

# Diagnosing the gap in the documented information system according to the international standard ISO 10013:2021, A case study

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## Abstract

The study aims to analyze the gap between the actual reality of the oil exploration company and the requirements of the international standard ("ISO 10013," 2021). The study stems from the problem of the potential risks faced by the Oil Exploration Company due to the limited methods of creating, trading, preserving and maintaining documented information. In the case study approach, a checklist also used. As for the means of statistical analysis, the arithmetic mean and percentage of applications and documentation were used. The results of the study show that the total percentage of applications and documentation in the company was (80%).

**Keywords:** Quality Management System, Documented Information, Oil Exploration Company, ISO 10013:2021, Information Documentation, International Guiding Standard.

## INTRODUCTION

The oil and gas sector is the main source of Iraq, as it composes about (90%) of the gross domestic product, which prompts us to pay attention to documented oil information. The Oil Exploration Company contributes to the first stage of oil and gas production, as the company's output is the most important stage because the rest of the oil industry stages depend on it for the validity of documented oil information by confirming the presence of hydrocarbon storage.

Based on the foregoing, the study addressed the international standard (ISO 10013:2021) in an attempt to find out the extent of application of its guidelines and the possibility of adopting and adhering to its standards in Iraqi companies in general and those operating in the oil sector in particular, including the Oil Exploration Company.

The study consists of two sections. The first section deals with the theoretical aspect represented by documented information and the international standard (ISO 10013:2021). The second topic dealt with the practical aspect of measuring the gap in the implementation of the quality management system - documented information and its analysis according to the international standard (ISO 10013:2021).

## Method of research:

First: the problem of the study

Through the preliminary survey conducted by the researcher through personal interviews with officials and heads of a number of departments in the Oil Exploration Company, it was found that there are real risks to which the company is exposed, represented in the limited methods of creating, trading, preserving and maintaining

documented information, as well as weak information security in it). These weaknesses make the company vulnerable to problems due to the nature of its work of providing services to its customers in the form of geochemical, geophysical and geological studies.

In light of this, the researcher believes that it is necessary to follow the instructions of the documented information system in accordance with the international standard (ISO 10013:2021) to preserve the documented information in the company in question.

1. Does the Oil Exploration Company have a quality management system - documented information according to the international standard (ISO 10013:2021)?
2. What are the sizes of the gaps between the actual reality of the documented information in the company and the requirements of the international standard (ISO 10013:2021)?

#### Second: Importance of the study

The importance of the study is reflected in an attempt to employ the positive results of a study in ensuring and improving the quality management system in the company in question by developing appropriate treatments to reduce the gap between the actual reality of the documented information system and the guiding requirements of the international standard (ISO 10013:2021)). This is to ensure the development of the organization's quality system within the context of meeting these requirements. The proposed recommendations will contribute to addressing the gap in enabling the researched company and other oil sector companies to apply the oil documented information system in accordance with the international standard (ISO 10013:2021). This is the first study (to the knowledge of the researcher) dealing with this international standard, which is reflected positively to increase the awareness and knowledge of workers in the field of documented information management in the oil sector.

#### Third: the study aims

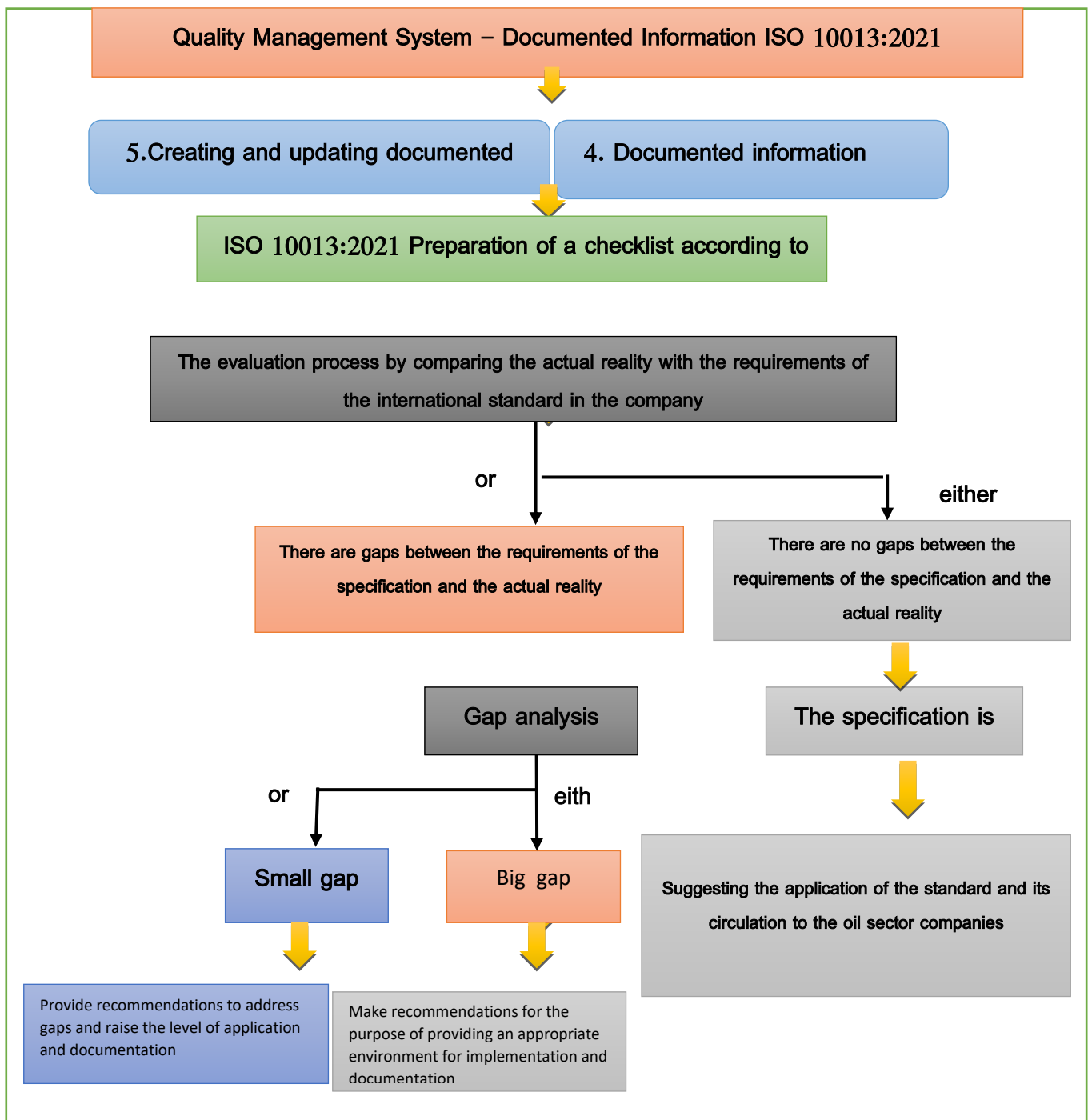
The application of the guidelines of the International Standard (ISO 10013:2021) is one

of the important procedures to support and enhance documented information in all companies. Also, the trend towards adherence to its guidelines leads to the success of companies technically, financially and administratively, in a way that ensures keeping pace with the latest systems and techniques used in documenting and preserving information. In addition, the aims can be divided into several goals, as follows:

1. Studying and analyzing of the actual reality in the Oil Exploration Company to determine the extent to which the guidelines of the International Standard (ISO 10013:2021) can be applied.
2. Identifying the gap in the application of the international standard (ISO 10013:2021) in the Oil Exploration Company and indicate the recommendations that must be followed in an attempt to bridge that gap, in order to improve the information provided to the beneficiaries (company employees, company customers, other relevant parties).

#### Fourth: the operational plan for the study

If the company wishes to develop its quality system in line with the requirements of the international standard (ISO 10013:2021), it must determine and implement the processes in it in a way that ensures continuous control that ensures the interdependence between the processes and controls the interaction between them. Figure (1) shows the operational scheme of the study, which shows the lines followed in the study and how to reach the desired results.

Figure (1) *The operational scheme of the research*

This figure is prepared by the researcher

Fifth: Study hypotheses: The study assumes:

The study starts from a basic hypothesis that states the application of documented information guidelines according to the international standard ISO10013:2021)

contributes to maintaining documented information in the Oil Exploration Company.

Sixth: Study Limits:

1- Spatial limits: This study was conducted at the Iraqi National Oil Company / Oil

Exploration Company at its headquarters in Baghdad.

2- Temporal limits: The study period lasted (8 months) from 1/9/2021 to 1/5/2022.

Seventh: Previous studies

No previous studies are available on the topic (to the researcher's knowledge)

Eighth: The structure of the study:

This study was divided into two sections, the first section deals with the theoretical framework of the study, documented information and the international standard ISO 10013:2021, while the second section deals with the practical side of the study.

The theoretical framework

First - Theoretical framework of documented information

We must make it clear that with the issuance of the ISO 9001 version 2015 standard, the use of the title "Procedures" was terminated and replaced with the title "Documented information" which is the documents that the company or institution needs as a minimum if it wants to be compatible with (ISO 9001:2015)("ISO 9001," 2015)

1- What is documented information?

Documented information can be defined as a form of documents or media, and these documents may be in the form of paper, electronic or optical computer disk, image, basic sample or any other physical medium(Dakkak, 2021). As defined by the International Standard ISO 10013:2021:1), it is the information required to be controlled and maintained by the organization and the medium that contains it. Documented information can be used for communication, to provide objective evidence or to exchange knowledge.

Documented information enables the organization's knowledge and experience to be maintained and can generate value to support improvement of products or services. It is the information that must be kept as evidence that the achieved results or activities are being

carried out as planned. Documented information can be structured and generated in a number of ways based on the needs of the organization and other factors such as leadership, desired outcomes of the management system, context (including legal and regulatory requirements), and stakeholders(Al-Khatib, 2008).

Therefore, we can say that documented information is that type of information taken from an official source such as government websites or official organizations and does not belong to any personal opinions as they are primary sources of information that provide real documented information. This information enables the individual to make correct decisions about them, unlike random sources. Also, Documented information shall be in any kind of media such as paper or electronic sample, photographs, maps and other physical media.

2- The main objectives of documented information

Below are some of the main objectives of documented information for an organization regardless of whether it has formally implemented a quality management system or not(Ibrahim, 2021).

A- Information transfer: It is a tool for transferring information and communication, and the type and extent of documented information depends on the nature of the organization's products and operations, the degree of formality in communication systems, the level of communication skills within the organization, and organizational culture.

b- Evidence of conformity: Documented information provides evidence that what was planned has actually been done.

C- Knowledge exchange.

D- Dissemination and preservation of the organization's expertise: A typical example is the technical specifications, which can be used as a basis for designing and developing a new product or service.

Second - Theoretical framework of the quality management system - Documented information system ISO 10013: 2020

A standard is a document containing guidelines or rules relating to specific activities, developed by a recognized organization with the aim of arriving at the best possible practice in relation to the implementation of the activities (Sartor, M. & Orzes, 2019:246). Since 1947 ISO has published more than 21,500 international standards covering nearly every aspect of technology and business, from food safety to computers, agriculture and healthcare, and international ISO standards are sure to affect our entire lives(Al-Musawi, 2020).

These standards are used by industrial and commercial organizations, regulatory agencies, governments and commercial organizations, and have important social and economic benefits. They are of great importance not only to designers, manufacturers, suppliers, service providers, and customers, but standards make an enormous contribution to society at large: they increase levels of quality, reliability, productivity, and procedures. Safety and affordable services also help facilitate international trade(Tricker, 2019).

Despite the expenses and commitment involved in the ISO certification, it gives great external and internal benefits. The external benefits come from the advantage of the products that will be sold compared to companies that do not have the ISO certificate. Therefore, many companies seek to obtain this certificate to enjoy the competitive advantage that it provides. The internal benefits come from the increase in the profitability of ISO certified companies, where registered companies reported an increase in profitability by (48%) and an improvement by (76%) in marketing (Stevenson, 2020). More than 1.6 million ISO certificates have been granted to companies in (201) countries, including (30,000) certificates in America to do business worldwide and have been listed in the ISO directory(Krajewski, Malhotra, Malhotra, Ritzman, & Krajewski, 2015).

Implementing and maintaining the requirements of the chosen standard may prove to be a burden in terms of costs and additional paperwork without any compensating benefits. Therefore, ISO registration should not only be required to meet the contractual requirements of major customers or for marketing purposes (Dale, B. G., Dehe, B., & Bamford, D.,2016). but rather adopt the requirements of this system as an integrated project preceded by an internal quality audit of the existing quality management system by a qualified auditor. This will determine the initial status of the company's quality management system and enable management from Assessing the amount required for qualification and meeting its requirements, as well as knowing (the amount of the gap) between the current reality and what the organization aspires to be in the future(Heizer, Render, Munson, & Sachan, 2017).

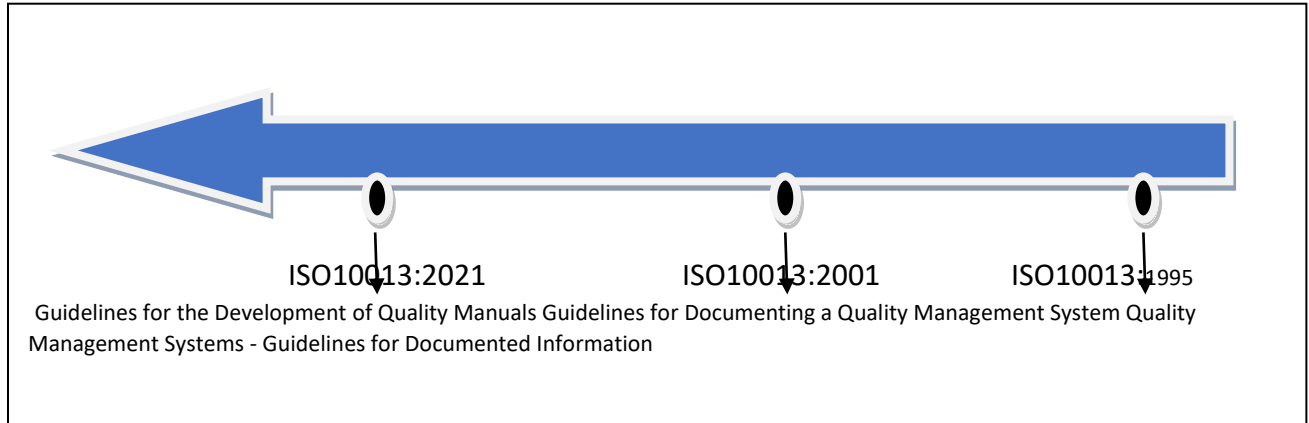
The international standard ISO 10013 is the international standard for documented information (documentation) is a specification (guidance) that helps the organization that intends to implement management systems (such as the quality management system, environmental management system, etc.) in preparing its documented information and how to respond to the requirements contained in those specifications. This standard went through several stages to reach this version, which, despite the existence of previous versions, is considered the first version. In 1995, the Guiding Standard 10013:1999 was issued, entitled "Guiding Principles for the Development of Quality Manuals", and then followed by another version in 2001 as well. The first version was considered because it took a different curve from its predecessor, and the version was ISO/TR 10013:2001, entitled "Guidelines for Documenting the Quality System." It is noted that the 2001 version was in the form of a technical report. Therefore, the 2021 version was considered the first real version, being more focused. It has comprehensive details and was issued by the International Organization for Standardization as an international specification ISO 10013:2021 entitled "Quality management

systems - Guidelines for documented information".

It has been adopted at the present time as a guiding specification for documented

information issued by the International Organization for Standardization. Figure 2 below shows the transitional stages of these versions.

Figure (2) *Timeline for the issuance of the International Standard ISO 10013:2021*



شكل (1) الإطار الزمني لانتقال المواصفة الدولية الخاصة بالمعلومات الموثقة 10013

ISO 10013:2021 رابعاً : أهداف المواصفة الدولية

This figure is by the researcher based on the international standard ISO 10013:2021

This figure is by the researcher based on the international standard ISO 10013:2021

The international specification ISO10013:2021 aims to guide public and private companies to obtain documented information (documentation of information) and find appropriate ways to preserve it as well as maintain and reuse it. Among these benefits that the organization obtains are the following (2): -

1. Demonstrating compliance with legal and regulatory requirements.
2. The information is readily available to all organizational levels so that they can better understand the interrelationships.
3. Communicating with the organization's commitment to quality to the relevant stakeholders.

4. Helping people understand their role within the organization and thus providing a basis for work performance expectations.

5. Providing objective evidence that the specified requirements have been met.

6. Addressing risks and opportunities to improve organizational performance, product or service compatibility, and customer satisfaction.

The practical side

First: An introduction to the Oil Exploration Company

The company is one of the most important formations of the National Oil Company specialized in the field of exploration and evaluation of hydrocarbon wealth in Iraq. It is responsible for implementing the first phase of the oil industry, and its activity is characterized by complete monopoly.

Second: Diagnosing and analyze the reality of the documented information system in the Oil Exploration Company according to the requirements of the guiding international specification (ISO 10013:2021).

This topic focuses on diagnosing and analyzing the gap between the reality of the documented information system in the Oil Exploration

Company and the guidelines of the international standard ISO 10013:2021 by comparing the reality of the procedures and operations of the documented information system in the company and the instructions of this standard. This is done through the use of the checklist in the analysis of the gaps (Gap Analysis). After diagnosing the gap for each item, the reasons that led to the emergence of these gaps will be discussed and the extent to which they can be overcome, using the 7-like Likert scale according to weights from (0) the lowest weight to (6) the highest weight (9).

The main and sub-items have been approved in building the checklist for the documented information system in accordance with the guidelines of the international standard (ISO 10013:2021), and gaps will be found in the company according to the following equations:

Equation (1) Arithmetic mean = sum of (weights \* their frequencies) / sum of frequencies

Equation (2) The percentage of conformity = (weighted arithmetic mean) / value of the highest weight in the scale

Equation (3) The size of the gap for each item in the checklist = 1- Percentage of match

### Discussion and results

The results of the actual evaluation of the requirements of the International Standard (ISO 10013:2021), which represent the evaluation results obtained from the check list, and as shown in Table (1) below,

Table (1): *Percentage of applying the international standard in the company under study*

No	The requirement number in the specification	Requirement name	Estimated arithmetic mean (average)	Percentage of application and documentation	Gap size for requirement	Application level and documentation
1	4.1.1	Documented Information Structure	5.3	%88.8	%11.2	Fully Applied Partially Documented
2	4.1.2	Definitions	4.5	%75	%25	Completely undocumented
3	4.1.3	Content	5	%83	%17	Fully Applied Partially Documented
4	4.1.4	the purpose	5	%83	%17	Fully Applied Partially Documented
5	4.1.5	the benefits	4.2	%70	%30	Completely undocumented
6	4.2.1	Scope of the quality management system	5.125	%85	%15	Fully Applied Partially Documented
7	4.2.2	Quality Policy	5.25	%87.5	%12.5	Fully Applied Partially Documented
8	4.2.3	Quality objectives	5.5	%91	%9	Fully Applied Partially Documented
9	4.2.4.1	Information specified by the company	5.5	%91	%9	Fully Applied Partially Documented
10	4.2.4.2	Necessary to support the quality management system and its operations	6	%100	%0	Fully Applied Completely Documented
11	4.2.4.3	Quality Manual	5	%83	%17	Fully Applied Partially Documented
12	4.2.4.4	process flow charts	5.3	%88	%12	Fully Applied Partially Documented
13	4.2.4.5	and process descriptions	5	%83	%17	Fully Applied Partially Documented

14	4.2.4.6	Work procedures and instructions	2.72	%45	%55	Partially Applied Partially Documented
15	4.2.4.7	Automated workflow	6	%100	%0	Fully Applied Completely Documented
16	4.2.4.8	Product and service specifications	5.3	%88	%12	Fully Applied Partially Documented
17	4.2.8.9	Internal and external communications	5	%83	%17	Fully Applied Partially Documented
18	4.2.4.10	Plans, schedules and lists	5	%83	%17	Fully Applied Partially Documented
19	4.2.4.11	Forms and checklists	4.5	%75	%25	Completely undocumented
20	4.3	Documented information from an external source	4.83	80.5	19.5	Completely undocumented
21	5.1.1	Documented information that	3.83	%64	%36	Fully Applied Partially Documented
22	5.1.2	must keep	4	%66	%34	Completely undocumented
23	5.1.3	Create and update information	5.5	%91	%9	Fully Applied Partially Documented
24	5.1.4	documented / general	5	%83	%17	Fully Applied Partially Documented
25	5.1.5	Use references	4.5	%75	%25	Completely undocumented
26	5.1.6	Responsibility for creating documented information	5.3	%88	%12	Fully Applied Partially Documented
27	5.2.1	Definition and description	5	%83	%17	Partially Applied Partially Documented
28	5.2.2	Format and media	2	%33	%67	Partially Applied Partially Documented
29	5.2.3	Distribution, access and retrieval	4	%66	%34	Completely undocumented
30	5.2.4	Storage and preservation	4	%66	%34	Completely undocumented
31	5.2.5	Update documented information	4.6	%76	%24	Completely undocumented
32	5.2.6	keep and dispose	6	%100	%0	Fully Applied Completely Documented
The sum total of the evaluation results			153.755	%2553.8	%612.2	
The upper limit of the application and complete documentation of the requirement			6	%100		
Assumed total sum of application and full documentation			192			
The amount of the gap in the application and documentation of the total requirements			38.245			
The ratio of the total actual results to the total assumed results			%80			
Percentage of the gap in the application and documentation of the international standard			%20			

This table is prepared by the researcher based on the results of the examination list

Based on the results of Table (1), it was found that the actual percentage of application and documentation in the Oil Exploration Company was (80%) compared to the international standard (ISO 10013:2021). This means there is



a gap between the requirements of the international standard and the reality of the actual application and documentation of the researched company, which It was (20%), which is fairly good because the company obtained international standards certificates (ISO 9001:2015, ISO 14001:2015, ISO 45001:2018) as well as the presence of a documented oil data bank, the first of its kind in the oil sector.

The largest application and documentation was for item (5.2.2 - protection) with an evaluation rate of (67%), which reflects the weak interest in protecting documented information security for the researched company, followed by item (4.2.4.6 - automated workflow), which reflects the slow transformation from traditional

(paperwork) work) to electronic work (computerized) to manage documented information.

The largest percentage of conformity with the international standard, was for the items in succession (4.2.4.2 - Quality Guide, 4.2.4.6 Specifications of the good or service, 5.2.6 retention and disposal), which reflects the efficiency and effectiveness of the company in preparing the quality guide (operating) for its operations as well as the unique description of the good and service it provides. It is represented in the exploration of oil and gas exclusively throughout Iraq, and the efficiency and accuracy of the methods of retention and disposal of documented information for the researched company.

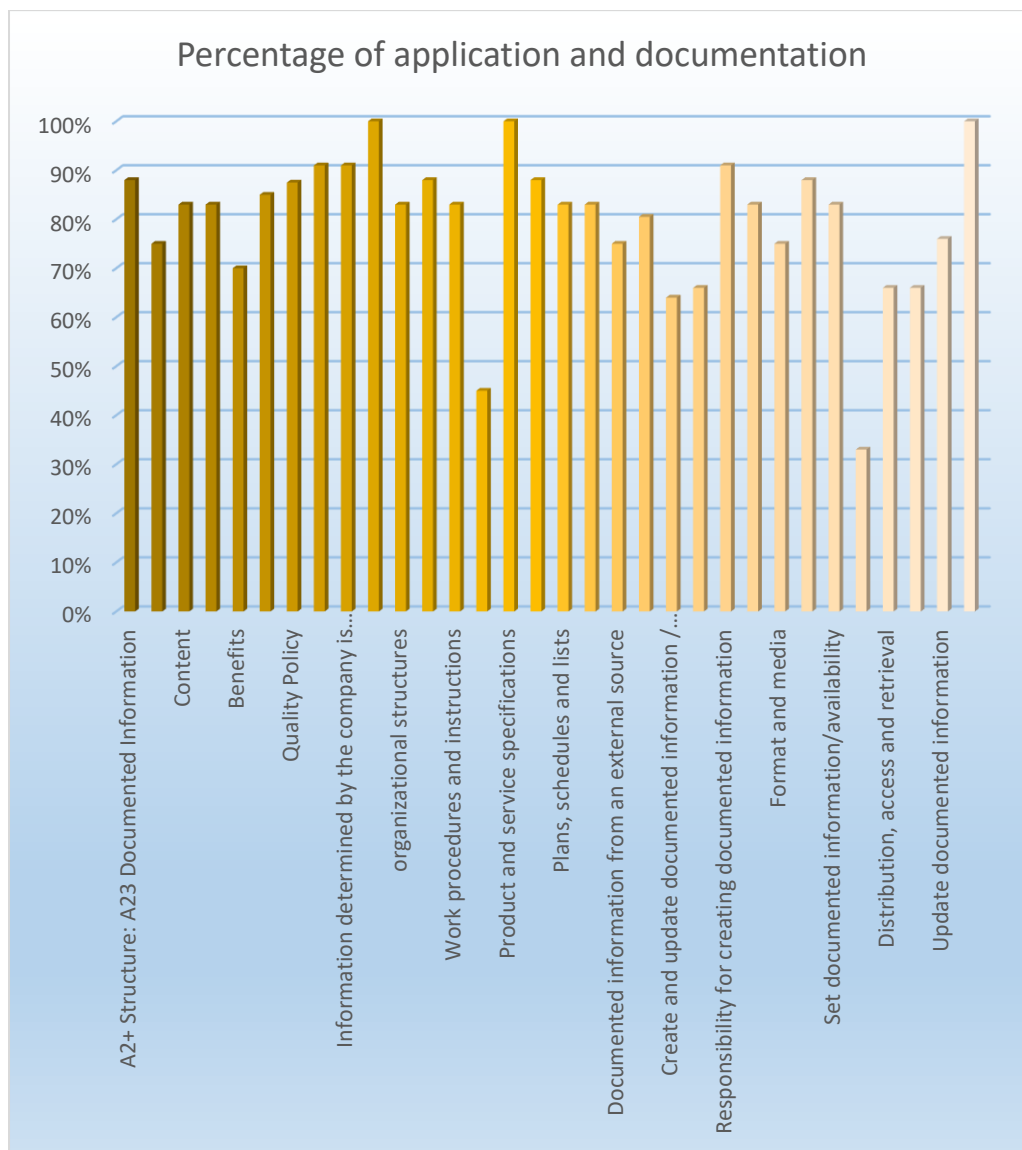


Figure (3) *Percentage of gaps extracted from the checklist*

## Recommendations:

Based on the findings, the study recommends the following:

1. The Oil Exploration Company need to adopt the guidelines of the international standard (ISO 10013:2021) and take advantage of the strengths and address the weaknesses, especially those related to the documented information security protection clause and automated workflow.
2. The Implementation of the integrated management system in the company is recommended because the way to reach it has become clear and easy, especially after the company obtained international standards certificates (ISO 9001:2015, ISO 14001:2015, ISO 45001:2018).
3. It is necessary to disseminate the company's unique experience in preserving the documented information represented by the Oil Data Bank to the rest of the oil sector companies.
4. The study recommends the need to use modern methods to avoid the risks of documented information security in the company and to train workers in this field to face potential cybersecurity risks. It also recommends providing appropriate protection for the company's website on the WebSat.
5. A brochure is recommended for all activities and tasks of the company's departments and bodies, showing in detail and accurate the daily work steps from beginning to end for all the company's operations and its various activities.
6. Legislating laws for preserving digital documents in Iraq and making documented information available to researchers, as well as accepting the citation of digital documents in all transactions of government departments will be good.

## Reference

- [1] Al-Khatib, S. K. (2008). Total Quality Management and ISO Contemporary

- Introduction (1 ed.). Baghdad - Iraq: Jaafar Al-Asami Library.
- [2] Al-Musawi, A. S. A. (2020). Assessment of the Requirements of Implementing the International Formula ISO 45001:2018 for Administering the Occupational Health and Safety System – A Study of Wasit Textile Factory. (Master). Al-Mustansiriya University, College of Administration and Economics.
- [3] Dakkak, A. K. (2021). Guidance on Documented Information Requirements in ISO (9001:2015), Syrian Scientific Society for Quality - Quality Bulletin, No. (4), pages (58-62). Retrieved from <http://quality.hiast.edu.sy/index.php/quality/article/view/63/57>
- [4] Heizer, J., Render, B., Munson, C., & Sachan, A. (2017). Operations management: sustainability and supply chain management, 12/e: Pearson Education.
- [5] Ibrahim, I. A. A. (2021). The Possibility of Implementing the Quality Management System for Electoral Organizations ISO 540001: 2019 in the Independent High Electoral Commission - Case Study. (Master). University of Baghdad, College of Administration and Economics.
- [6] ISO 9001. (2015).
- [7] ISO 10013. (2021). In.
- [8] Krajewski, L. J., Malhotra, M., Malhotra, N., Ritzman, L., & Krajewski, L. (2015). Operations management: Pearson Education, Limited.
- [9] Stevenson, W. J. (2020). Operations management: McGraw-Hill.
- [10] Tricker, R. (2019). Quality management systems: A practical guide to standards implementation: Routledge.
- [11] Sartor, M.& Orzes G. (2019), Quality management: Tools, methods and standards, Emerald Group Publishing.
- [12] Dale, B. G., Dehe, B., & Bamford, D. (2016). Quality Management Systems and the ISO 9000 series. Managing quality 6E: an essential guide and resource gateway.