant, and non-compliant. The compliance section must be marked when the diagnosis of the organization presents all the competent documents to demonstrate compliance with the points of the regulations. Partially, it should be flagged when the organization presents incomplete evidence, which can translate into processes that are not yet fully executed and consequently, the respective documents are not possessed. If it does

not comply, it must be flagged when the organization does not present any type of approach toward compliance with the point of the standard.

The context of the organization as the main point of analysis about the situation faced by the company. It discloses internal issues such as resources, organizational structure, etc. And external issues such as legal requirements, conditions faced by the organization, etc.

#### Table 2

Factors to be evaluated related to the context of the organization.

	<b>4.</b> Co	ontext of the organization	
4.1 Understandin	g of the organization and its	s context.	
The organization s	hould set external and interna	Il activities based on its pur	poses on the EMS.
Meets	Partially	Doesn't comply	Evidence Observation
4.2 Understandin	g the needs and expectation	s of stakeholders.	
to. The organization	on determines the main actors	in its EMS	
Meets	Partially	Doesn't comply	Evidence Observation
b. The organization	n sets the needs and requirem	ents for the main actors.	
Meets	Partially	Doesn't comply	Evidence Observation
c.La organization,	sets the requirements and nee	eds that become legal obligation	tions and other requirements.
Meets	Partially	Doesn't comply	Evidence Observation
4.3 Determination	n of the scope of the EMS.		
to. The organizatio	on determines the deadlines ar	nd execution of the EMS.	
Meets	Partially	Doesn't comply	Evidence Observation
0	n considers internal and exter	nal issues to delineate the so	cope of the
EMS.			
EMS. Meets	Partially	Doesn't comply	Evidence Observation
Meets			Evidence Observation to delimit the scope of the EMS.
Meets			_
Meets c. The organization Meets	n considers the units, function Partially	is, and physical boundaries Doesn't comply	to delimit the scope of the EMS.

## Note: Based on ISO 14001(2015).

Leadership must be exercised by the general management (DG), which in turn manages internally the problems that the organization may face, it also directly manages the activities and roles that must be executed by the different departments, to fulfill its activities effectively.

Table 3

Factors to evaluate related to leadership.

		5. Leadership		
5.1 Leadership and C				
to. The Directorate-Ge	eneral (DG) expresses its leader		he basis of the EN	
Meets	Partially	Doesn't comply	Evidence	Observation
h The DG is committe	ed to accountability based on th	a afficiency of the EMS		
			Evidence	Observation
Meets	Partially	Doesn't comply	Evidence	Observation
c. The DG ensures the	commitment between senior n	nanagement and strategic m	nanagement by se	tting objectives
related environmental				
Meets	Partially	Doesn't comply	Evidence	Observation
d. The DG. in its nego	tiation processes, undertakes to	o ensure compliance with it	s own environme	ntal policies.
Meets	Partially	Doesn't comply	Evidence	Observation
Meets	1 artiany	Doesn't comply		Observation
and. DG provides an a	dequate budget for the integrat	tion of the EMS.		
Meets	Partially	Doesn't comply	Evidence	Observation
f The DC discloses th	e requirements and relevance of	of the EMS		
			Enderse	Ohaamatian
Meets	Partially	Doesn't comply	Evidence	Observation
g. The DG incentivise	s its staff to meet the objective	s set out in the EMS.		
Meets	Partially	Doesn't comply	Evidence	Observation
			_	
h. The DG directs and	supports the workers in meeting	ng the objectives.		
Meets	Partially	Doesn't comply	Evidence	Observation
i The DG supports the	e other departments of the orga	nisation		
Meets	Partially	Doesn't comply	Evidence	Observation
Meets	1 altially	Doesn't compty		Observation
5.2 Environmental p	olicy			
	s, implements and maintains er	vironmental policy within	a framework defi	ned in its EMS.
Meets	Partially	Doesn't comply	Evidence	Observation
1				
	he magnitude and environment		E 1	
Meets	Partially	Doesn't comply	Evidence	Observation
c. DG is committed to	good environmental practice a	nd pollution prevention		
within the organization	č ,			
Meets	Partially	Doesn't comply	Evidence	Observation
	ed to the principles of continuo	•	•	
Meets	Partially	Doesn't comply	Evidence	Observation
5.3 Roles, responsibil	ities and authorities of the or	ganization.		
	e tasks, goals, and responsibili		ents that make up	the organization
	the reports made based on the			
Meets	Partially	Doesn't comply	Evidence	Observation
	1 11 11 11 1	Doesn't comply		o ober varion

## Note: Based on ISO 14001 (2015).

The supporting analysis and planning factors represent the scope that the implementation of the regulation in a new EMS may represent. In addition, it sets short and medium-term objectives for the organization based on the awareness of the workers who are part of the company.

Table 4

Factors related to planning and	d support.			
	6. Pl	anning		
6.1 Actions to address risks and				
to. The organization considers the	e scope of its EMS.			
Meets	Partially	Doesn't comply	Evidence	Observation
b. The organization considers abn	ormal conditions and for	eseeable risk situation	IS.	
		Doesn't	Evidence	Observation
Meets	Partially	comply	-	
6.2 Environmental objectives an				
to. The objectives set by the organ	nization are based on coh	erence, feasibility and	the updating	g of environmental
policies.		Doesn't	Evidence	Observation
Meets	Partially	comply	Evidence	Observation
				10 11 1
b. The objectives set out answer the	he questions: What is goi	ng to be done?, What	is going to b	e used?, Who will be
responsible?, When will it end?				
when which end:		Doesn't	Evidence	Observation
Meets	Partially	comply	_	
	7 8	upport		
7.1 Resources	7.5	սրիու		
to. The organization in its annual	budget must allocate a fo	recast for the implem	entation of th	e
EMS.	6	I		
		Doesn't	Evidence	Observation
Meets	Partially	comply	-	
7.2 Competition				
to. The organization delimits the o	competence of its worker	s assigning responsib	ilities to the	different departments
and evaluating their performance			intres to the	
C 1	1 1	Doesn't	Evidence	Observation
Meets	Partially	comply	-	
b. The organization, prior to hirin	g new personnel evaluat	es and verifies that an	nlicants are c	competent to
work.	g new personner, evaluat	es and vermes that ap	pheants are e	
work.		Doesn't	Evidence	Observation
Meets	Partially	comply	_	
7.3 Awareness.	4 4 4 60 1 4 40	11 .	• • • •	1
to. The organization must ensure	that the staff is committee	d to the company's en Doesn't	Evidence	Observation
Meets	Partially	comply	Evidence	Observation
	1 (11)(11)	eompiy	-	
7.4 Communication.				
to. The organisation proposes a di		on between the DG ar	nd the other d	epartments
respecting hierarchies and deadlin	nes.			
Moots	Partially	Doesn't	Evidence	Observation
Meets	Falually	comply	-	
7.5 Documented Information.				
to. The organization's EMS must	include the international	standards to which it a	applies.	
		Doesn't	Evidence	Observation
Meets	Partially	comply	_	
h If the organization greates or the	dates information or dea	uments it must confif	v that the	
b. If the organization creates or up identification and	puates information of doc	uments, it must certif	y mai the	
description is the right one.				
		Doesn't	Evidence	Observation
Meets	Partially	comply	_	

7.6 Control of Docur	nented Information.			
to. The organization e	nsures that the EMS documents are av	vailable to the releva	nt staff, who	in turn
They must maintain c	onfidentiality agreements.			
		Doesn't	Evidence	Observation
Meets	Partially	comply		
			_	

## Note: Based on ISO 14001(2015).

Finally, the operation, performance evaluation and improvement are analyzed. These points represent the final stage of the evaluation model, in which an internal and external audit process of the other points of the EMS is addressed. In other words, the organization ensures the commitment that the actors of this company must maintain.

#### Table 5

Factors related to operation, performance evaluation and improvement

	8. (	Operation.		
8.1 Operational plann	ning and control.	*		
to. The organization tal	kes action on unforeseen changes	in order to mitigate the adve	erse effects that	t may be
Represent schedules ali	ready in place.			
Meets	Partially	Doesn't comply	Evidence	Observation
b. The organization dis	closes environmental requiremen	ts to suppliers and contracto	rs to ensure the	
compliance with them.				
Meets	Partially	Doesn't comply	Evidence	Observation
c. The organization info Initial and final handlin	orms the personnel in charge of tr	ansport of the importance o	f compliance w	ith the EMS,
Meets	Partially	Doesn't comply	Evidence	Observation
8.2 Emergency Prepa	redness and Response.			
	eriodically ensures that the machin	nery, infrastructure, etc. Are	in good condit	ion in order to
o mitigate the environ	mental impacts that problems such	h as these can present in the	organization.	
Meets	Partially	Doesn't comply	Evidence	Observation
		nance appraisal.		
	surement and evaluation.			
5	etermines specific deadlines, meth	1 1 1 1	for avaluating t	
the EMS.	specific deddiffes, filed	lods, personnel, and criteria		the points raised in
	Partially	Doesn't comply	_ Evidence	the points raised in Observation
Meets 9.2 Internal Audit.	Partially	Doesn't comply	_ Evidence	Observation
Meets 9.2 Internal Audit. 10. The organization ass	Partially signs auditors who exercise object	Doesn't comply tivity and impartiality throu	_ Evidence	Observation
Meets 9.2 Internal Audit. 10. The organization ass	Partially	Doesn't comply	_ Evidence	Observation
Meets 9.2 Internal Audit. to. The organization ass Meets	Partially signs auditors who exercise objec Partially 10. In	Doesn't comply tivity and impartiality throu Doesn't comply <b>nprovement</b>	_ Evidence ghout the proce _ Evidence	Observation ess. Observation
Meets 9.2 Internal Audit. to. The organization ass Meets	Partially signs auditors who exercise objec Partially	Doesn't comply tivity and impartiality throu Doesn't comply <b>nprovement</b>	_ Evidence ghout the proce _ Evidence	Observation ess. Observation

## Note: Based on ISO 14001 (2015).

The evaluation model was proposed with a bibliographic review of the ISO 14001 standard over the years, in addition to considering the variations that this standard has experienced. In the qualitative analysis, he has revealed the points that are used in this new EMS. Giving a clear and detailed behavioral line on the requirements of the Standard in the face of the initial analysis of the company's situation.

This ISO 14001 pre-certification assessment form provides fundamental principles for the development of action plans focused on continuous improvement. Once the form has been completed, the "non-compliant" and "partially compliant" sections that have been identified in the form are taken as a starting point. The PHVA cycle focuses on four stages of action, the planning stage, the problem must be detailed, that is, indicate the point of the proposal that has not been met, then the proposed objectives must be detailed to achieve the fulfillment of this point. It also encompasses the improvement action, in which the specific actions and tools used by the company to comply with it must be detailed. The human, physical, and economic resources used in this operation must be detailed, in addition to establishing a maximum date for the fulfillment of the corresponding actions and finally making comments based on the expected results and those achieved (Pedro José et al., 2023).

#### Figure 2

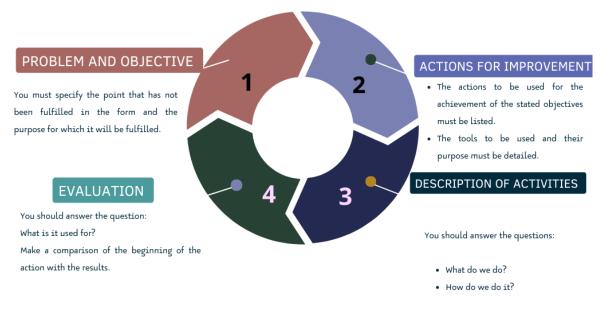
Rationale for the development of action plans in the planning stage.



In the doing stage, the problem and the objectives to be met are detailed with this possible action plan, to the improvement actions, the actions and tools that the company will use for the fulfillment of its proposed objectives must be described, when complying with each corresponding action it must be answered what is being done? How is it being done? and why is it being done? since answering these questions maintains the objective approach required by the form.

Figure 3

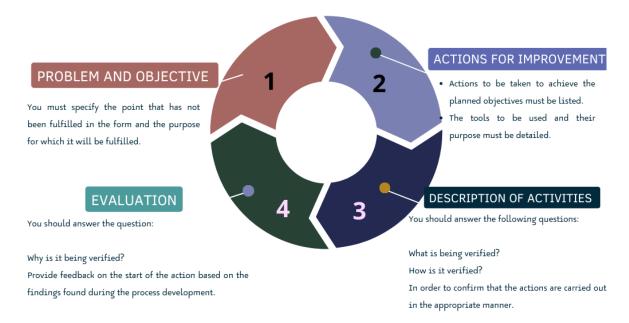
Rationale for the development of action plans for the doing stage.



The verification stage is executed based on the stage of doing, the fundamental difference is based on the actions used in each one and on the way of verifying or controlling that these are being carried out properly, that is, in the verification, it is answered: what is verified? And what is the purpose of verification? Concerning the answers to these questions, help or accompaniment is sought from personnel with experience in the areas where the form is lacking, all this to execute a correct audit of the actions applied in the previous stage.

#### Figure 4

Rationale for the development of action plans for the verification stage.

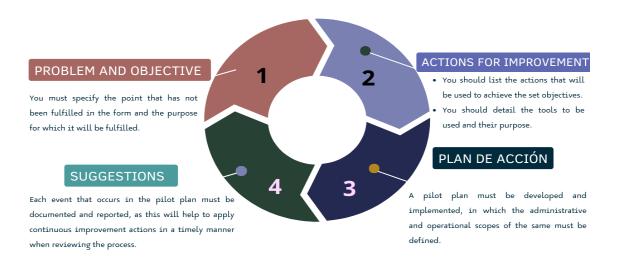


Finally, in the stage of acting, it is executed based on the same problem and objectives, however, the improvement actions are presented as a pilot test, which must delimit their administrative and operational scopes respectively, in summary, once the possible action plan is launched, each event of this action must be noted and reported. To be able to carry

out a cross-sectional analysis between the point to be fulfilled in the form and the expected results, at the end of the proposed period.

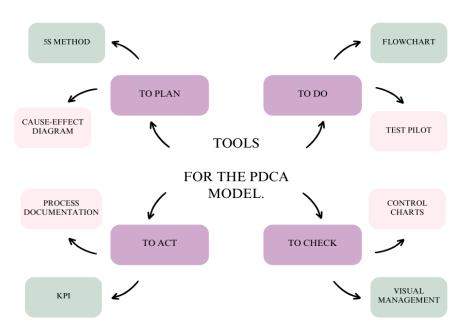
#### Figure 5

Rationale for the development of action plans for the action stage.



The tools to be used in the different stages of the PHVA cycle are several, however, the recommended ones are; The 5s method, cause and effect diagram, flowcharts, pilot tests, control charts, visual management, etc. These tools can make it easier to complete each of the different stages of the cycle. It is worth mentioning that, although they are recommended tools, they are not the only ones that could be used when planning the stages. These are recommended for their ease of use and applicability.

#### Figure 6



Tools for the PHVA model

#### 4. Discussion

The ISO 14001 standard is a fundamental tool for hotels to evaluate and carry out improvement plans focused on environmental performance, in this document its foundations and meaning are explored in detail. The standard emphasizes the importance of complying with environmental requirements. It also highlights the need for management that meets socio-economic expectations without harming the environment (Ahmed et al., 2020). When companies use these environmental management systems, they can prevent/reduce the negative effects they have on the environment, improve their performance and reputation in the hospitality industry.

The research analyzes several conditions that seek to encourage hotels to adopt measures focused on ecological responsibility in their daily work, such as changing the way they carry out their main activities and achieving environmental awareness among their workers. Getting certified can make a big difference, but it sometimes takes much time, work, and money.

### 5. Conclusion

Research on ISO 14001 pre-certification assessment in hotels provides a global view of how environmental management systems can improve sustainability in the hospitality sector. The implementation of this standard not only drives hotels to comply with environmental standards, but also fosters a culture of continuous improvement that can lead to better environmental, economic, and social performance. The literature review and the proposed methodology demonstrate that the adoption of sustainable practices is not only necessary for environmental conservation but also to improve competitiveness in the hotel sector.

The form presented stands out tor be an evaluation model that systematically identifies the areas of improvement needed in the environmental management of a hotel before seeking certification officially, however, it is imperative, which means that it is one of the desirable ways to achieve such certification. The model not only serves as a diagnostic tool to assess compliance with ISO 14001 but also allows hotels to plan and implement effective strategies to improve their internal environmental responsibility systems, thus presenting the essential fundamentals of the PHVA cycle for the creation of action plans according to the objectives to be achieved once the form is completed.

The study provides a detailed guide, which allows responsible and informed decisions to be made, and encourages hotels, regardless of their business size, to implement this evaluation guide, especially since tourism is a constantly growing activity. Adopting standards such as ISO 14001 becomes crucial to ensure sustainable growth. Finally, the research proposes a path towards the improvement of environmental systems that not only benefit the environment but also improve the reputation and economic viability of hotels committed to sustainable practices.

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