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THE AVAILABILITY OF THE DOCUMENTATION REQUIREMENT TO OBTAIN THE ISO 9001:2015 CERTIFICATE IN PREFABRICATED BUILDING FACTORY-IRAQ: A CASE STUDY

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A B S T R A C T

The study aims to shed light, define, and diagnose the item (documentation requirement) within one of the components of the general requirements of the international standard (ISO 9001:2015) in the prefabricated building factory in Kirkuk Governorate, Iraq. The purpose of the study was to identify the reality of the availability and application of these requirements necessary to obtain the certificate of international standards, by indicating the levels of achievement of the documentation items, as well as trying to open horizons for the application of other items necessary for the factory to obtain the mentioned certificate. In order to achieve this goal, it relied on the checklists that contributed to obtaining the necessary data to achieve the goal of the study. Based on the conclusions and recommendations of the study in its theoretical and field terms, proposals were made that are consistent with these conclusions, the most important of which was the statistical results showing gaps between the actual reality of the resource management requirements to obtain the international standards certificate (ISO 9001, 2015) and the theoretical academic reality and the prefabricated building factory to address them, where a gap of 70% is considered significant in the degree of application and documentation of certification requirements(ISO 9001, 2015). To improve the performance of the prefabricated building factory in order to obtain the Certificate for International Standards (ISO 9001, 2015). The most important recommendation from the study was the need to set up a computerized database to collect information on the operations and activities of the factory so that it could be used in future analysis and documentation. The need to use both traditional and new TQM tools and train the workforce to use them, as well as the necessity to universally use the documentation clause throughout the factory.

1. INTRODUCTION

The issue of obtaining an international certificate of international standards (ISO 9001: 2015) has attracted the attention of researchers, as it is one of the quality standards adopted by modern administrations (Zimon et al., 2020). The organization's performance level is improved by encouraging innovative efforts while taking into account the continuous development and improvement of activities and operations (Yanto & Mahulae, 2021).

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Based on this, many business organizations have begun to apply them in a manner that suits their situation and is consistent with their future aspirations aimed at developing and improving their products, helping them to obtain a competitive advantage that gives them uniqueness and distinction and makes them superior to their counterparts from competing organizations in the market (Shafiq et al., 2019). Therefore, we found it appropriate to study the documentation requirement as one of the requirements for obtaining the International Standards Certificate (ISO 9001: 2015) and the role of this requirement in the continuous improvement of the activities and operations of the organization. Based on the foregoing, and to achieve its goals, the study was divided into four sections (Sadikoglu & Olcay, 2014). The first discussed the methodology of the study; the second presented the theoretical framework; the third presented the analytical framework of the study, and the fourth concluded with conclusions and suggestions (Sá et al., 2019).

1.1. The study problem

Obtaining the International Standards Certificate (ISO 9001: 2015) requires a statement of the extent of its commitment to the documentation requirement. As a result, we can present the study's problem by asking two questions:

1. What is the interest of the research factory in applying the documentation required to obtain the international standards certificate (ISO 9001: 2015)?
2. Are the reasons for not qualifying the study sample to obtain the International Standards Certificate (ISO 9001: 2015) due to the lack of documentation requirements? Or is it for another reason?

1.2. The importance of the study

The importance of the study stems from the importance of the International Standards Certificate (IS9001: 2015) and its positive effects on business organizations. The study tried to shed light on the efforts made by the research factory to implement the requirements of the international standard that are consistent with the nature of its activity; it is also an attempt to identify the reality of the availability and application of documentation as one of the requirements for obtaining the international standards certificate by indicating the levels of its achievement, as well as to try to open horizons to implement the other items necessary for the factory to obtain the mentioned certificate.

1.3. The objectives of the study

The objectives of the study can be stated as follows:

1. Knowing the basic concepts of the international standard certificate ISO 9001: 2015
2. Evaluating the level of application and documentation of the documentation requirement from the requirements of the standard specification (ISO 9001: 2015) in order to diagnose the gap compared to the existing quality system in the study sample.
3. Determine the reasons for non-conformity and try to suggest the best ways to overcome them.
4. Develop appropriate solutions to address quality problems in the factory.
5. Providing the company with a set of proposals and recommendations to obtain the prefabricated building factory for the international standards certificate (ISO 9001, 2015).

1.4. The hypothesis of the study

The study is based on the hypothesis that "the prefabricated building factory in Kirkuk governorate did not obtain the International Standard Certificate (ISO 9001: 2015) due in part to the lack of documentation requirements."

1.5. The study population and its sample

The study dealt with the presentation and analysis of the prefabricated building factory in Kirkuk governorate, Iraq, which is one of the factories affiliated with the Iraqi ministry of construction and housing in Kirkuk governorate.

This factory was chosen for its excellence in the integration of the manufacturing process, which helped in evaluating the production process in its various stages as well as the problems that this factory suffers from, including damage to the final or semi-finished products.

1.6. Methods of data collection

To obtain the data and information necessary to test and prove the hypothesis, the theoretical side has been covered in many sources that were represented by scientific references such as books, magazines, studies, and theses related to the study of factory records, as well as using the checklist called the gap analysis examination, which aims to diagnose the gap between the reality of the quality management system in an organization and the standard requirements in the international specification (ISO 9001:2015). For this purpose, the heptagonal scale was used as a specific weight was assigned to each of the paragraphs of that scale, and accordingly, the analysis was done and the results were reached.

2. THE THEORETICAL FRAMEWORK

2.1. Concept and importance for (ISO 9001:2015)

The (ISO) quality management system is a standard that expresses an effective quality management system and allows organizations that meet the requirements of this standard to use the certificate (Purwanto et al., 2020). The products offered by these organizations are manufactured according to internationally accepted standards, and they are safe for use by customers (Prada Ospina & Ocampo, 2018). It is defined as "a series of

instructions for organizations to establish their quality system by focusing on procedures, control, and documentation, which are supposed to help organizations identify errors and ensure the flow of operational processes to ensure a consistent level of quality (Pacana & Ulewicz, 2020)." (ISO Organization) considers it "a family name for quality management standards and organizations use it to ensure the conformity and quality of their products" (Noryani et al., 2020). It was also defined as "a set of guidelines for organizations to establish quality systems by focusing on procedures, control, and documentation. It also helps organizations to identify errors, streamline operational processes, and ensure the level of quality (Ngambi & Nkemkiafu, 2015). The ISO 9000 series includes a harmonized set of general quality assurance measures applicable to any company, whether large, medium, or small, and can be used with any existing system. It helps the company to reduce internal costs, increase quality, effectiveness, and productivity and is a step towards total quality and continuous improvement. The ISO 9000 series is not a set of product specifications and does not cover industry-specific standards, as each document classifies a quality model for use in different applications. The ISO 9000 standards were published in four parts: ISO 9001, 9002, 9003, and 9004, as (ISO 9001: 2000) represents the international standard, while (ISO 9001, 2008) represents the requirements of a quality management system through which the organization must demonstrate its ability To provide products that address customer requirements and enhance their satisfaction as well as legal controls (ISO 9004: 2008) is concerned with providing guidelines for improving the quality management system, and the recent version (ISO 9000:2008) promotes the process approach to developing quality management systems, as it is built on the belief that the desired results are achieved more efficiently when the activities and resources associated with them are seen as a process. (ISO 9001:2015) and its recent updates, we see it applied to all types of organizations, regardless of their size or work, and can help any organization that wants to achieve and implement quality standards recognized in all of its activities, operations, and dealings with its customers and clients, as organizations can achieve the following through accreditation of (ISO 9001:2015) (Ionascu et al., 2017):

1. Contributes to the efficient and effective management of quality systems. (Martin, 2017).
2. Increasing the efficiency and profits of organizations by increasing confidence in their production system (Leong et al., 2012).
3. Achieving customer satisfaction by linking the process closely to its requirements.
4. Increasing and maintaining market share.
5. Increasing the effectiveness of communications among the members of the organization and raising the morale of the employees (Kutnjak et al., 2019).
6. Reducing costs, as well as reducing spoilage, obsolete inventory, and returned work.
7. Increasing the competitiveness of the organization (Hernawan et al., 2019).
8. Better control and greater preservation of the organization's systems (Hailu et al., 2018).
9. Facilitate the compatibility and harmony of the quality system with the rest of the systems (Gallego & Gutiérrez, 2017).

2.2. Documentation requirements, concept, and importance

The application of ISO 9001: 2015 is based on several basic principles approved by the (International Organization for Standardization). One of these requirements is authentication, which is part of the general requirements for obtaining the International Standard Certificate (Gal et al., 2020).

The word "documentation" was derived from the word "document," and the use of the term "documentation" prevailed until it became one of the common terms among those concerned in all fields of knowledge, including quality. It is stored, analyzed, and transmitted to the beneficiaries. Documentation is defined as "the provision, selection, classification, storage, dissemination, and exploitation of information" (Fonseca, 2015). The interest in this requirement came as a result of its role in organizing and facilitating activities and operations in any organization, and its relationship to the scientific approach, which has become one of the most important principles of total quality management, as well as being a measure of the organization in obtaining the certificate of international standards (Fahmi et al., 2021), as the system assumes the (ISO) documenting quality processes in all their details, parts, and stages to ensure the application of quality as an approach, strategy, and work method.

The importance of documentation, and its positive effects on all parties related to the organization, can be stated according to the following (Dąbrowska-Świder 2019, Brooks et al., 2021):

The importance of documentation for workers (Bravi et al., 2019; Armawati et al., 2018; Anoye, 2015):

A. Introducing them to the quality system and their responsibilities and authority.
B. A means of training them on how to implement the documented system.
C. Providing information that enables them to do their work in an appropriate manner

The importance of documentation for the organization:

A. Ensure the continuity of achieving quality requirements.
B. Demonstrate the organization's commitment to quality.
C. Reduce the possibility of errors.
D. Reference for internal quality audit work.

The importance of documentation for external parties:

A. Enhancing the customer's confidence in the organization's ability to meet their requirements and meet the
B. Confirmation to external parties that the organization has a quality system that has been planned and documented.

2.3. Documentation in the ISO 9000 series

The way to improve the performance of organizations is through good management, which comes from following modern administrative work methods, which is called the quality management system, which organizations of all kinds follow effectively and efficiently and with the highest possible degree of accuracy without documentation, restriction, and commitment to what has been agreed upon, and considering an approach and method of work. This is the goal of good documentation of the quality management system, which is to provide workers with stability and satisfaction in the ways of completing work, carrying out tasks, using resources, and operating production lines. In this context, the ISO 9000 series of specifications work to determine how any quality system includes all the activities related to quality that can be implemented in any organization to ensure conformance to the performance specifications that have been identified and fully meet the needs of the customer (Almeida et al., 2018; Ali, 2014; Alhasani, 2020).

The documentation standards contained in the series of specifications (ISO 9000) represent an important part of any organization intending to implement a quality management system, and it is indeed the typical method of documentation that is most accepted in all organizations. The international specification (ISO 9000:2000) indicates that documentation "achieves the delivery of the goal, the continuity of the action, and its use, and documentation contributes to achieving the following for organizations:

1. Matching products to customer requirements and improving quality.
2. Providing appropriate training to the organization's employees.
3. Work repetition and sequencing.
4. Providing objective proof.
5. Evaluate the effectiveness and continuity of the appropriateness of the organization's quality management system.

3. THE ANALYTICAL FRAMEWORK OF THE STUDY

This topic deals with the presentation of the data shown by the checklists used to determine the availability of the documentation requirements in the prefabricated building factory. In their formulation of questions, the researchers relied on the scale (Ali, 2014), as well as the lists issued by the Central Organization for Standardization and Quality Control, because these lists are more appropriate to the reality of the construction industry environment and show the extent of the gap between the current quality system and ISO requirements. (ISO 9001:2015), will be based on the quantitative expression of the answers in the checklists, which will be analyzed using the following statistical tools:

A. Use the weighted mean to find out the application rate of the requirements of ISO 9001:2015, where the number of times the answer is repeated is considered mainly in calculating the result according to the following formula:

Whereas:

X= average or mean

Xi = weights

Fi = frequencies

After comparing it with the paragraphs of the scale, it is possible to determine the level of that requirement and know the number of stages required to reach full conformity and complete documentation with the requirements of ISO 9001:2015.

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B. The formula for the percentage of conformity was also used, which expresses the percentage of conformity with each of the requirements of ISO 9001:2015, and the number six (6) represents the highest degree on the scale, which represents the state of complete conformity and complete documentation of the requirements of ISO 9001:2015. As previously stated, the analysis will begin with the fourth paragraph because the first three paragraphs (1, 2, and 3) are non-main paragraphs.

To calculate the size of the gap by subtracting the percentage of the number (1) The size of the gap for each checklist = 1- The percentage of conformity to come up with results that prove the hypothesis of the study.

Table1: Measurement items and their weights

No.	Paragraph	weight
1	completely implemented and completely documented	6
2	completely Applied and Partially documented	5
3	Completely implemented and undocumented	4
4	Partially applied, completely documented	3
5	Partially Applied and Partially documented	2
6	Partially Applied Undocumented	1
7	Not applicable Not documented	0

Table 2: Checklist for Documentation Requirement According to ISO 9001:2015

Documentation requirements	**Conformance with ISO 9001:2015**						
	1	2	3	4	5	6	**7**
1. The company has prepared a quality guide to the requirements of this standard, using the guidance in ISO 10013 – ISO.					*		
2. There is a manual for all procedural methods to meet the requirements of this standard.					*		
3. Name the persons responsible for approving and maintaining documentation of quality-related activities.				*			
4. The powers and responsibilities related to the preparation, distribution, review, and control of documents related to quality are defined.				*			
5. Quality-certified documents are identified and coded within the company.							*
6. Issuing, distributing, amending, and canceling documents related to the quality management system.							*
7. All forms and forms related to the quality management system are listed and standardized.						*	
8. The records required to document the results of the quality management system applications are identified.					*		
9. Periods are set for each type of record to be kept.		*					
10. There is an approved context for destroying obsolete records.						*	
11. The company owns journals to document the results of the application of various activities related to quality, including corrective measures taken when cases of non-conformance appear.					*		
12. Appropriate conditions for storing records are determined to ensure that they are not damaged and are easy to refer to when needed.				*			
13. Persons responsible for approving and keeping records related to quality are identified.						*	
Weighted mean (average)	6	5	4	3	2	1	0
repetitions	0	0	1	3	4	3	2
The result	0	0	4	9	8	3	2
Weighted mean (average)	1.85						
Match extent percentage	% 30						
Gap size	% 70						

Table **2** shows the checklist for the application and documentation of the quality system in the factory and the items of the documentation required according to ISO 9001:2015. This item obtained an average of 1, which indicates that the prefabricated building factory partially applies the provisions of this item and does not document it, with an application rate of 30% of the total items to be applied, which indicates the existence of a gap of (70%) The reasons for the gap are:

1. The prefabricated building factory did not follow the guidelines outlined in the ISO9001:2015 specification, and they lacked a guide for procedural methods following ISO 9001:2015 requirements.
2. There is no clear definition of tasks regarding the documentation system.

4. CONCLUSIONS AND SUGGESTIONS

4.1. The conclusions

The researchers reached a set of conclusions, the most important of which are:

1. Business organizations strive to obtain the International Standards Certificate (ISO 9001: 2015) by establishing the fundamental requirements for achieving excellence through quality.
2. To obtain the International Standards Certificate (ISO 9001: 2015), all requirements must be met with the same strength and sobriety, as no requirement can be overlooked or ignored.
3. The checklist is a good tool that enables business organizations to check and measure the availability of the requirements necessary to obtain the international standards certificate (ISO 9001: 2015), including the documentation item, and thus be able to make appropriate decisions to improve the reality of organizations in general, including the research sample, to the acceptable level for obtaining it.
4. The statistical results show that there is a gap between the actual reality of the factory in question and the theoretical academic reality of the documentation requirement specified for obtaining the international standards certificate (ISO 9001: 2015). The amount of gap when examining and comparing was (70%), which can be described as large, and clearly shows the lack of sufficient documentation requirements in the research

sample to obtain, apply, and document the requirements of the certificate (ISO 9001: 2015) in the prefabricated building factory in Kirkuk, Iraq.

4.2. The suggestions

1. Establishing a computerized database in order to collect data related to the organization's operations and activities in order to benefit from it in future analysis and documentation.

2. The necessity of naming the persons responsible for approving and maintaining the documents related to quality and specifying the powers and responsibilities related to the preparation, distribution, and review of the documents of quality.

3. Senior management should follow up with the Documentation Committee by coding approved documents for quality and issuing, distributing, amending, and canceling documents related to the company's quality management system. Inventory and standardization of all forms and forms and identify the records required to document the results of quality management applications.

4. The recommendation of the senior management is to follow up on the documentation committee by setting periods for keeping each type of record and creating an approved context for destroying obsolete records and making records of the results of applications of various quality-related activities, including corrective actions taken when non-conformities arise.

5. The need to generalize the use of the documentation clause and the mechanism of using the tools that can be applied to all parts of the factory and the support and backing of the senior management to apply these tools and train the workers to use them.

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