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An Evaluation of Environmental Performance According to The International Standard (ISO14001: 2015) in a Field East of Baghdad / A Case Study in the Midline Oil Company

Ekhlas Jasim Resen
College of Administration And Economics
University Of Baghdad

ikhlass.jassem1205a@coadec.uobaghdad.edu.iq

Mohammed Sadiq AbdulRazzaq
Collage of Administration And Economics
University Of Baghdad

dr-aldouri@coadec.uobaghdad.edu.iq

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Abstract

EMS in accordance with ISO 14001: 2015 is considered an entry point to reduce environmental impacts, especially the effects resulting from the oil industry, which is the main source of environmental pollution and waste of natural resources, since the second revision of the standard took place in September 2015. The problem of the research was manifested in the weakness in understanding of the correct guidelines that must be followed in order to obtain and maintain the standard .The purpose of this research was to give a general picture of what is behind ISO14001:2015 and how it is possible to create a comprehensive base for understanding its application by seeking the gap between the actual achieved reality, standards requirements and the diagnosis of their causes in the Medline Oil Company/ A field east of Baghdad by using the checklist and a number of statistical analysis methods (arithmetic mean, weights and percentages).The research reached a number of results; the most important of which is the existence of a gap in the application of the standard at a rate of (47.03%) resulting from a weakness in the application of most of the standard's clauses in the company and lack of interest in the programs related to the treatment and reduction of environmental impacts. The added value in this research is evident by diagnosing the strengths and weaknesses in each clause of the environmental specification in preparation for setting plans to eliminate or reduce the gap in the company under consideration.

Paper type: Case research.

Keywords: EMS ISO14001:2015, Extractive oils industry, Environmental Management System, ISO14001: 2015, Standardization, environmental performance, pollution, Environmental Management.

1. Introduction

Environmental issues have received increasing attention from international organizations in order to preserve them due to human-caused pollution, and this concern for the environment came to preserve the health and safety of future generations, as most countries of the world have enacted laws to protect the environment. The industrial sector took into consideration the environmental aspects in its various operations, activities and functions, especially if it is active in a sector that pollutes the environment. Hence, these organizations found themselves looking for new tools, mechanisms and methods of work that are consistent with and respond to environmental requirements, and this only happens through the adoption of the (EMS) in accordance with the international standard ISO 14001. Therefore, the importance of this research appeared in shedding light on the problem of environmental pollution resulting from industrial activities and the various process, specifically the oil industries, in order to preserve the environment and protect it from environmental pollutants by setting plans, mechanisms and work procedures to address the effects of various environmental aspects because they pose a challenge to industrial organizations on how to reduce them and turn them into opportunities to improve environmental performance, enhance environmental reputation, and embody an ethical environmental commitment.

The researcher relied on several previous studies, including the research (Murmura et al., 2017), whose goal was to analyse the two management systems ISO14001 and ISO19001 environmental auditing from a third aspect, not only to consider the advantages and disadvantages of their implementation separately, but also to develop them together in the organization and also show the type of motives which pushed the Italian companies to implement them together in order to present the results of a pilot survey that was conducted between the Italian companies accredited the ISO 14001 environmental management system, and the European Environmental Management and Audit System, and the most prominent conclusions of the research were that the certificate of the environmental audit and management system is closely related to ISO 14001; the majority of companies operating in International markets have both standards, as well as the emergence of evidence regarding the fact that more third-aspect environmental auditing and management system certified companies operated in international markets than companies that rely on ISO14001.

Among the other studies is the research of (Zaidan, 2020), which aims at diagnosing and determining the size of the gap in the application of the requirements of the (EMS) according to the standard ISO 14001:2015 and to know the resulting environmental problems, as well as the application of the failure mode and effects analysis (FMEA) tool to support the application and implementation of the requirements of the system environmental management, where the researcher used the case research method of the session's refinery/light derivatives commission as a sample for the research. The most important conclusions that Zaidan reached were the limited interest and environmental awareness among most of the company's employees, with a weakness in holding seminars, courses and workshops that would enhance interest and environmental awareness, with the absence of diversity in the use of means and tools for risk assessment and reliance only on the risk matrix when evaluating from time to time, in addition to the existence of work procedures according to ISO 14001: 2004, but they are brief and

do not cover the reality of the refinery's work in detail in operational and environmental terms, as well as the presence of guiding work instructions manuals, but they are not activated and do not work according to them.

Industrial progress and development have a major role in increasing economic growth, but this leads to an increase in the percentage of environmental pollution resulting from those industries, including the waste of oil products, as the extractive oil industry directly affects the safety of all workers in the Midline Oil Company (MOC.) as well as the surrounding areas through water and air pollution as a result of the gases emitted from the production processes associated with oil extraction, the researcher conducted a preliminary survey in the (MOC.) (the research community) to determine the extent of interest in environmental factors and their effects, as well as identifying the extent of the application of the international standard in the East Baghdad oil field (research sample) of the MOC. In light of this, the following questions were raised:

- i. Is there a gap between the actual reality achieved in the researched company and the requirements of the international standard (ISO14001: 2015)? Are there solutions and treatments to reduce or bridge the gap, if any?
- ii. Are modern techniques and tools relied upon in diagnosing, identifying and evaluating risks related to environmental aspects in order to support and implement the requirements of the environmental management system?
- iii. Does working in the East Baghdad field (research sample) lead to environmental damage, depletion of resources, increased wastage of production and increased waste rates?

The importance of the research is reflected in its selection of an area of vital importance to society in general, and the oil sector in particular, as the topic of concern for the environment is one of the contemporary issues that have occupied a top priority due to the severe damage that has befallen the environment, which has greatly affected the possibility of benefiting from what is available; as it is a resource naturally necessary for human life, the importance of this research is reflected in the following points:

- i. Assessing the reality of the Midline Oil Company from an environmental point of view by measuring the percentages of conformity with the requirements of ISO14001:2015 in order to find the best ways that would reduce the percentages of non-conformity and increase the percentages of conformity by developing procedures and plans for that.
- ii. Providing effective plans, mechanisms and tools to manage the various environmental aspects of the company, with a focus on activating administrative plans that require more attention and environmental awareness.

1. Enhancing environmental awareness through the formation of work teams to identify the risks of environmental aspects and risk-based thinking leads to the improvement of future environmental performance as a result of understanding the needs and expectations of the stakeholders.

2. Access to some results and proposals that are likely to help form a better picture of the extent of the contribution of ISO 14001 to the diagnosis and assessment of the risks of environmental aspects, as a new vision within the requirements of environmental protection.

3. Assessing the environmental situation of the concerned company by measuring the conformity rates with the requirements of ISO14001: 2015 and finding the best ways to reduce non-conformity rates and increase conformity rates by developing procedures, practices and plans for that.

2. Materials and Methods

2.1 The origin and concept of EMS

The Environmental Management System (EMS) is considered as one of the most prominent systems used to manage the environmental aspects of organizations (Oliveira et al., 2016:1). The adoption of the (EMS) has begun as a framework for integrating policies and programs for the environmental protection of organizations (Murmura et al., 2017:3). EMS plays an important role in voluntary initiatives to protect the environment, where environmental management systems are formed according to a set of administrative processes that focus on identifying, measuring and controlling the environmental impacts of companies (Kiatkulthorn and Sundstedt, 2016: 14). ISO 14001 environmental management systems are not only a system for environmental performance, but can also be used as a driving force for sustainable development and value creation in a process of fundamental change aimed at quality improvement (Fonseca, 2015:39). EMS is useful in better fulfilling the legal obligations related to the activities of the organization and allowing access to the latest information and in accordance with the environmental legislation and in case of failure corrective actions must be taken to correct the situation (Mangra, et.al, 2014:6) and EMS is in accordance with the standards of ISO 14001 is a continuous standard for continuous improvement and does not refer to compliance with a specific goal or result, meaning that organizations are not required to perform environmentally on what they must achieve regardless of commitment to environmental regulations and implementation of the continuous improvement process to achieve their goals and objectives in an organized and documented manner (Kiatkulthorn and Sundstedt, 2016: 14).

An (EMS)(EMS) is designed to help companies manage their environmental obligations and responsibilities and includes a continuous cycle of improvement (Thomas, 2014: 154). The researcher in Figure 1 illustrates this philosophy.

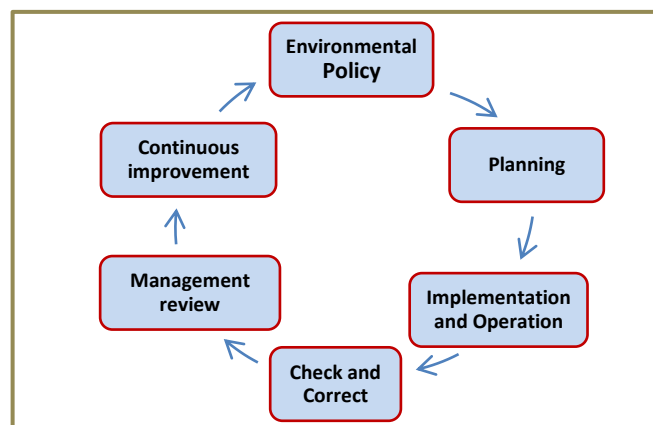


Figure (1): The (EMS)Cycle

Source: (Jain, Ravi K., (2016), “Environmental Impact of Mining and MinERAL PROCESSING Management, Monitoring, and Audit Strategies,” USA, P 36.)

A number of researchers have presented different definitions of EMS. (ISO14001) defines it as “the comprehensive management system that includes the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining environmental policy.” Franz et al.,(2017:79) define it as "It is the part of the overall management system of the organization which deals with the regulatory and policy requirements related to the environmental aspects, especially the protection of the environment, in order to ensure that the products and processes of the organization are environmentally friendly and that the employees and stakeholders are aware of their duties in the environment in a responsible manner." Lee (2018:25) defines it as "A system used by an organization to ensure that it does everything possible to protect the environment and follows all laws related to the environment," while Kniaz et al.,(2020:58) define it as "It is an open, artificial, and managed system which it is based on organizational, individual and collective goals of management qualifications, which correspond to social needs, on the basis of the provisions of the concept of sustainable development," while Shah et al.,(2022:49) define it as "A systematic management to reduce the environmental impact of an organization or company whose main objective is to protect the environment as it acts as a weapon to combat mismanagement caused by the results of organizations in their various operations in different work environments."

Based on the foregoing, the researcher defines EMS in a way that is appropriate to the nature of the field of research as: “An integrated administrative system represented in the main functions of management: planning, organizing, directing and following up the workflow with an environmental impact in order to achieve the objectives and policies of the project in this field according to specific programs with the aim of improving its environmental performance.”

EMS is considered as one of the most prominent systems used to manage the environmental aspects of organizations (Viranda et al., 2020:3). The (EMS) played an important role in voluntary initiatives to protect the environment. It also constituted a set of administrative processes that focus on identifying, measuring and controlling the environmental impacts of companies that included the structure of roles and responsibilities and a set of procedures related to the environmental political management of the organization, including direct environmental aspects, and indirect, such as compliance with legal and other requirements (Bravi et al., 2020:2). ISO 14001 environmental management systems are not only a system for environmental performance, but can also be used as a driving force for sustainable development and value creation in a process of fundamental change aimed at quality improvement (Fonseca, 2015:39).

ISO 14001 is a continuous standard for continuous improvement and does not refer to compliance with a specific goal or result, meaning that organizations are not required to perform environmentally on what they must achieve regardless of commitment to environmental regulations and implementation of a continuous improvement process to achieve their goals and objectives in an organized and documented manner (Harmoko and Suef,2021:3) Similar to the Deming Plan-Do-Check-Act cycle, the ISO 14001-based EMS provided a framework for frequently and systematically dealing with environmental issues to achieve sustainable environmental performance (Zilahy, 2017:24 ; Harmoko and Suef,2021:3) .

An EMS based on the ISO 14001 standard is part of the environmental management tools. ISO 14001, which sets out requirements for environmental management systems, is one of the standards in the ISO 14000 series of environmental management standards (Dereinda and Greenwood, 2015:2). ISO 14001 can be applied to any service or industry organization and is one of the most widely used voluntary environmental management tools globally (ISO, 2015a; Iatridis and Kesidou 2016: 3; Boiral et al., 2017: 2. According to Purwanto et al., (2021:22) the current ISO 14000 standard contains a global technical standard for environmental compliance required not only by companies, but also by suppliers and distributors.

The need for the development of environmental management standards arose from the results of the deliberations during the convention of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 (Bravi et al.,2021:2), in which a call was made to establish common standards , the ISO 14001 standard was launched in 1996, as the first in the 14000 series of ISO standards for environmental management (Dereinda and Greenwood, 2015:2); based on International Standards Organization (ISO) data in 2018, there are 307059 companies in the world that have implemented ISO 14001 (Budi et al.,2020:1).

Organizations are motivated by various factors to implement the ISO14001-based Environmental Management System. However, the benefits and effectiveness of implementing an EMS are not directly related to motivation, but rather to organizational characteristics (Zobel, 2016:603). In fact, it has been highlighted that organizations are motivated more by internal factors than external factors to implement EMS-based ISO14001 (Iatridis and Kesidou, 2016:1; Boiral et al., 2017:22; Vilchez, 2017:35).

2.2 Notable changes in the 2015 version of ISO 14001

ISO standards are meant to be reviewed regularly to ensure that they remain relevant and effective (BSI, 2015:2; Fonseca, 2015:43). The ISO 14001 standard has been revised twice, since its launch - in 2004 and 2015 (ISO, 2015a ; Zutshi and Creed, 2015:92; Maliwatu, 2018:21).Changes made with each review are influenced by ongoing lessons from practice and the results of the extensive research that has been and continues to be conducted around the world regarding the ISO 14001-based (EMS)(Salim et al., 2018:652).Moreover, as Zilahy (2017:23) explained, shifts in the way of thinking about environmental challenges and the development of new technological solutions also continue to influence the development of environmental management tools, which include ISO 14000 standards. Some of the notable changes introduced in the 2015 (3rd Edition) version of the ISO 14001 standard are highlighted below.

The ISO standard, (ISO, 2015a), incorporated enhanced requirements for environmental performance (Fonseca, 2015:37; Zobel, 2016:602) in order to partially help counteract the weaknesses highlighted by previous research findings, such as (Darnall et al., 2008:30) who have argued that the environmental performance of an organization could even deteriorate while the organizations continued to maintain certification. The emphasis on identifying and proactively managing risks and opportunities that could influence the achievement of the organization's desired outcomes is also intended to enhance environmental performance (Dereinda and Greenwood, 2015:1; Ramana and Kaushal,2020:10).

Moreover, the role of senior leadership is becoming more prominent in the sense that the ISO 14001 standard expects organizations to make environmental management part of their strategic management activities (ISO, 2015a; Nel and Alberts, 2016:3). Entry into the ISO 14001 standard for the requirements of organizations to define organizational context is also a necessity for strategic management (Banks et al., 2016: 19).

The 2015 version of the ISO 14001 standard also brought more emphasis to the process approach and life-cycle thinking (ISO, 2015a). Interrelated activities and issues, enhancing the chances of achieving the desired results, analysis of processes and related issues entails continually assessing risks and opportunities, considering all steps of the process, from start to finish - by reflecting on the life cycle (Fonseca, 2015: 46; ISO, 2015a; Kumar and Sami, 2020:11).

2.3 Advantages of the 2015 ISO 14001 Environmental Management System:

Most writers and researchers agreed on a number of advantages when applying (ISO 14001), which appear as follows (Syam et al., 2021:44; Fura and Wang, 2017:104; Da Fonseca, 2015:47)

- Strengthening the organization's capabilities, process innovations and improving efficiency to support its competitive position.
- Reducing the size of the regulatory authorities and stimulating the emergence of environmental competencies.
- Reducing costs and reducing the consumption of water and energy resources to improve environmental performance and improve the organization's environmental image and reputation.
- Improving: maintenance, operational efficiency, relationships with the community, authorities, and legal and regulatory bodies.
- Working to meet customers' desires by reducing waste, improving product quality and reducing environmental risks.
- Increasing production capacity and prevent wasting raw materials, energy and production requirements.

Others believe that the new version of the ISO 14001:2015 standard has many advantages for the user, for example: (Anwar and Imad, 2021: 452; Mansur and al-Salami, 2021: 62)

- Provides more importance to management participation.
- It helped to deal with risks and opportunities in an orderly manner.
- Uses a common structure and terminology for other management system standards - which is particularly useful for organizations implementing many management systems (environmental, health and safety, or business continuity).
- Achieves strategic business objectives by integrating environmental issues into business management.
- Improves the company's reputation and stakeholder confidence through strategic communication.

Purwanto et al.,(2020:14059) add that internal benefits have become a more influential factor than external benefits, although the gap between these two factors is not relatively large, as the company's influence in the market, the transition from traditional practices to sustainable practices, and the improved relationship with society resulting from better environmental performance; improving waste

treatment is a set of contributing factors from which companies derived their interest in implementing the standard .

2.4 Obstacles to the application of ISO14001

There are a number of obstacles that the organization faced when trying to obtain the standard, and they are summarized (Al-Obaid, 2006: 37; Salman, 2015: 38) as follows:

1. The process of implementing an EMS takes much longer than the organization expects, as a result of the numerous documents required and the time required to prepare them.
2. Problems that arise during the process which are often related to the lack of time required, adequate preparation and required procedures.
3. Some organizations feel that the system is too bureaucratic in terms of adherence to formalities and standards.
4. For small organizations, guidelines are often difficult to understand, and certifications can be expensive.
5. Many organizations considered it difficult to track environmental performance and created effective environmental performance indicators.
6. There is often a conflict of priority that may arise from working with an EMS in that it is difficult to identify the most important criteria, which should be given the highest importance.

2.5 Research objectives 3.4 The research population and sample and the reasons for selection

Due to the difficulty of being familiar with the sources of pollution and emissions in the Iraqi environment, the Midline Oil Company was chosen as a community to research in the gap survey stage according to criteria that served the main objective of this research and address the problem at hand, and these criteria are:

1. Oil is the main pillar, if not the only pillar on which the state budget is based, as it is the main and important artery for the Iraqi economy and its obligations.
2. There is a tendency on the part of the government and the concerned authorities represented by the Ministry of Health and Environment as well as the Ministry of Oil towards the application of environmental management systems.
3. The company's stakeholders suffer from weak environmental financial allocations by senior management and out-dated infrastructure, all of which impede the work of the environmental management system.

The company represents one of the companies of the Ministry of Oil working in the extractive sector and its place of management is in the city of Baghdad / Rashidiya. Its capital is (90) (ninety billion dinars) based on the provisions of Article (3) of the Public Companies Law No. (22) of 1997, as amended and the number of employees. It has (2984) affiliates until the end of 2018 compared to (2839) affiliates at the end of 2017, i.e. an increase of (145) affiliates, and the company includes many production sites that extend to a wide geographical area, starting from the East Baghdad field (in the Rashidiya area) and the Naft Khana in Diyala Governorate all the way to Al-Ahdab Oil Field and Badra Field in Al-Kut Governorate, as well as the Okaz and Al-Mansuriya Gas Fields in Al-Anbar and Diyala Governorate. The above sites include processing units for crude oil and exporting it to the beneficiary parties. The Oil treatment units, storage and export units.

2.6 The research method

In line with the subject of the research in an attempt to achieve its objectives, and in order to achieve the desired results, the research will adopt the case research approach, as it suits the research of the reality of (the Midline Oil Company), and that this method depends on (personal interviews - observation method - checklists - as well as field experience), which helps in highlighting the gap through responses and observations in kind, which leads to determining conclusions and giving recommendations and appropriate solutions or alternatives with tangible impact.

Measures

This paragraph deals with measuring and analyzing the gap through (Check List) to know and diagnose (strengths and weaknesses) for each clause of the specification, resulting from measuring the percentage of deviation (the gap) between the actual environmental reality of the research community (MOC.) and the requirements Specification ISO14001:2015 on the heptagonal scale by allocating a specific weight to each of the scale's paragraphs. Table 2 shows the scale clauses and their weights that range between application and complete documentation (with a weight of six degrees) and non-application and documentation (with a weight of zero), and using the arithmetic mean and percentages, as well as graphs to clarify the scope of the gap in the documentation and application of those requirements in the Midland Oil Company / field east of Baghdad.

Table (1): The seven-point scale to determine the degree of conformity with (ISO 14001:2015)

No.	Scale paragraph	Scale paragraph weight
1	Fully applied and fully documented	6
2	Fully applied and Partially documented	5
3	Fully applied and undocumented	4
4	Partially applied and fully documented	3
5	Partially applied and Partially documented	2
6	Partially applied and undocumented	1
7	Not applicable and undocumented	0

The source: Al-Khatib, Samir Kummel, (2008), Total Quality Management and ISO - Contemporary Introduction, Library of Egypt and Dar Al-Murtada - Iraq - Baghdad, 326.

The practical aspect of the research was accomplished through the checklists and based on the statistical tools (Al-Khatib, 2008, 327):

1- Weighted arithmetic mean: the average is found for the arithmetic mean and through the relationship.

$$\text{Weighted arithmetic mean} = \frac{\sum(\text{weights} * \text{repetitions})}{\sum \text{repetitions}} \quad (1)$$

2- Percentage of conformity with the standard (ISO14001:2015): The percentage of each requirement is calculated to determine the extent of conformity and variance with the requirements of the standard (ISO14001:2015) through the relationship:

$$\text{Percentage of conformity} = (\text{weighted mean} \div \text{highest score on the scale}) \times 100\% \quad (2)$$

3- Gap size: to find out the percentage of difference between the actual reality of the requirement and what is required by the standard (ISO14001:2015).

$$\text{Gap size for each requirement} = 1 - \text{Percentage of conformity}. \quad (3)$$

3. Discussion of Results

It is known that the ISO 14001:2015 standard contains (10) clauses, the first three of which are defining clauses related to the field, standard references, definitions and terms. As for the rest of the categories, they are basic ones, and they are (7): {(4) organizational context, (5) leadership, (6) planning, (7) support, (8) operating, (9) performance evaluation and (10) improvement}.

The researcher conducted several field tours with various environmental teams from the Environmental Department of Medline Oil Company for the purpose of monitoring and field inspection of the actual environmental reality, records and documents related to the (EMS) through the checklist designated for that purpose, as Table 3 shows the analysis of the checklist for the fourth clause related to (organizational context), while Table 4 is devoted to analyzing the checklist related to the fifth clause of the mentioned standard (Leadership); these two clauses have been chosen in order to clarify how this test will be conducted, as this structure will be worked on for the rest of the clauses of the standard, and then the results were collected the final results obtained from the analysis of the checklists in Table 5.

3.1 The analysis of the requirements of the fifth clause (organizational context):**Table 2 analysis of a checklist to meet the requirements of (organizational context)**

Indications		The degree of conformity with the standard (ISO14001:2015)						
No.	Indications	Fully applied and fully documented	Fully applied and Partially documented	Fully applied and undocumented	Partially applied and fully documented	Partially applied and Partially documented	Partially applied and undocumented	Not applicable and undocumented
4.1 Understanding the organization and its context								
4.1.1	Provide an (EMS) in compliance with the requirements of the standard (ISO14001:2015).					•		
4.1.2	The senior management is working to develop an (EMS) that suits internal and external issues of direct or indirect impact.				•			
4.1.3	The administration is keen to develop an (EMS) that is compatible with the requirements of the standard in the future.				•			
4.1.4	Senior management studies and determines the surrounding environmental conditions to determine and formulate its future environmental directions.					•		
weights		6	5	4	3	2	1	0
The number of repetitions		0	0	0	2	2	0	0
The result		0	0	0	6	4	0	0
Weighted arithmetic mean		2.5						
The percentage of conformity (degree of application)		%41.7						
Gap degree		3.5						
The non-conformance percentage (degree of non-application)		%58.3						

4.2 Understanding the needs and expectations of interested parties.								
4.2.1	Identification of the parties related to environmental activity and within the context.					•		
4.2.2	Determining the needs and expectations of the parties involved in environmental activity within the context.						•	
4.2.3	The commitment of the senior management to the requirements of the concerned parties as regulatory requirements and commitment to them now and in the future.							
4.2.4	The correlation of future trends and decisions taken with other influential parties in order to achieve the current and future needs of the concerned parties.					•		•
4.2.5	The commitment of senior management to develop an (EMS) of a nature compatible with the needs and expectations of the concerned parties.						•	
4.2.6	The senior management determines its achievements in achieving the needs and expectations of the concerned parties.						•	
weights		6	5	4	3	2	1	0
The number of repetitions		0	0	0	0	2	3	1
The result		0	0	0	0	4	3	0
Weighted arithmetic mean		1.17						
The percentage of conformity (degree of application)		%19.5						
Gap degree		4.83						
The non-conformance percentage (degree of non-application)		%80.5						
4.3 Determining the scope of the environmental management system								
4.3.1	The scope of the EMS is determined by taking into account the internal and external issues affecting environmental performance.					•		
4.3.2	The scope of the (EMS) conforms to the needs and expectations of the stakeholders as well as the regulatory requirements.						•	
4.3.3	Establishing EMS scope limits in order to control activities, products, and services		•					
4.3.4	Inclusion of all activities, products and services when defining the field in the environmental management system.							•
4.3.5	The ability of senior management to			•				

	maintain its authority and influence in implementing the environmental management system.							
4.3.6	Maintain documented information related to the implementation and improvement of the (EMS) and be available to the relevant parties.			•				
	weights	6	5	4	3	2	1	0
	The number of repetitions	0	1	2	0	1	1	1
	The result	0	5	8	0	2	1	0
	Weighted arithmetic mean	2.67						
	The percentage of conformity (degree of application)	%44.7						
	Gap degree	3.33						
	The non-conformance percentage (degree of non-application)	%55.5						
4.4 Environmental management system								
4.4.1	The administration works to establish and implement an effective (EMS) that achieves the desired results.					•		
4.4.2	The company's management maintains and improves its ecosystem in order to enhance environmental performance.					•		
4.4.3	The company's management is keen to take into account the company's operations and the interactions between them from an environmental point of view.						•	
4.4.4	Confirmation and commitment of all levels of the company to the need to adopt an (EMS) compatible with the available capabilities					•		
4.4.5	Senior management works to take into account, when establishing and maintaining the environmental management system, the following:				•			
	a. Understand the nature and context of the company's business		•					
	b. Understand the needs and expectations of stakeholders.					•		
	weights	6	5	4	3	2	1	0
	The number of repetitions	0	0	0	1	3	1	0
	The result	0	0	0	3	6	1	0
	Weighted arithmetic mean	2						
	The percentage of conformity (degree of application)	%33.3						
	Gap degree	4						
	The non-conformance percentage (degree of non-application)	%66.7						

Arithmetic mean of the Organizational context clause	2.085
The percentage of conformity (degree of application) to the Organizational context clause	%34.75
Gap degree for Organizational context clause	3.915
The percentage of non-conformity (degree of non-application) for Organizational context clause	%65.25

3.2 The analysis of the requirements of the fifth clause (Leadership):

Table 3 The analysis of a checklist to meet the requirements of (Leadership)

5.Leadership		The degree of conformity with the standard (ISO14001:2015)						
No.	Indications	Fully applied and fully documented	Fully applied and Partially documented	Fully applied and undocumented	Partially applied and fully documented	Partially applied and Partially documented	Partially applied and undocumented	Not applicable and undocumented
5-1 Leadership and Commitment								
5.1.1	Senior management bears responsibility for the effectiveness of the activities of the environmental management system			•				
5.1.2	Senior management's contribution to the distribution and identification of (EMS) responsibilities.				•			
5.1.3	Ensuring the effectiveness of the (EMS) and its integration with operations and activities, reflects the responsibilities of higher management.						•	
5.1.4	Emphasis on senior management on aligning environmental policy and objectives with the strategic direction and context.			•				
5.1.5	Senior management works to provide the resources required to ensure the effective implementation of the environmental management system.					•		
5.1.6	Senior administrations continue to show the importance of the role of effective environmental management in achieving the requirements of the environmental management system.						•	
5.1.7	The commitment of senior management to focus on the principle of guidance and contribution of employees to ensure the effectiveness of the environmental		•					

	management system.							
5.1.8	Confirmation by senior management that the (EMS) has achieved the required results.					•		
5.1.9	Clarify the important role of senior management in promoting and adopting the principle of continuous improvement in all operations and activities.						•	
5.1.10	Supporting senior management for relevant administrative positions in terms of defining the scope of their responsibility.					•		
Weights		6	5	4	3	2	1	0
number of repetitions		0	1	2	1	3	3	0
The result		0	5	8	3	6	3	0
Weighted arithmetic mean		2.5						
Percentage of conformity (degree of application)		%41.7						
Gap degree		3.5						
Non-conformance percentage (degree of non-application)		%58.3						
5.2 Environmental Policy								
5.2.1	The senior management determines the environmental policy in line with its field of work and the environmental management system.	•						
5.2.2	Achieving and implementing the environmental policy and maintaining it by the Midline Oil Company management and other departments within the field.	•						
5.2.3	That the senior management set and formulate frameworks for environmental objectives based on the environmental policy.		•					
5.2.4	The established environmental policy is concerned with the environmental impact of the outputs.	•						
5.2.5	The environmental policy includes clearly and explicitly the reduction of pollution of the outputs and the commitment to continuous improvement.		•					
5.2.6	Senior management is committed to developing an environmental policy that takes into account the sustainable use of resources, mitigation of climate changes and the protection of biodiversity.							•
5.2.7	Senior management ensures that the approved environmental policy meets the requirements of the applicable environmental management system.							•
5.2.8	Senior management works on the need for the environmental policy to be specific, known to the employees, documented on a	•						

	regular basis, and available to the concerned parties.							
	Weights	6	5	4	3	2	1	0
	The number of repetitions	4	2	0	0	0	0	2
	The result	24	10	0	0	0	0	0
	Weighted arithmetic mean	4.25						
	The percentage of conformity (degree of application)	%70.8						
	Gap degree	1.75						
	The non-conformance percentage (degree of non-application)	%29.2						
5.3 Organizational roles, responsibilities and powers								
5.3.1	Confirmation of senior management on the participation of workers in the (EMS) through the assignment of roles, responsibilities and powers of employees.		•					
5.3.2	Provide workers with a clear understanding of the roles entrusted to them with regard to the (EMS) in order to achieve the desired results.				•			
5.3.3	The senior management works to ensure that the responsibilities of the important environmental impact entrusted to the workers are announced and clear.			•				
5.3.4	Defining the overall roles and powers of environmental management.		•					
5.3.5	Senior management identifies a person or entity responsible for environmental management.	•						
5.3.6	Granting the representative / entity, responsibilities and powers to submit reports to evaluate the performance of the (EMS) to the higher management and to improve it.	•						
	Weights	6	5	4	3	2	1	0
	The number of repetitions	2	2	1	1	0	0	0
	The result	12	10	4	3	0	0	0
	Weighted arithmetic mean	4.8						
	The percentage of conformity (degree of application)	80%						
	Gap degree	1.2						
	The non-conformance percentage (degree of non-application)	20%						
	Arithmetic mean of the Leadership clause	3.85						
	The percentage of conformity (degree of application) to the Leadership clause	%64.2						
	Gap degree for Leadership clause	2.15						
	The percentage of non-conformity (degree of non-application) for the Leadership clause	%35.8						

Table 4 The summary of the final results of the extent of conformity with the provisions of ISO14001:2015 in the Midline Oil Company

Clause No.	Main Clause name	sub- Clause					Gap rate for each major Clause	
		No.	Weighted arithmetic mean	Match percentage %	Gap %			
4	Context of the organization	4.1	2.5	41.7%	58.3%		65,25%	
		4.2	1.17	19.5%	80.5%			
		4.3	2.67	44.7%	55.3%			
		4.4	2	33.3%	66.7%			
5	Leadership.	5.1	2.5	41.7%	58.3%		35.8%	
		5.2	4.25	70.8%	29.2%			
		5.3	4.8	80%	20%			
6	Planning.	6.1	6.1.1	2.33	38.8%	61.2%	53.3%	35%
			6.1.2	3.71	61.8%	38.2%		
			6.1.3	3.17	52.8%	47.2%		
			6.1.4	2	33.3%	66.7%		
		6.2	5	83.3%	16.7%			
7	Support	7.1	3.5	58.3%	41.7%		37%	
		7.2	3.38	56.3%	43.7%			
		7.3	3.83	63.8%	36.2%			
		7.4	7.4.1	4	66.7%	33.3%		31.1%
			7.4.2	4.7	78.3%	21.7%		
			7.4.3	3.7	61.7%	38.3%		
7.5	4.1	68.3%	31.7%					
8	Operation	8.1	33.3	55.5%	44.5%		44.5%	
		8.2	3.88	64.7%	35.3%		35.3%	
9	Performance evaluation	9.1	9.1.1	3.25	54.2%	45.3%	41%	52.7%
			9.1.2	3.8	63.3%	36.7%		
		9.2	3.57	59.5%	40.5%			
		9.3	1.43	23.8%	76.2%			
10	Improvement.	10.2	2.75	45.8%	54.3%		63.7%	
		10.3	1.6	26.7%	73.3%			
The percentage of the total gap to conform to the specification		47.03%						
The overall percentage of conformity with the specification		52.97%						

3.3 Discussing the results of the fourth clause (organizational context):

This clause is one of the modern requirements in the mentioned specification, and it shows the extent to which the MOC has a high level understanding of the external and internal factors that can affect the application of the environmental management system.

It is clear from Table 3 that the arithmetic mean of the organizational context clause was 2.085 and the percentage of matching was 34.75%, while the degree of the gap was 3.915, with the non-conformance rate was 65.25 %, and the percentage of conformity with the sub-clauses of the specification shown in Figure 2; this indicates that the Midline

Oil Company suffers from weakness and lack of interest in meeting the requirements of the context of the organization, while the sub-clause (Determining the scope of the environmental management system) got the highest level of application, as the arithmetic mean value reached 2.67, with a matching percentage 44.5%, a gap degree 3.33 and a non-conformity rate 55.5%, which indicates that MOC has an interest below the acceptable level in meeting the requirements for determining the scope of the environmental management system, which should meet the requirements for determining the (EMS) by taking into account internal and external issues and the compatibility of the field with the expectations of the concerned parties. One of the most important reasons for this is the weak ability of the company to support the application of the (EMS) and the strengthening of its authority and influence in order to enhance environmental performance and achieve the desired results, as well as the lack of support and commitment of all formations and bodies to apply the (EMS) according to the available capabilities.

As for the lowest level of application of the sub-clauses of the context of the organization, it was for (understanding the needs and expectations of the concerned parties), as the arithmetic mean value reached 1.17 with a matching percentage 19.5%, a gap degree 4.83 and a non-conformity rate 80.5, which indicates that the Midline Oil Company did not work to understand the needs and expectations of the concerned parties, so the company should identify and define the concerned parties and determine their needs and expectations and work to achieve them through the commitment of the senior management in the Midline Oil Company, due to three reasons, including:

1. The lack of senior management's interest in identifying and meeting the needs of the concerned parties in the company, represented by suppliers, workers, and other responsible parties.
2. The lack of procedures for integrating the needs of the concerned parties within the company's future plans and directions.
3. Not paying attention to the required level when specifying requirements and including them in tenders when providing work needs in the company.

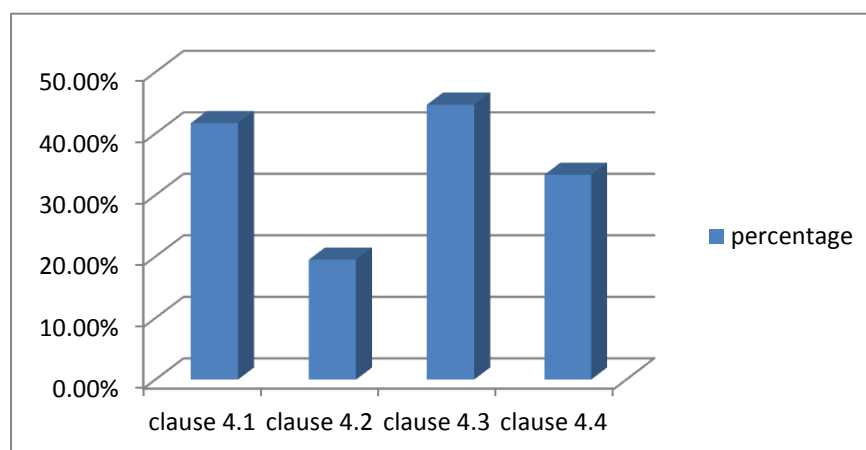


Figure 2: The level of application of the sub-clauses of the context of the organization in the Midline Oil Company

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the fourth clause (the organizational context) as follows:

The strengths are as follows:

1. The company has established limits for the scope of the (EMS) in order to control all activities of the EMS.
2. It has also an awareness and understanding of the context of the organization and the nature of the work it does.

While the weaknesses were as follows:

1. The company's (EMS) does not comply to the acceptable level with the requirements of the international standard ISO14001:2015
2. The weakness of the senior management in its research of the environmental conditions surrounding the company in order to determine its future environmental directions.
3. A weakness in identifying the parties assigned to the environmental management system, as well as their lack of interest in determining the needs of the concerned parties and their lack of commitment to meet those requirements as organizational requirements the company is working to meet.
4. Although the company has specified the scope of its environmental management system, it has not worked to include all environmental activities in it in order to control those activities.

3.4 The discussing the results of the fifth clause (Leadership):

The leadership clause includes three sub-clauses, and from Table 4 it is clear that the arithmetic mean of the leadership clause was 3.85 and a matching percentage 64.2%, while the gap degree was 2.15, with a non-conformity rate 35.8%, which indicates that the oil company is concerned with meeting the leadership requirements within the specification ISO14000:2015, while the sub-clause (roles, responsibilities and organizational powers) obtained the highest level of application, as the value of the arithmetic mean was 4.8, with a matching percentage 80%, a gap degree 1.2, and a non-conformity rate 20%, which indicates that the Midline Oil Company has a high-level interest in meeting the requirements of organizational roles, responsibilities and powers by involving the workers in the (EMS) and introducing them to their roles. The rest of the departments, as well as the commitment of the senior management to grant their representatives the power to submit reports to evaluate the system and work to improve it, but this did not prevent the senior management's lack of interest in clarifying the environmental impacts that are identified by the competent authorities and workers, as well as the weakness of creating a clear understanding among employees about the roles assigned to them to achieve the desired results.

As for the lowest level of application of the sub-clauses of the leadership clause, it was for (leadership and commitment), as the arithmetic mean value reached 2.5, a matching percentage 41.7%, a gap degree 3.5 and a non-conformity rate 58.3, which indicates that the senior management in the (MOC) is on. Despite the involvement of workers and the definition of their roles in the environmental management system, the (EMS) is not effective to the desired degree and is not characterized by integration with other operations and activities, as the researcher noted through the plans and administrative reviews:

1. Senior management pledge and commitment to apply the (EMS) in an efficient and effective manner, but there was a weakness in the system's integration with other activities.

2. The approval of the senior management on the environmental objectives and policies, but there is a shortcoming in the continuity and periodicity of the administrative reviews in order to come up with recommendations and proposals that support the system and enhance its effectiveness on a regular basis.

3. The lack of clarity of internal audit procedures and lack of emphasis on its independence from periodic administrative reviews.

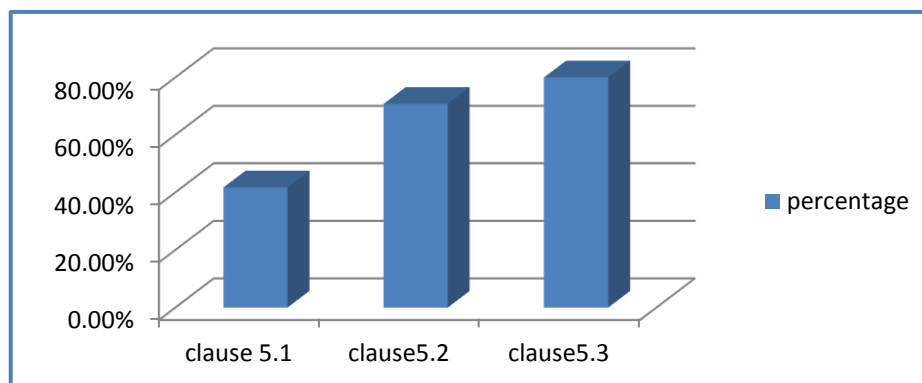


Figure (3) The application level of the sub-clauses of the leadership clause in the Midland Oil Company

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the fifth clause (leadership) as follows:

The strengths are as follows:

1. The company's senior management is committed to focusing on the principle of directing and contributing to the private sector in order to ensure the effectiveness of environmental management.

2. The senior management determines the environmental policy in line with its field of work and the environmental management system, as well as its application of that policy. In addition, this policy is concerned with the environmental impact resulting from the company's business.

3. The management representative has the powers and responsibilities to submit reports to assess and improve the performance of the (EMS) to the higher management.

While the weaknesses were as follows:

1. The leadership's weakness in its eagerness to achieve the effectiveness of the environmental management system.

2. The weakness in the statement of the importance of environmental management in meeting the requirements of the (EMS) in accordance with the standard ISO14001:2015.

3. The weakness in adopting the principle of continuous improvement in all operations and activities carried out by the company.

4. The environmental policy used in the company does not take into account the sustainable use of resources, mitigation of climate changes and the protection of biodiversity.

5. The environmental policy does not consider meeting the requirements of environmental management according to the standard ISO14001:2015.

3.5 Discussing the results of the sixth clause (planning):

The arithmetic mean of the planning clause was 3.9, with a matching rate of 65%, while the gap degree was 2.1 with a non-conformity rate of 35%, while the sub-clause (Environmental goals and planning to achieve them) reached the highest level of application, as the arithmetic mean value was 5 with a matching rate 83.3%, a gap degree 1, and a non-conformity rate 16.7%.

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the sixth clause (planning) as follows:

The strengths are as follows:

1.The company has documentation of information related to environmental obligations and has the ability to provide such information when needed, in addition to information related to environmental goals.

2.It has environmental goals for job levels defined by the senior management, and these goals are consistent with the environmental policy and communicated to everyone.

While the weaknesses were as follows:

1. The weakness in defining the needs and expectations of the specific parties in the company.

2. The weakness in the process of integrating administrative systems with the company's environmental management system.

3. The environmental objectives set are not measurable, applicable, subject to monitoring, and updated.

3.6 Discussing the results of the seventh clause (support):

The support clause includes five sub-clauses, and by analyzing the checklists, it was found that the arithmetic mean of the support clause was 3.78 and a matching percentage 63%, while the gap degree was 2.22 with a non-conformity rate 37%, while the sub-clause (documented information) at the highest level of application, as the arithmetic mean value reached 4.1, a matching rate 68.3%, a gap degree 1.9 and a non-conformity rate 31.7%, while the lowest level of application of the sub-clauses of the support clause was (efficiency), as the arithmetic mean value reached 3.38, with a matching rate (56.3%), a gap degree 2.62, and a non-conformity rate 43.7.

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the seventh clause (support) as follows:

The strengths are as follows:

1. The company provides support to workers who have an impact on environmental performance, and works to provide all needs related to training programs with the aim of developing workers in the field of environmental management.
2. The company has employees who have awareness and understanding of the concept of environmental management system.

While the weaknesses were as follows:

1. The weakness in control and control over the changes taking place in the procedures related to the environmental management system.
2. The weakness of the procedures related to the completion of continuous improvement processes within the framework of the environmental management system.

3.7 The discussion of the results of the eighth clause (operation):

The arithmetic mean of the operating clause was 3.72 with a matching percentage 62%, while the gap degree was 2.28, with a non-conformance rate 38%, which indicates that the Middle Oil Company is somewhat interested in meeting the operating requirements within the specification (ISO14000:2015), while the sub-clause (preparedness and emergency response) obtained the highest level of application, as the arithmetic mean value reached 4.1, a matching percentage 68.3%, a gap degree 1.9 and a non-conformity rate 31.7%, which indicates that the (MOC) has an interest in meeting Emergency preparedness and response requirements.

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the eighth clause (operation) as follows:

The strengths are as follows:

1. The company is working on developing immediate plans for the purpose of preparing and responding to emergencies in a manner commensurate with the size of the emergency, as well as the influential concerned parties.
2. The senior management is keen to provide the necessary information to respond to emergency situations.

While the weaknesses were as follows:

1. The company's weakness in its assurance of the controls established to address environmental requirements at the stage of designing and developing the services it provides.
2. The weakness in conducting periodic tests of the procedures for the planned emergency response.

3.8 Discussing the results of the ninth clause (performance evaluation):

The arithmetic mean of the performance evaluation clause was 2.84 with a matching rate of 47.3%, while the gap degree was 3.16, with a non-conformity rate 52.7%, which indicates that the (MOC) suffers from weakness and lack of interest in meeting the performance evaluation requirements within the specification (ISO14000:2015), while the sub-clause (internal audit) obtained the highest level of application, as the arithmetic mean value reached 3.57, with a matching percentage 59.5%, a gap degree 2.43 and a non-conformity rate 40.5%, which indicates that the (MOC) has an interest in meeting internal audit requirements.

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the ninth clause (performance evaluation) as follows:

The strengths are as follows:

1. The senior management works to evaluate and know the level of commitment on a regular basis.
2. The administration maintains documented information related to the evaluation of the various obligations, and documented information about the process of implementing the internal audit.
3. The higher management chooses the specialists and the auditors objectively.

While the weaknesses were as follows:

1. Senior management is not interested in conducting internal audits of the (EMS) during a planned period of time.
2. The lack of interest of senior management in the administrative review of the environmental management system, and the lack of most of these reviews of information related to internal issues related to the system.

3.9 The discussion of the results of the tenth clause (improvement):

The arithmetic mean of the improvement clause was 2.18 with a matching percentage 36.3%, while the gap degree was 3.82, with a non-conformance rate 63.7%, which indicates that the Midland Oil Company suffers from weakness and lack of interest in meeting the improvement requirements within the specification (ISO14000: 2015), while the sub-clause (non-conformity and corrective action) obtained the highest level of application, as the arithmetic mean value reached 2.75, with a matching percentage 45.8%, a gap degree 3.25, and a non-conformity rate 54.2%, which indicates that the (MOC) has a weakness and a lack of interest in meeting the requirements of non-conformity and corrective action.

In the foregoing, the researcher can summarize the strengths and weaknesses in achieving the requirements of the tenth clause (improvement) as follows:

The strengths are as follows:

The company is somewhat concerned with identifying cases of non-conformance based on the results of operations, as well as taking effective measures and treatments for the purpose of eliminating cases of non-conformity.

While the weaknesses were as follows:

Despite the company's interest in getting rid of non-conformities, it suffers from the weakness of taking corrective measures.

Table 5 represents a summary of the results reached by the researcher through the analysis of checklists for the requirements of the standard specification field of research that was obtained from the National Oil Company / MOC .

The researcher found a gap in the application of the specification in the field of research at a rate of 47.03% related to the treatment and reduction of environmental impacts in various environmental aspects. The researcher notes that the clause (planning, leadership, support) had the lowest gap sizes 35%, 35.8% and 37%, respectively, and here emerges the urgent need to use environmental tools to advance this reality, including the comprehensive quality management tool for the environment whose role will emerge. In participation of everyone in the company to reduce environmental impacts and improve environmental performance, and the environmental impact assessment tool, which recommends it is being applied in two phases and periodically; the first stage is the planning stage of the company's project life cycle in order to establish the aspects that need to change and develop plans for improvement. The second is when a particular project is suspended or

terminated to assess the extent of the workflow in accordance with the pre-established plans and the degree of deviation from those plans in order to diagnose the causes of that deviation and develop solutions to address it.

4. Conclusions

A set of conclusions was reached through this research, such as the existence of a defect in the application of the provisions of ISO 14001: 2015 in the Midline Oil Company, especially in the planning item and the weakness in identifying and documenting internal and external issues that have a direct impact on enhancing environmental performance, and the needs and expectations of the concerned parties as well as about the company's attempts to build its own EMS system in accordance with the requirements of the international standard ISO 14001:2015. Therefore, the company has identified the most important environmental aspects resulting from its operational operations and defined them in its guide, but it did not implement procedures to reduce the environmental impacts resulting from these aspects. It was also found that the company does not set annual quantitative environmental goals that can be measured, but it is aware of the local and international environmental determinants that can be achieved to be a basis for measuring the environmental goals and objectives that it can achieve, with the availability of measuring devices for each environmental goal that falls within those determinants, insufficient resources available to achieve the successful application of the environmental management system, whether in terms of infrastructure or human resources, or in the development of a sound formulation of roles and the distribution of responsibilities and powers as well as a lack of focus on the process of continuous improvement in a manner that enhances the effectiveness and activity of the process of application and development of the environmental management system.

It also found working procedures according to ISO 14001: 2015 but they are short and do not cover the reality of the company's work in detail in terms of operational and environmental terms, as well as the presence of guiding booklets for work, but they were not activated efficiently, which led to a slowdown in achieving the desired environmental goals to be achieved according to a specific timetable.

5. Further Work

There are several future proposals that this research recommends like:

1. Integration of the two environmental impact assessment tools and the (EMS) for gas and diesel power plants and hydroelectric power stations.
2. The role of environmental impact assessment and (EMS) in improving the project performance cycle.
3. Integration of the (EMS) with the management of total quality of the environment towards improving environmental performance.
4. Effective integration of the (EMS) and the total quality management towards environmental sustainability.

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تقييم الاداء البيئي بموجب المواصفة الدولية (ISO14001:2015) في حقل شرقي بغداد
/ دراسة حالة في شركة نفط الوسط

أ.د محمد صادق عبد الرزاق
كلية الادارة والاقتصاد/جامعة بغداد /العراق،
بغداد

الباحث/ اخلاص جاسم رسن
كلية الادارة والاقتصاد/جامعة بغداد /العراق، بغداد

dr-aldouri@coadec.uobaghdad.edu.iq

ikhlass.jassem1205a@coadec.uobaghdad.edu.iq

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مستخلص البحث:

يعد نظام الإدارة البيئية (EMS) وفق المواصفة ISO 14001 : 2015 مدخلا للمعالجة أو الحد من الأثار البيئية ومخاطرها ، وبالخصوص الأثار الناجمة من الصناعة النفطية والتي تعتبر المصدر الرئيس للتلوث البيئي ونفاذ وهدر الموارد الطبيعية ، ونظراً لأن المراجعة الثانية للمعيار تمت في سبتمبر 2015 ، فقد تجلت مشكلة الدراسة في ضعف فهم الإرشادات الصحيحة التي يجب اتباعها من أجل الحصول على معيار ISO والحفاظ عليه ، وكان الغرض من هذه الدراسة هو إعطاء صورة عامة لما وراء ISO14001:2015 وكيف يمكن إنشاء قاعدة شاملة لفهم تطبيقه ، من خلال السعي إلى تحليل الفجوة بين الواقع الفعلي المتحقق ومتطلبات المواصفة وتشخيص أسبابها في شركة النفط الوطنية العراقية / شركة نفط الوسط عن طريق استخدام قائمة الفحص (Checklist) وعدد من وسائل التحليل الاحصائي (الوسط الحسابي ، الأوزان ، النسب المئوية) . توصلت الدراسة الى جملة من النتائج اهمها وجود فجوة في تطبيق المواصفة اعلاه بنسبة (47.03%) ناتجة عن ضعف في تطبيق معظم بنود المواصفة في الشركة وكذلك ضعف الاهتمام بتطبيق البرامج المتعلقة بمعالجة و الحد من التأثيرات البيئية . تتضح القيمة المضافة في هذه الدراسة عن طريق تشخيص نقاط القوة والضعف في كل بند من بنود المواصفة البيئية تمهيدا لوضع الخطط من اجل إلغاء أو تقليص الفجوة في الشركة قيد البحث .

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