Vol. 05, No. 3 (2023) 367-374, doi: 10.24874/PES05.03.001

Proceedings on Engineering Sciences

www.pesjournal.net

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

Mueyyed Akram Omar Arslan[1]
Sivadass Thiruchelvam
Gasim Hayder

Received 18.12.2022.
Accepted 05.05.2023.
UDC – 005.6

Keywords:

Documentation Requirement, ISO 9001:2015 Certificate, Quality, Prefabricated Building Factories

A B S T R A C T

The study aims to shed light on 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/ Iraq. The purpose of the study was to find out the reality of the availability and application of these requirements to obtain the certificate of international standards by indicating the levels of achievement of the documentation item, as well as an attempt to open horizons for the application of other necessary items for the factory to obtain the mentioned certificate. To achieve this goal, checklists were relied upon, which contributed to obtaining the necessary data to achieve the study objective. The study found statistical results showing that there is a large gap (70%) between the actual reality of the documentation requirement and the theoretical academic reality, and the organization must address this gap to improve its performance in obtaining the mentioned certificate. The study included proposals and recommendations, the most prominent of which was the need to establish a computerized database to collect data on the factory's operations and activities to benefit from it in future analysis and documentation processes.

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, Madzik, and Sroufe 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 (Mahulae, 2021).

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

[1] Corresponding author: Mueyyed Akram Omar Arslan
Email: Alparslan1961.ma@gmail.com

their counterparts from competing organizations in the market (Shafiq, Lasrado, and Hafeez 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 and Olcay 2014). The first discussed the methodology of the study; the second presented the theoretical framework; the third presented the analytic framework of the study, and the fourth concluded with conclusions and suggestions (Sá et al. 2019).

The objectives of the study can be stated as knowing the basic concepts of the international standard certificate ISO 9001: 2015, evaluating the level of application and documentation of the documentation requirement from the requirements of the standard specification (ISO 9001: 2015) to diagnose the gap compared to the existing quality system in the study sample, determining the reasons for non-conformity and trying to suggest the best ways to overcome them, developing appropriate solutions to address quality problems in the factory, and providing the company with a set of proposals and recommendations to obtain the prefabricated building factory for the international standard certificate (ISO 9001: 2015).

Thus, the importance of this study stems from the importance of the International Standard 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 standard certificate by indicating the levels of its achievement, as well as to try to open horizons to implement the other items. The study's problem was revealed through what was presented.

Attempting to obtain the International Standards Certificate (ISO 9001:2015), indicating the extent of its compliance with the documentation requirements. As a result, we can present the study 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 (IS9001:2015) due to the lack of documentation requirements? Or is it for another reason?

Based on the foregoing, the contents of the research were framed according to the following axes: The first axis is the introduction to the study, the second axis is the literature review; the third axis is the research methodology; the fourth axis is the results and discussion, and the fifth axis is the conclusions.

2. LITERATURE REVIEW

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 (Zumitzavan and Mumi 2014). The products offered by these organizations are manufactured according to internationally accepted standards, and they are safe for use by customers (Zimon et al. 2020). 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 (Young 2010). (ISO Organization) considers it "a family name for quality management standards and organizations use it to ensure the conformity and quality of their products" (Yeng, Jusoh, and Ishak 2018). 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 identify errors, streamline operational processes, and ensure the level of quality (Abbas 2017). 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 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 it

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 (Aburayya et al., 2020):

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, Zakuan, and Saman 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, Miljenović, and Mirković 2019).
6. Reducing costs, as well as reducing spoilage, obsolete inventory, and returned work.
7. Increasing the competitiveness of the organization (Hernawan, Kesuma Dewi, and Musafa 2019).
8. Better control and greater preservation of the organization's systems(Hailu, Mengstu, and Hailu 2018).
9. Facilitate the compatibility and harmony of the quality system with the rest of the systems (Gallego and 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, RaÈ›, and Toadere 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 Msc n.d.)(Brooks et al. 2021):

A. The importance of documentation for workers (Bravi, Murmura, and Santos 2019)(Armawati, Syamwil, and Florentinus 2018)(Anoye 2015):

1. Introducing them to the quality system and their responsibilities and authority.
2. A means of training them on how to implement the documented system.
3. Providing information that enables them to do their work appropriately.

B. The importance of documentation for the organization:

1. Ensure the continuity of achieving quality requirements.
2. Demonstrate the organization's commitment to quality.
3. reduce the possibility of errors.
4. Reference for internal quality audit work.

C. The importance of documentation for external parties:

1. Enhancing the customer’s confidence in the organization’s ability to meet their requirements and meet the
2. 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, Pradhan, and Muniz 2018)(Ali 2014)(Alhasani 2020)(Domingues et al., 2019).

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. RESEARCH METHODOLOGY

The research adopts the case study approach in presenting and discussing the requirement (the documentation) according to ISO 9001:2015 to reach results that are as close to reality as possible to reach the goal of the research, which is to support the prefabricated building factory in obtaining the quality management system certificate. The seven-point Likert scale will be used to measure the extent to which the actual implementation of the requirements of the international standard (ISO 9001:2015) is achieved by assigning a specific weight to each paragraph in the scale, as shown in Table 1, to translate the data obtained through the checklists into quantitative expressions and to obtain the most accurate possible analysis of the data contained therein.

Table 1. Measurement items and their weights (Olivier 2014)

measurement	weight (degree)
Completely implemented and fully documented	6
Completely implemented and partially documented	5
Completely implemented and undocumented	4
Partially implemented and fully documented	3
Partially implemented and Partially Documented	2
Partially implemented and undocumented	1
Not implemented and undocumented	0

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."

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. 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 seven-point Likert scale was used; a specific weight was assigned to each of the paragraphs of that scale, and accordingly, the analysis was done and the results were reached.

4. RESULT

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 = repetitions

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.

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.

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.

5. CONCLUSIONS

The researchers reached a set of conclusions, the most important of which is that business organizations strive to obtain the International Standards Certificate (ISO 9001:2015) by establishing the fundamental requirements for achieving excellence through quality. And 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. The results showed that the checklists are 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 an acceptable level for obtaining it. 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), including the documentation item. 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.

Through the conclusions, the study reached some recommendations, including establishing a computerized database to collect data related to the organization's operations and activities to benefit from it in future analysis and documentation; 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 related to quality. Top 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, 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, 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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Mueyyed Akram Omar Arslan
College of Graduate Studies, University Tenaga Nasional, Malaysia
Alparslan1961.ma@gmail.com
ORCID 0000-0002-9384-7934

Sivadass Thiruchelvam
College of Engineering, University Tenaga Nasional, Malaysia
sivadass@uniten.edu.my
ORCID 0000-0002-7934-4740

Gasim Hayder
College of Engineering, University Tenaga Nasional, Malaysia
Gasim@ uniten.edu.my
ORCID 0000-0002-2677-0367