

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/359722248>

The Implementation of a Quality Management System in Accordance with ISO 9001: 2015 Standard: A Case Study

Article in *International Journal of Economics and Business Administration* · March 2022

DOI: 10.35808/ijeba/762

CITATIONS

0

READS

4,510

3 authors:



Mehdi Bouchetara

Ecole Nationale supérieure de Management

36 PUBLICATIONS 37 CITATIONS

SEE PROFILE



Ahlem Fatma Zohra Amrani

Ecole Nationale supérieure de Management

1 PUBLICATION 0 CITATIONS

SEE PROFILE



Imad Eddine Bedaïda

Ecole Nationale supérieure de Management

2 PUBLICATIONS 0 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Banking crisis and financial stability [View project](#)

The Implementation of a Quality Management System in Accordance with ISO 9001: 2015 Standard: A Case Study

Submitted 12/11/21, 1st revision 13/12/21, 2nd revision 12/01/22, accepted 25/03/22

Mehdi Bouchetara¹, Ahlem Fatma Zohra Amrani², Imad Eddine Bedaïda³

Abstract:

Purpose: This article aims to provide the main guidelines for a Quality Management System (QMS) implementation, compliant with the international standard ISO 9001: 2015, within a banking service offered by a large Algerian public bank.

Design/Methodology/Approach: A qualitative study based on document review, gap analysis grid, and observation, brainstorming as well as semi-directive interview for descriptive purposes was conducted.

Findings: The diagnosis results of the current state suggest the need to develop an action plan that attempts to bring the QMS in compliance with the requirements of ISO 9001: 2015, as well as to proceed with the design, development and implementation of the foundations of this system (contextual issues, needs and expectations of interested parties, QMS and its necessary processes as well as the quality documentation system).

Practical Implications: The positive results expected from the implementation of the QMS depend considerably on the commitment of the bank's top management and the involvement of all its employees.

Keywords: QMS, ISO 9001:2015 standard, banking service, process.

JEL Code : M10, M11

Paper type: Research article.

¹Assistant professor, Higher National School of Management, Algeria, m.bouchetara@ensm.dz;

²PhD student, Higher National School of Management, Algeria, afz.amrani@ensm.dz;

³PhD student, Higher National School of Management, Algeria, i.bedaïda@ensm.dz;

1. Introduction

In an economic environment characterized by globalization, competition, and increasing customer demands (Azzouzi and Naoui, 2020; Kakouris and Sfakianaki, 2019), more and more organizations are striving to increase their performance and become more competitive by improving their business processes (Siltori *et al.*, 2020).

In response to these environmental conditions, organizations are turning to adopting and certifying their quality management systems according to the international standard *ISO 9001* requirements because of the several benefits it can bring to their businesses (Almeida and Pradhan Jr., 2018).

In fact, quality management improves the operational performance of organizations including banks, as well as the quality of their products and services (Bhatia and Awasthi, 2018). As a result, quality has become an element of survival in such an environment (Gaspar, Popescu, Dragomir, and Unguras, 2018). It drives organizations to become competitive and demonstrate that they meet the requirements of their customers. These organizations demonstrate this through the implementation of a Quality Management System (QMS) (Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021).

Thus, the adoption of *ISO 9001* has become a persistent, growing and popular managerial practice in the market (Psomas, Vouzas, and Kafetzopoulos, 2014). This is due to the fact that *ISO 9001* provides the foundations for establishing a quality culture at the organizational level, which can develop towards the Total Quality Management (TQM) approach (Kakouris and Sfakianaki, 2019).

In the banking market, the customer is the target of all financial operations. In addition to being the user of the service, he represents the element that ensures the sustainability of the bank by the necessary resources that he entrusts to it (Lachache and Abdelhafid, 2019). Therefore, the customer remains at the center of the banking institutions' concerns. It imposes a better, faster and more reliable service delivery as well as the marketing of new products that meet its needs (Lleshi and Lani, 2017). Banks need to respond quickly and better to the needs of their customers, in order to maintain their competitiveness in their industry (Ibid.).

Given the sensitivity of banks to errors and defects, the adoption of quality management practices is needed. Thus, they adopt various risk management tools and methods, as well as quality management systems (Alharth, Jastania, and Aziz, 2017).

Given that implementation of a QMS that complies with the *ISO 9001* requirements within organizations means the implementation of a customer-oriented system, in the interest of meeting their needs and expectations (Demkiv, 2018). The banking

industry expresses a trend regarding the implementation of *ISO 9001* (Ibid.), in order to effectively and efficiently meet the increasing and complex customer requirements (Njuguna and Bett, 2018).

Although the scientific literature is rich in articles that address different research areas related to *ISO 9001*, it remains poor in terms of research on successful methodologies or modalities for its implementation (Chen, Anchecta, Lee, and Dahlgaard, 2016; Fonseca, Domingues, Machado, and Harder, 2019). Moreover, *ISO 9001* determines what to do without indicating how to do it (Sá *et al.*, 2020).

Thus, thanks to the literature review, we identified a gap in the literature that studies the relationship between *ISO 9001* and the performance of banks as well as the good practices of its implementation in the latter. The interest in our research stems from this gap in the literature concerning the modalities and good practices of implementing an *ISO 9001*-compliant QMS in banks.

We contribute to the scientific literature by conducting a case study on preparing the implementation of a quality management system in accordance with *ISO 9001:2015* requirements in a banking service, by integrating the basic concepts of the latter.

2. Literature Review

Companies of all sizes, in all types of businesses and in all sectors are adopting *ISO 9001*. It has become a persistent, growing and popular management practice in the global marketplace (Psomas, Vouzas, and Kafetzopoulos, 2014).

In order to engage in Total Quality Management (TQM), many organizations maintain *ISO 9001* certification as an interesting starting point for quality improvement (Bhatia and Awasthi, 2018).

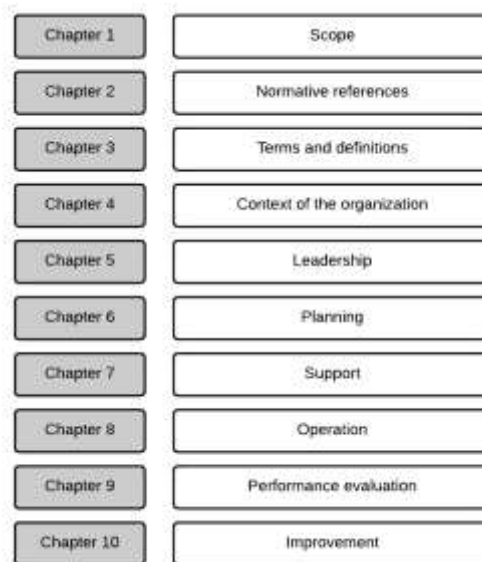
According to the latest ISO report on the amount of validated worldwide management system certificates (ISO 9001, ISO 14001, ...) in 2019, we find that *ISO 9001* is the most adopted standard by various organizations (TheISOsurvey, 2020). The ISO 9000 family of standards is among the best known and most widely sold ISO standards (ISO/SC, 2020).

According to Magana, Bakama, Mukwakungu, and Sukdeo (2020) *ISO 9001* is « *a list of clauses of requirements that enable organizations to be consistent in the management of their quality-related processes* » (Magana, Bakama, Mukwakungu, and Sukdeo, 2020). Also, Betegon *et al.* (2021) define *ISO 9001* as « *the international standard that provides a process-oriented approach to implementing a QMS in an organization* » (Betegon *et al.*, 2021). Therefore, the ISO 9001 standard defines the requirements for the implementation of a QMS by organizations wishing to improve their systems' quality and increase their efficiency (ISO9001, 2015; Hussain, Eskildsen, and Edgeman, 2018).

ISO reviews the *ISO 9001* standard every seven years. Thus, until today, *ISO 9001* has undergone four successive revisions; in 1994, in 2000, in 2008 and the last revision in 2015 (Pyzdek and Keller, 2013; Demkiv, 2018). The aim is to make organizations more flexible so as to increase their responsiveness to changing internal and external environments. Thus, organizations that comply with the standard have the assurance of providing products and services that will meet the needs and expectations of their customers, as well as the relevant legal and regulatory requirements (Betegon *et al.*, 2021).

Through this revision, considerable novelties and differences are introduced to the *ISO 9001:2015* version compared to its predecessor (*ISO 9001:2008*) (Domingues, Reis, Fonseca, and Putnik, 2019; Bravi, Murmura, and Santos, 2019). Based on Hoyle (2017) the *ISO 9001: 2015* standard has changes related to; structure (the High Level Structure) (Figure 1), terminology, requirements and emphasis of concepts.

Figure 1. High Level Structure (HLS) according to Annex SL of the ISO Directives - Part I



Source: BSI, 2015.

a. Motivations for adopting the ISO 9001 standard

Many scientific publications analyze motivation as a crucial influencing factor in the adoption and the implementation process of *ISO 9001* (Kakouris and Sfakianaki, 2019), as well as in the appearance of expected benefits from this approach (Castillo-Peces, Mercado-Idoeta, Prado-Roman, and Castillo-Feito, 2018).

From this perspective, most studies classify motivations for *ISO 9001* implementation into two types: *internal and external motivations* (Valmohammadi and Kalantari, 2015). Internal motivation is related to a desire from within the organization itself, while external motivation is driven by external pressures (Ibid.). Internal motivations are often related to improving internal processes and improving product/service quality, while external motivations refer to improving the company's image and competitiveness, expanding market share, internationalization, demands/pressures from customers/suppliers or from the state, etc., (Georgiev and Georgiev, 2015; Bravi, Murmura, and Santos, 2019).

These motivations determine how a QMS (in accordance with *ISO 9001*) is implemented within organizations, as well as how successful the implementation of the system has become (Hussain, Eskildsen, and Edgeman, 2018). Moreover, before embarking on QMS implementation, it is essential to first identify its motivations and objectives (Klute-Wenig and Refflinghaus, 2020).

Adaptation to organizational contexts results in different motivations for adopting the *ISO 9001* standard from one organization to another. To each its needs and internal constraints (Kakouris and Sfakianaki, 2019). Indeed, a better exploitation of the benefits of *ISO 9001* implementation by organizations is achieved when they implement it for initial motivations, mostly internal than external (Echour and Nbigui, 2020).

b. Critical Success Factors and Barriers for the implementation of an ISO 9001 QMS

Once the organization has defined its goals and motivations for internalizing *ISO 9001*, it faces obstacles, which can impede the successful implementation of the system (Klute-Wenig and Refflinghaus, 2020), as the organizations internal environment may or may not be supportive of this approach (Tahir, 2017).

In order to assist in the decision making of organizations wishing to adopt *ISO 9001* for the first time, researchers have been interested in analyzing the factors that have led to the failure or ineffectiveness of QMSs already implemented by other organizations. As a result, a number of Critical Success Factors (CSFs) and barriers to implementing an *ISO 9001* compliant QMS are revealed (Sawant, Yadav, and Rokke, 2018).

The researchers Sanchez-Lizarraga *et al.* (2021) find a variation in CSFs for *ISO 9001* implementation in organizations. They also note that most CSFs are aligned with the quality management principles (QMPs). They conclude that QMPs can be considered as CSFs.

On one hand, the literature points to management commitment as the key factor for successful and effective QMS implementation. It refers to the degree of support provided by management along the implementation process (Almeida and Pradhan

Jr., 2018). Due to its high criticality, it represents one of the major obstacles for the implementation (Klute-Wenig and Refflinghaus, 2020).

Since the implementation of *ISO 9001* is a strategic decision (Sá *et al.*, 2020), top management has the responsibility to raise awareness of the QMS importance to the organization, to promote and embody the quality mindset in every employee, to define and communicate quality guidelines, and to involve employees through their recognition and motivation (Almeida and Pradhan Jr., 2018). Top management must define its strategic orientations in terms of quality, which it should formalize and communicate through a quality policy and other instructions. It also has the obligation to make available and allocate the necessary resources for QMS implementation while stimulating employees' involvement (Stanojeska, Minovski, and Jovanoski, 2020). Furthermore, top management must show its involvement in monitoring and evaluating the QMS and value its employees by involving them in defining the quality culture (Chiarini, Castellani, Rossato, and Cobelli, 2020).

On the other hand, employee engagement is the second CSF for implementation that recurs strongly in the literature (Almeida and Pradhan Jr., 2018; Stanojeska, Minovski, and Jovanoski, 2020; Vasic, Delic, Brkljac, Vrhovac, and Zizakov, 2020). Employees are responsible for the implementation of management's quality guidelines. Their involvement promotes; customer orientation, continuous improvement and organizational learning, which are the most important determinants on the state of the QMS (Stanojeska, Minovski, and Jovanoski, 2020).

To achieve the goals that the company has set for its QMS, it is essential to involve its employees in the processes in which they operate by encouraging the acquisition of new skills and sharing knowledge (Vasic, Delic, Brkljac, Vrhovac, and Zizakov, 2020). Furthermore, and interestingly, learning is the only critical success factor that irreversibly influences all other factors. It refers to the required trainings and the sharing of knowledge and experience among employees (Vasic, Delic, Brkljac, Vrhovac, and Zizakov, 2020).

According to the findings of the multi-country empirical research Fonseca, Domingues, Machado, and Harder (2019), the success of the *ISO 9001: 2015* transition or implementation process carried out by the different organizations that participated in the study, is due in part to their participation in trainings and seminars on the subject.

Finally, understanding the added value of each factor and being aware of the potential barriers when implementing an *ISO 9001*-compliant quality management system, are two essential elements to consider in order to ensure the success and improved performance of the system once it is implemented (Almeida and Pradhan, Jr., 2018; Bounabri, Oumri, Saad, Zerrouk, and Ibnlfassi, 2018).

c. *Methodologies for implementing an ISO 9001 QMS*

The scientific literature shows that the *ISO 9001: 2015* version - published based on the results of a large survey of *ISO 9001* users, leads several researchers to study its different aspects. However, it remains poor in terms of studies on the modalities of its implementation (Chen, Anchecta, Lee, and Dahlgaard, 2016; Fonseca, Domingues, Machado, and Harder, 2019).

It is worth noting that for the implementation of a QMS compliant with *ISO 9001*, the standard in question specifies the 'what to do?' without indicating the 'how to do it?' (Sá *et al.*, 2020). In response to this last question, some researchers propose different methodologies (Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021).

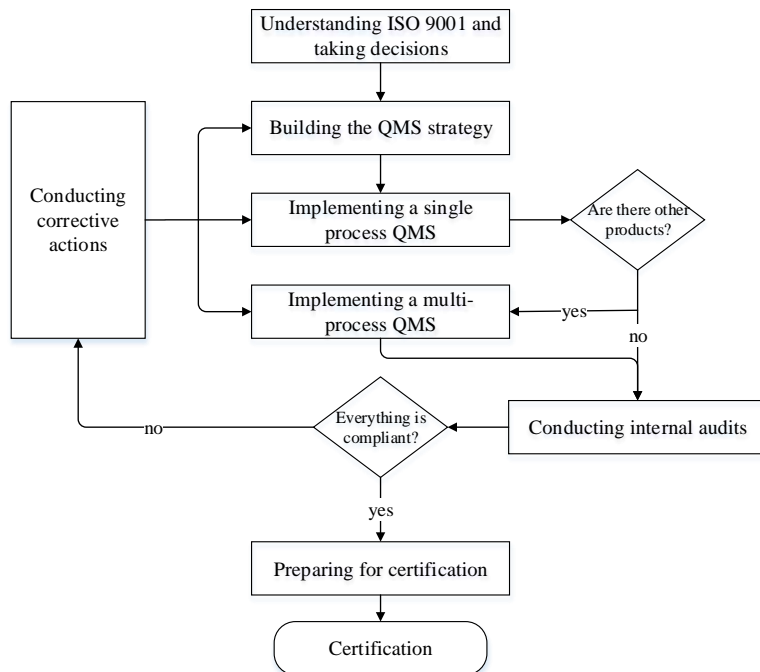
Considering the complexity and difficulty of implementing *ISO 9001*, Klute-Wenig and Refflinghaus (2020) suggest a step-by-step approach to implementation, which seems suitable for any organizational context. It is firstly a 'single process QMS' implementation, where the most resourced process is selected to serve as a model.

The chosen model process is first modelled by a flowchart in order to optimize it and reveal its automation possibilities, then the documentation required by the standard is developed progressively (the *ISO 9001* requirements are fulfilled one after another). Secondly, the scope of the QMS is extended to other processes, resulting in a multi-process QMS. Eventually, if desired, the company can start the certification process of the implemented QMS. Figure 2 shows the step-by-step approach mentioned above.

The approach proposed by the authors remains general. In practice, it is necessary to define the steps, activities and methods essential to the QMS implementation (Ibid.). The QMS based on *ISO 9001: 2015* addresses both strategic and operational levels of the organization. Therefore, the authors Chen, Anchecta, Lee and Dahlgaard (2016) refer to developing an *ISO 9001*-compliant QMS in two phases:

- Developing an *ISO 9001*-compliant QMS at a *strategic* level: the organization must first develop its strategy before making it operational. At this level, management develops its quality policy to support and demonstrate its commitment to this approach, and allocates the necessary resources to support the QMS infrastructure.
- Developing an *ISO 9001* compliant QMS at an *operational* level: The organization must operationalize its strategy. At this level, procedures, work instructions and records are developed and resources and/or data are transformed into a product/service that meets customer requirements.

Figure 2. Guidelines for QMS implementation according to ISO 9001 - basic structure



Source: Klute-Wenig and Refflinghaus, 2020.

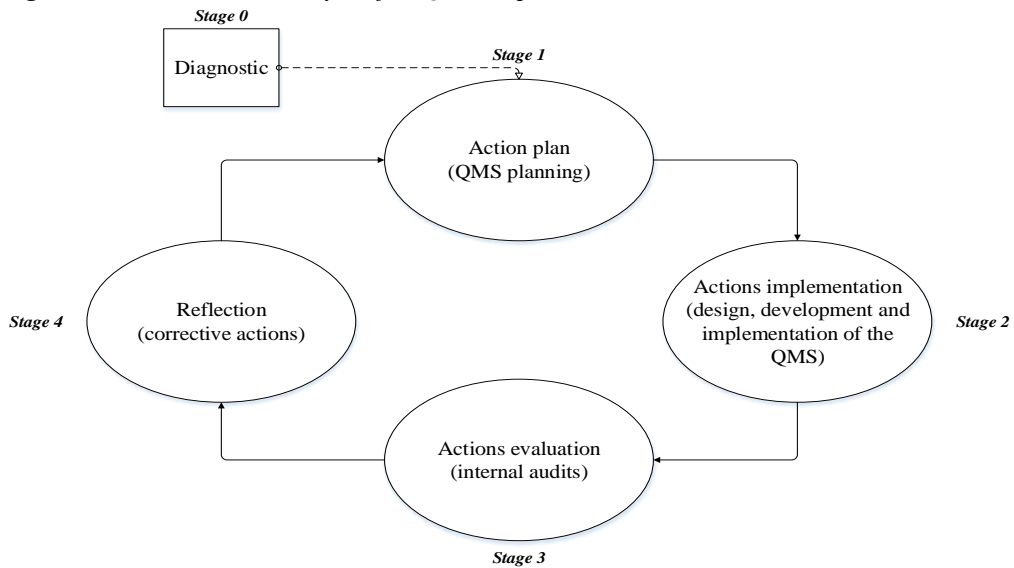
In the interest of improving the critical manufacturing processes of a body shop company so that it is more responsive to market needs, researchers Tigre-O, Tubón-Núñez, Carrillo, Buele and Salazar (2019) conduct an action research for the implementation of an *ISO 9001: 2015*-compliant QMS specific to manufacturing processes, following four main steps:

- The description of the company's manufacturing processes: a step by which roles and responsibilities, inputs and outputs, customers, indicators and resources are established and failures are identified.
- The diagnostic of the *ISO 9001: 2015* requirements: step carried out by a set of questions related to the requirements of the standard and grouped in the form of a checklist. The results of the checklist and their analysis allow to have a clear idea on what to do, especially on the QMS documentation to be established.
- The development of the QMS documentation system in accordance with *ISO 9001: 2015*: a step that meets the requirements of the standard for recording, maintaining and preserving documented information. To ensure effective management of the QMS, researchers develop a quality manual, a procedures manual and a record book.
- The development of the 'Quality Road' method: this step is based on the PDCA cycle to identify improvement opportunities and undertake the necessary

actions to address them. Thus, the quality management system in accordance with *ISO 9001: 2015*, related to the manufacturing processes is implemented.

Researchers Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes and Nadeem (2021) also conduct action research that aligns in phases with the PDCA cycle to (i) implement an *ISO 9001: 2015*-compliant QMS within the failed support process reported at the Network Operations Center of a telecommunications company and (ii) obtain certification (Figure 3).

Figure 3. Action research cycle for QMS implementation



Source: Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021.

To reach their objective, the authors carry out: (1) a diagnosis aimed at understanding the functioning of the process as well as the level of compliance with the requirements of the standard (2) an action plan for the implementation of the system (3) an implementation of the planned actions (training of the staff, development of the documentary system, process approach, ...) (4) an internal audit to evaluate the actions taken and (5) an identification and application of the necessary corrective actions (Ibid.).

These *ISO 9001: 2015* implementation steps are similar to those proposed by Echour and Nbigui (2020). (1) development of a quality policy demonstrating management's commitment. (2) Conducting an initial diagnosis according to the requirements of *ISO 9001*. (3) Development of an action plan for the implementation of the QMS. (4) Evaluation of the actions carried out by conducting internal audits. (5) certification of the implemented QMS by conducting an external audit (third party).

d. Quality in banking services

The confidentiality and the sensitivity of banks to errors make it necessary for them to be quality-oriented by adopting quality systems, methods and tools that allow them to identify and correct non-conformities in time, to understand their origins and to avoid their recurrence, by ensuring the control of internal processes and taking preventive measures. Thus, these institutions can ensure their development and continuously improve their performance (Alharth, Jastania, and Aziz, 2017).

The literature discusses *ISO 9001* certification and its application in different types of industries, including service organizations (Chiarini, Castellani, and Rossato, 2020) such as banks and other financial institutions that are currently actively adopting it in various countries worldwide (Demkiv, 2018).

Under such circumstances, and due to the characteristics of the banks' internal environment (large capital deployment, significant number of employees, and complex organizational structures), these institutions realize the strategic importance of quality in the design and delivery of the services they offer, as well as in retaining existing markets and conquering new ones. As a result, many banks have implemented a QMS specific to their contexts (Lleshi and Lani, 2017).

According to Demkiv (2018), the implementation of an *ISO 9001*-compliant QMS within an organization, means the implementation of a system oriented towards the satisfaction of the needs and expectations of its customers. Thus, taking into account the requirements of its customers, provides the necessary data for the development of the QMS, having for performance indicator: customer satisfaction. Moreover, the latter is generally seen by organizations as one of the long-term objectives of high importance (Bouketir and Hassani, 2017).

Globalization, strong competition, and lack of differentiation that characterize today's banking industry make service quality the undisputed element to ensure the survival and success of banks in such an environment. It represents the answer to any organization seeking to develop and maintain a competitive advantage (Lleshi and Lani, 2017). Decidedly, customers' satisfaction and loyalty increase, with the growth of the quality of service offered (Bouketir and Hassani, 2017), « *the company must therefore organize itself around a strategy more customer-oriented than product to differentiate itself against a tough competition* » (Azzouzi and Naoui, 2020).

Since bank performance is significantly and positively related to service quality and its improvement is considered a condition of survival and success for these institutions, adopting the Total Quality Management (TQM) approach is essential for improving service quality especially, and improving bank performance overall (Alharth, Jastania, and Aziz, 2017). Moreover, Njuguna and Bett (2018) conclude that quality management initiatives (employee empowerment, top management

commitment, continuous improvement, and customer focus) exert positive effects on the performance of commercial banks in Makueni County, Kenya.

In the banking context, the customer is the driving force behind all financial operations. In addition to being the user of the service, they are the element that ensures the sustainability of the bank through the necessary resources they entrust to it (fundraising activities). It is therefore crucial that banks take care of their customers, « *because they are the source of their main profits* » (Lachache and Abdelhafid, 2019). In fact, it is vital to understand customers' needs and expectations regarding the expected quality of banking services, as their satisfaction and loyalty are closely linked to the gap between their expectations of service performance and the actual service experience itself (Alharth, Jastania, and Aziz, 2017). Consequently, in order to ensure the conformity of the banks' offer with the customers' expectations, it is essential for them to elaborate management and quality improvement strategies of their banking services, jointly integrated with the global development strategy of the bank and responding to market evolutions (Demkiv, 2018).

Moreover, according to Lleshi and Lani (2017) quality management within banks aims to improve their operations in order to; reduce costs, motivate staff, continuously improve the quality of products and/or services and enhance customers' trust in their banks. As a result, banks' competitive position in their industry is positively affected. Finally, Demkiv (2018) identifies a lack of studies focused on impacts resulting from the implementation of quality management systems within banking institutions.

3. Research Methodology

The methodological approach applied aims to design and implement a quality management system in accordance with the *ISO 9001: 2015* standard within the banking service « Pawnbroking » of an important Algerian public bank. The method is based on the *qualitative approach* (Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021), taking into account the nature of the data collected and manipulated, which are mostly textual (Zerhouni, 2016).

3.1 Method

To reach the goal of our research work, we go through several steps, constituting our QMS implementation approach (Table 1) developed based on the literature review.

Table 1. *QMS Implementation Approach*

Purpose	Objectives	Stages	Steps
<i>Design and implementation of a QMS</i>	<ul style="list-style-type: none"> Understand the global functioning 	1. Diagnostic	1.1. Description of key pawnbroking activities

compliant with ISO 9001:2015 in the pawnbroking banking service - Large Algerian public bank	of the banking service: Pawnbroking;		1.2. Gap analysis
	<ul style="list-style-type: none"> Knowing its level of compliance with ISO 9001:2015 requirements 		
	<ul style="list-style-type: none"> Developing an action plan 	2. QMS planning and implementation	2.1. Action plan
	<ul style="list-style-type: none"> Designing, developing and implementing the QMS 	3. Actions implementation	3.1. External and internal issues related to the banking service 3.2. Interested parties, needs and expectations 3.3. Quality management system and its processes 3.4. Quality documentation system

Source: Elaborated by our care.

3.2 Data Collection

For the purposes of this study, qualitative data were collected to help answer our research questions and objectives. As needed, these data were collected at different stages of the QMS implementation process (Table 2), using different data collection tools, namely: Document review, observation, gap analysis grid, brainstorming and semi-structured interview for descriptive purposes.

Table 2. *Data collection tool(s) adopted at different stages of the QMS implementation process*

Steps in the implementation process	Adopted data collection tools
Description of key pawnbroking activities	<ul style="list-style-type: none"> Observation ; Document review ;
Gap analysis	<ul style="list-style-type: none"> Gap analysis (Completed with open questions)
Action plan	<ul style="list-style-type: none"> Document review ; Brainstorming
External and internal issues related to the banking service	<ul style="list-style-type: none"> Brainstorming ; Document review
Interested parties, needs and expectations	<ul style="list-style-type: none"> Brainstorming
Quality management system and its	<ul style="list-style-type: none"> Semi-structured interview ;

processes	<ul style="list-style-type: none"> • Observation ; • Document review
Quality documentation system	<ul style="list-style-type: none"> • Gap analysis • Document review

Source: Elaborated by our care.

3.3 Data Analysis

We adopted various data analysis tools in order to analyze, structure and exploit the collected data in the best possible way.

First, the gap analysis allowing the diagnosis of the current state was carried out on an Excel file which allowed us, due to its data analysis capabilities, to calculate the compliance rate for each chapter as well as the compliance rate of all the chapters of the standard. Subsequently, « Radar » type graphs are generated to allow a simple and quick view of the findings. These numerical results were used as performance indicators.

Second, the arrangement and exploitation of the answers to our interview questions was made possible by voice recording and subsequent transcription. The purpose of these interviews was to describe and document the different processes covered by the QMS.

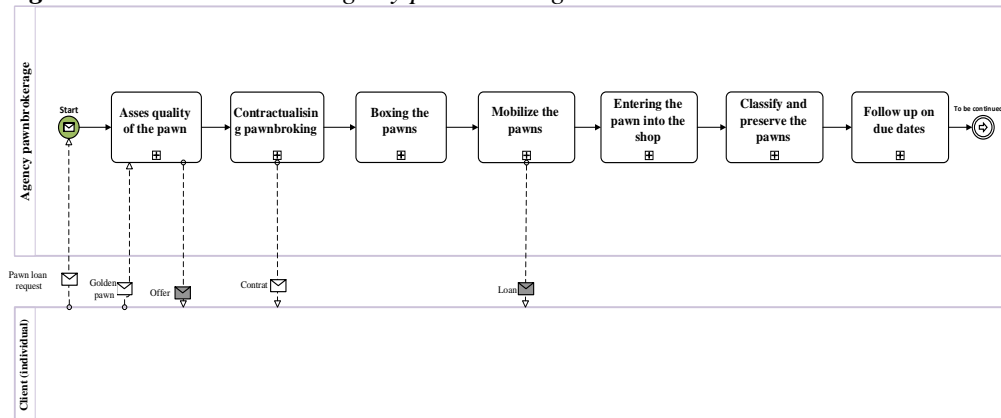
Also, the observation was carried out with a view to visualizing the way in which the operational processes were carried out within the pawn shops in order to formalize and optimize them. Therefore, we listed each activity of each process on a notebook while recording them by photographs.

4. Results

4.1 Diagnosis of the Current State

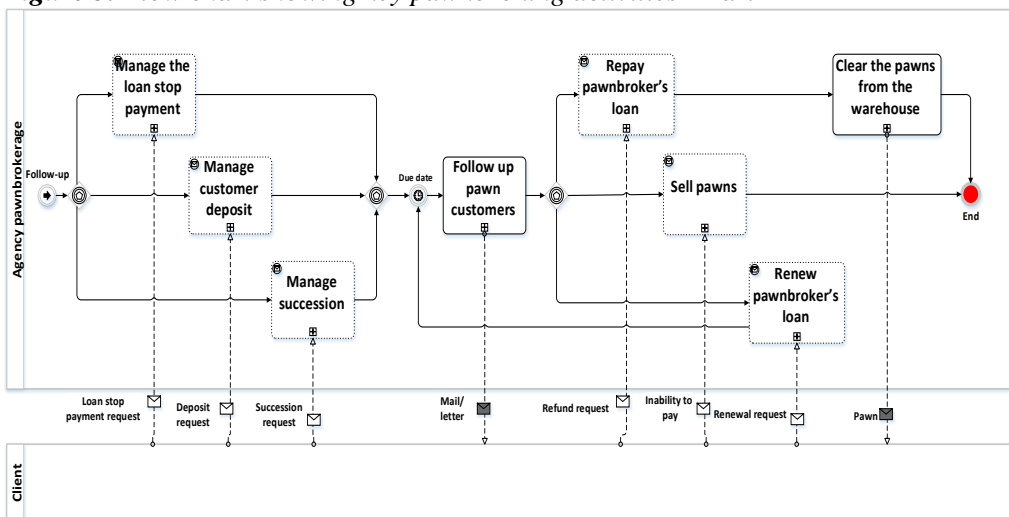
We initiated our on-site work with a diagnosis of the current state of the QMS application area, i.e., the pawnbroking banking service, managed by the Pawnbroking Department and offered through six agencies. To this end, we first tried to understand the general functioning of the latter by describing its flow of activities, which we represented in a flow diagram (Figures 4 and 5) following the guidelines of ISO/IEC 19510: 2013 or BPMN 2.0 (*Business Process Model and Notation*).

Figure 4. Flow chart showing key pawnbroking activities - Part 1



Source: Elaborated by our care.

Figure 5. Flow chart showing key pawnbroking activities - Part 2



Source: Elaborated by our care.

As in most processes, the customer's request is the triggering event. In our case, and according to the flow chart presented above;

- (1) The customer, having his gold object, goes to one of the bank's six pawn shops and applies for a loan against his object;
- (2) If the client is eligible to receive the loan, the pledge is assessed;
- (3) An offer on the amount of the loan is made to the client;
- (4) Once the offer has been accepted, the customer agrees to sign a loan contract that specifies the details of the transaction and the amounts to be repaid;

- (5) The pledges are stored in a vault that ensures their security until they are recovered by their owners (following the repayment of the loan) or, alternatively, until they are sold at auction;
- (6) Activities to monitor the maturity and recovery of loans are carried out.

For the purpose of identifying actions and/or improvements to be included in the planning of the QMS and its implementation, we administered to the concerned parties (managers and IRCA auditors who conducted an internal audit mission on the Pawnbroking banking service) a gap analysis grid established according to the requirements of *ISO 9001: 2015*, under the form of 48 questions, which they filled in according to a rating scale and a color code (Table 3). According to researchers Purwanggono, Bakhtiar, and Rahman (2018), gap analysis is a tool used to understand and compare the current state with the expected state in order to highlight areas for improvement.

Table 3. Rating Scale and Color Code

Rating	Description	Rate	Color
Compliant	Requirement satisfied	fully 100%	
Acceptable	Requirement satisfied	greatly 66%	
To improve	Requirement satisfied	weakly 33%	
Non-compliant	Unsatisfied requirement	0%	

Source: Claude, 2015.

The gap analysis grid consists of two tables:

- (1) A small table with descriptive elements about the conduct of the gap analysis (the purpose, scope, evaluator, participants, and dates and duration of the analysis).
- (2) A large table with the components of the gap analysis (the chapters and their respective sections, the questions, the assessment, the compliance rates, and the observations).

Once the grid was filled in and the percentages were calculated, we obtained an overall compliance rate i.e. of all chapters (4th to 10th chapter) equal to (**47%**). The latter is interpreted according to the scale (Table 4) proposed in the paper of Purwanggono, Bakhtiar and Rahman (2018) where they conduct a gap analysis to study whether or not the company is ready to embark on a certification process for its QMS.

Thus, by interpreting the overall compliance rate obtained which is equal to (47%) according to the scale of interpretation previously presented in Table 4, we conclude that there is a real need to undertake improvement actions to reduce or eliminate the gaps identified compared to the requirements of *ISO 9001: 2015*.

Table 4. Interpretation scale for the overall compliance rate of ISO 9001:2015 requirements

Pourcentage	Interpretation
1% - 49%	The organization needs to undertake significant improvements due to the numerous non-conformities with the requirements of <i>ISO 9001:2015</i>
50% - 74%	The organization still needs to improve its QMS in preparation for <i>ISO 9001:2015</i> certification
75% - 100%	The organization is ready to complete its QMS according to <i>ISO 9001:2015</i> and to undertake certification

Source: Purwanggono, Bakhtiar, and Rahman, 2018.

This gap analysis grid provided us with both quantitative and qualitative results. The quantitative results are numerical indications of the level of performance in relation to each chapter, while the qualitative results represent all the findings (observations, documents, records, etc.) necessary for developing the action plan.

Overall, the diagnostic reveals that operational processes are very slow, resulting in long queues for pawnbroking clients, which can take hours to process. This is due to the use of two information systems simultaneously in the loan granting operations as well as the additional activity of relationship entry, where the front office staff opens a bank account for new clients. Normally, this is an activity performed only by commercial agencies. This generates a double consequence (1) customers are unsatisfied with the quality of the service (waiting time to be taken care of is long) and (2) the bank is losing revenue.

Being interested in the continuous improvement of its activity, the bank launched internal audits missions with respect to the requirements of *ISO 9001: 2015* by prioritizing the pawnbroking service. The findings of these audits and the strong potential for profitability of the latter have motivated the bank to further improve the quality of operational processes responsible for the delivery of this service through the implementation of a QMS compliant with the international standard *ISO 9001: 2015*.

4.2 Planning the Implementation of the QMS

Based on the results of the gap analysis, we developed an action plan for the implementation of the QMS for its area of application. Our action plan includes the following elements: Actions/Improvements to be implemented to fulfill the requirements of each clause of the *ISO 9001: 2015* standard, *Responsibilities*, *Resources* needed to carry out the planned actions and expected *Results* of the realization of these actions as well as the *Means or Methods* of their evaluation.

Once the action plan was developed, we proceeded to carrying out the actions that represent the basis of the QMS, namely:

- Determination of the internal and external issues related to the field of application

of the QMS.

- Determination of the relevant interested parties, their needs and expectations.
- Design of the QMS, identification and description of the processes.
- Determination of the quality documentation system.

4.3 Conception, Development and Implementation of the QMS

First, we consider it essential to begin the implementation of the QMS by understanding the environment in which Pawnbroking operations take place, namely: its external and internal issues, its stakeholders as well as their needs and expectations. Then, we proceed to the establishment of the QMS through the identification of the processes, the clarification of their interrelations and their description.

4.3.1 External and internal issues related to the pawnbroking service

Taking into account the possible influences of internal and external issues of the context in which the pawnbroking activities are carried out on the achievement of the objectives established for its QMS, we collaborated with the managers of the Quality Management Department (QMD) and the Pawnbroking Department in order to determine the internal and external issues related to the application area of the QMS. This was done through brainstorming sessions with the concerned parties and numerous document reviews (pre-established SWOT analysis, Pawnbroking audit report, activity reports, newspaper articles, websites...).

The context analysis allows us to conclude that, in addition to being a value-added activity, pawnbroking represents a relevant competitive advantage for the bank. However, understanding customer needs and improving operational processes are key to maximizing the benefits of this activity and ensuring greater success and profitability for the bank as a whole.

4.3.2 Stakeholders, needs and expectations

In this stage, we first identified and listed the interested parties that have a positive or negative impact and influence on the Pawnbroking banking service and its QMS. Then, we proceeded to the analysis of their requirements and expectations as well as their impacts and influences on the effectiveness of the QMS. Furthermore, any party that presents a significant risk to the sustainability of the activity if its needs and expectations are not met was considered a relevant stakeholder. With this in mind, and being inspired by the PMBOK guide, a register of relevant stakeholders was created.

4.3.3 Quality management system and its processes

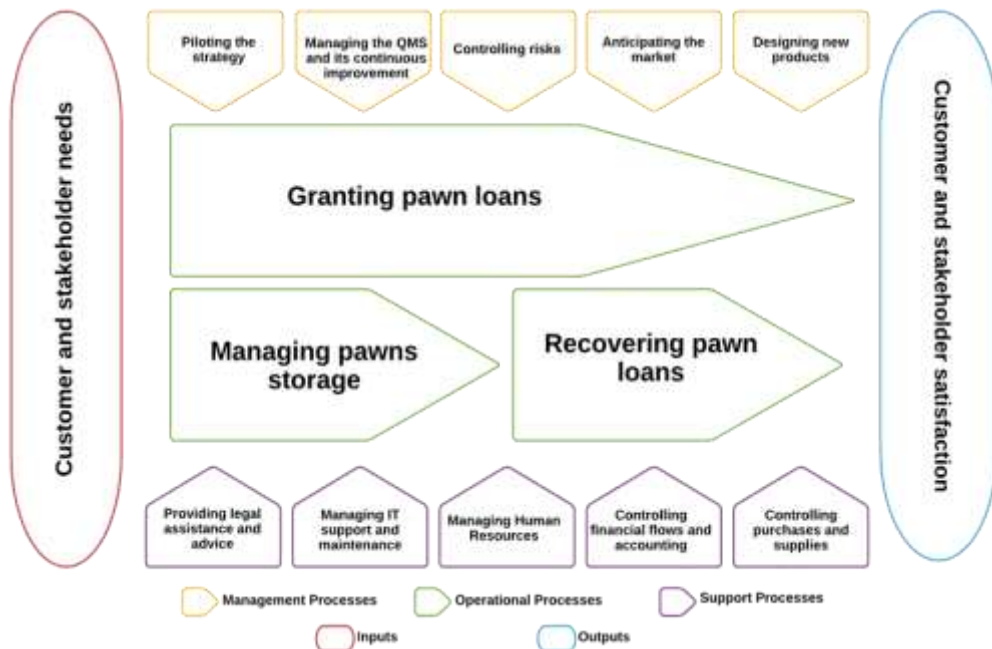
Here, we proceed in a logical order to; the identification of the processes that constitute the application area of the QMS, the description of the latter and their documentation by process sheets.

(1) Process identification - Process mapping

An identification of the QMS processes was carried out through the analysis of internal documents as well as numerous discussions with the QMD managers in view of their expertise and experience in the bank.

Based on this, we have identified 13 processes that we have classified into three categories according to their purposes and organized in the form of a process map (Figure 6).

Figure 6. Mapping of the QMS processes




Source: Elaborated by our care.

Once the processes have been identified, we tried to clarify the different interactions between them, because these interactions are what make the identified processes constitute a single system, which is the *quality management system*.

In order to make the process map clear and communicative in an efficient way, we have developed an interaction matrix, shown in Table 5. In the latter, we find boxes that contain (X), which means that there is an interrelation between the two processes on either side of the same table. The dark grey boxes indicate the absence of links because they are the intersection of the same process. The light grey boxes indicate the absence of exchange between the processes.

Table 5. Process interaction matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
 Piloting the strategy (1)		X	X	X	X	X	X	X	X	X	X	X	X
Managing the QMS and its continuous improvement (2)	X		X	X	X	X	X	X	X	X	X	X	X
Controlling risks (3)	X	X		X	X		X	X		X	X	X	
Anticipating the market (4)	X	X			X	X		X		X	X		
Designing new products (5)	X	X	X	X						X	X		
Granting pawn loans (6)	X	X	X	X	X				X	X	X		X
Managing pawn storage (7)	X	X	X			X		X		X	X		X
Recovering pawn loans (8)	X	X	X	X					X	X	X		X
Providing legal assistance and advice (9)	X	X						X			X		
Managing IT support and maintenance (10)	X	X				X		X			X		X
Managing Human Resources (11)	X	X								X			X
Controlling financial flows and accounting (12)	X	X	X							X	X		X
Controlling purchases and supplies (13)	X	X				X	X	X		X	X	X	

Source: elaborated by our care.

(2) Description and documentation of processes - Process sheets

In compliance with the requirements in 4.4 of the *ISO 9001: 2015* standard as well as one of the principles of quality management, which is the *process approach*, we tried to promote the latter by proceeding to the elaboration of descriptive sheets related to each identified process.

The description and documentation of these processes are made possible through descriptive interviews conducted with the process pilots concerned as well as by non-participating observations that we conducted at the bank's pawnbroking agencies.

4.3.4 Quality documentation system

To guarantee the good management and efficiency of the QMS, we made sure that all the documented information required by the standard and those deemed necessary by the bank were available.

In this interest, we first made sure to inventory all the existing documented information through the gap analysis, then we made sure to introduce the missing documented information during the development of the action plan.

We found that the bank had already initiated a project to develop a documented information control procedure, providing guidelines for creating, maintaining and controlling documented information. In addition, the bank has formalized a quality policy to demonstrate its commitment to the QMS implementation process.

5. Discussion

In order to prepare for the implementation of a quality management system in accordance with the requirements of *ISO 9001: 2015*, we followed three main phases, namely: diagnosis of the current state, planning of the QMS and implementation of the basic actions from the action plan. This approach is aligned with the methodologies adopted by (Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021), (Tigre-O, Tubón-Núñez, Carrillo, Buele, and Salazar-L, 2019) as well as by (Echour and Nbigui, 2020) in the conduct of their *ISO 9001*-compliant QMS implementation projects.

However, due to lack of time, we were not able to carry out all of the key implementation steps specified by these authors, such as the evaluation of the corrective actions carried out (internal audits), in particular their impact on customer satisfaction as well as on the overall performance of the banking department concerned by the QMS and the evaluation of the new results obtained.

The results of the gap analysis indicate an overall compliance rate (all chapters combined) equal to (47%). Interpretation of this rate in relation to the previously established interpretation scale indicates that the QMS needs considerable improvement due to the numerous non-conformities identified.

Also, based on the results of the gap analysis, it became possible to identify the roles and responsibilities related to the QMS, to plan the corrective actions and to clarify the documented information to be generated by the organization. This is in accordance with the conclusions of (Ortiz-Rangel, Rocha-Lona, Bada-Carbajal, Garza-Reyes, and Nadeem, 2021).

Moreover, the diagnosis of the current state is a preliminary, crucial and determining phase in order to determine the actions to be taken and thus guarantee compliance

with all the requirements of the standard, as observed by (Tigre-O, Tubón-Núñez, Carrillo, Buele, and Salazar-L, 2019).

Taking into account that motivation is a significant variable allowing the achievement of the expected benefits of the implementation of *ISO 9001* (Castillo-Peces, Mercado-Idoeta, Prado-Roman, and Castillo-Feito, 2018). The results of the internal audit missions carried out on all the structures responsible for the functioning of the pawnbroking operations, namely: the Pawnbroking Department and its six Agencies, which took place at the beginning of 2021, have developed an internal motivation for the bank that consists in improving the quality of its services (regarding pawnbroking) as well as its internal processes related to it. This justifies the choice of the application area of the QMS applied to the present study.

However, it is important for top management to formalize its commitment to the QMS implementation process by communicating a quality policy that makes explicit the motivations and expected objectives of the policy. This is crucial in view of the major influence that top management has on the effectiveness of the QMS (Almeida and Pradhan Jr., 2018).

In addition, considering the role of employees in implementing quality guidelines as well as in achieving the desired goals (Stanojeska, Minovski, and Jovanoski, 2020; Vasic, Delic, Brkljac, Vrhovac, and Zizakov, 2020), the training plan should be expanded so that it includes even the pawnbroking operators. If they do not understand what we require from them to do, they will never be able to achieve the results expected of them.

This is supported by the relational aspect of service delivery by banks, which leads to an improvement in the quality of the service offered. According to Bouketir and Hassani (2017) the satisfaction and loyalty of customers increase, with the increase of the quality of service offered. In this perspective, the bank has reacted as a priority to the slowness of its operational processes carried out at its pawnbroking agencies by eliminating the main bottlenecks (the entry in relation and the use of two information systems) that limit the performance of the banking service and generate customer dissatisfaction. As a result, customer care has been reduced from hours to minutes.

Attention is paid to the conduct of a verification related to the documentary system required by the *ISO 9001: 2015* standard allowing to gather all the existing documented information, those in preparation or being approved as well as those that are missing. This derives from the crucial role of the document system in ensuring effective management of the QMS, as stated in the implementation project carried out by Tigre-O, Tubón-Núñez, Carrillo, Buele, and Salazar-L, (2019).

Finally, based on the results of the literature review, we assume that the standardization of processes with a control of their documentation (creation of

process sheets, clarification of their sequences and information flows) allows to reduce the consequences of the potential turnover on the good functioning of the processes, in accordance with the results of the research on the benefits of the implementation of the *ISO 9001* in companies (Kakouris and Sfakianaki, 2019).

6. Conclusions

Our study focuses on the implementation of a quality management system in accordance with the *ISO 9001: 2015* standard within a banking service offered by a large Algerian public bank. The QMS implementation approach maintained is essentially based on three main phases; the diagnosis of the current state, the planning of the QMS implementation and the realization of the actions that represent the foundations of the QMS.

Firstly, the diagnosis of the current state has allowed us to introduce and familiarize ourselves with the scope of the QMS which covers all activities related to the banking service. Based on a gap analysis, we obtained the compliance rates for each chapter of the *ISO 9001: 2015* standard as well as a global compliance rate for the requirements of the seven chapters combined, indicating a value equal to (47%).

Secondly, based on the results of the gap analysis and taking into account the requirements of *ISO 9001: 2015*, we were able to develop an action plan that addresses the various gaps previously identified. In addition, the development of the action plan allowed us to clarify responsibilities and, above all, to confirm that top management is the actor who takes the greatest responsibility for the planning, development and implementation of the QMS for the decided scope.

Thirdly, we proceeded to the implementation of the actions predefined in the action plan, constituting the foundations of the QMS, namely: the determination of the internal and external issues related to the activities of the pawnbroking service, the determination of the relevant stakeholders for the QMS as well as their needs and expectations, the identification and description of the processes and finally, the definition of the quality documentation system.

On one hand, the results of this study provide a contextual originality since it is one of the few studies conducted on banking institutions, particularly Algerian banks. It is also research which attempts to provide guidelines for the implementation of a quality management system in accordance with the requirements of the international standard *ISO 9001: 2015*. Also, this research provides a guide to decision makers or quality managers when making decisions related to the modalities of implementing an *ISO 9001: 2015* compliant QMS, especially in the context of banking institutions. On the other hand, the present research takes as a case study a type of bank credit that is not part of the classical credits and applies to certain banking professions only. Moreover, due to the exploratory nature of our study, its qualitative data cannot be generalized.

Moreover, our empirical part is limited only to the *preparation* phase of the implementation of a QMS compliant with the *ISO 9001: 2015* standard.

Despite the limitations of our study, through the literature review we were able to identify a gap in the literature on the implementation of a QMS compliant with *ISO 9001: 2015* on banks, including banks in Algeria. This reveals, on the one hand, a need to explore the possible relationships between banks and *ISO 9001*, and on the other hand, to clarify the specificities of design, development and implementation of an *ISO 9001* QMS within banking institutions.

References:

- Alharth, M.M., Jastania, Z.A., Aziz, A.A. 2017. The Total Quality Management in Banking. International Advanced Research Journal in Science, Engineering and Technology. doi:10.17148/IARJSET.2017.4530.
- Almeida, D., Pradhan Jr, N.J.M. 2018. Assessment of ISO 9001:2015 implementation factors based on AHP: Case study in Brazilian automotive sector, 1343-1359. doi:10.1108/IJQRM-12-2016-0228.
- Azzouzi, M., Naoui, F. 2020. Impact de la qualité d'accueil sur la fidélité des clients: Cas de la Banque Populaire. Revue Internationale des Sciences de Gestion, 650-674. doi:10.5281/zenodo.3660080.
- Betegon, M.A., Gonzalez, V.B., Ramirez, N.B., Arce, A.M., Guzman, J.R., Calvo, F.J., Avanzada, S. 2021. Quality Management System Implementation Based on Lean Principles and ISO 9001:2015 Standard in an Advanced Simulation Centre. Clinical Simulation in Nursing, 28-37. doi:https://doi.org/10.1016/j.ecns.2020.11.002.
- Bhatia, M.S., Awasthi, A. 2018. Assessing relationship between quality management systems and business performance and its mediators: SEM approach. International Journal of Quality and Reliability Management, 1490-1507. doi:10.1108/IJQRM-05-2017-0091.
- Bouketir, D., Hassani, A. 2017. Impact of Banking Service Quality on Customer Satisfaction -sample Study-. Revue des Sciences Humaines, 17(1), 61-73.
- Bounabri, N., Oumri, A.A., Saad, E., Zerrouk, L., Ibnlfassi, A. 2018. Barriers to ISO 9001 implementation in Moroccan organizations: Empirical study. Journal of Industrial Engineering and Management, 34-56. doi:10.3926/jiem.2412z.
- Bravi, L., Murmura, F., Santos, G. 2019. The ISO 9001:2015 Quality Management System Standard: Companies' Drivers, Benefits and Barriers to Its Implementation. Quality Innovation Prosperity, 64-82. doi:10.12776/qip.v23i2.1277.
- BSI. 2015. www.bsigroup.com/ISO9001Revision. Retrieved from: www.bsigroup.com: https://www.bsigroup.com/LocalFiles/en-IN/Resources/ISO%209001/ISO-9001-Whitepaper-Risk-in-quality-management.pdf.
- Castillo-Peces, C.D., Mercado-Idoeta, C., Prado-Roman, M., Castillo-Feito, C.D. 2018. The influence of motivations and other factors on the results of implementing ISO 9001 standards. European Research on Management and Business Economics, 33-41. doi:10.1016/j.iedeen.2017.02.002.
- Chen, C.K., Anchecta, K., Lee, Y.D., Dahlgaard, J.J. 2016. A stepwise ISO-based TQM implementation approach using ISO 9001:2015. Management and Production Engineering Review, 65-75. doi:10.1515/mper-2016-0037.
- Chiarini, A., Castellani, P., Rossato, C. 2020. Factors for improving performance in

- ISO 9001 certified small- and medium-sized service enterprises. *The TQM Journal*, 21-37. doi:10.1108/TQM-05-2019-0141.
- Chiarini, A., Castellani, P., Rossato, C., Cobelli, N. 2020. Quality management internal auditing in small and medium-sized companies: an exploratory study on factors for significantly improving quality performance. *Total Quality Management and Business Excellence*. doi:10.1080/14783363.2020.1776101.
- Chountalas, P.T., Magoutas, A.I., Zografaki, E. 2019. The heterogeneous implementation of ISO 9001 in service-oriented organizations. *The TQM Journal*, 56-77. doi:doi.org/10.1108/TQM-02-2019-0053.
- Claude, P. 2015. Grille d'autoévaluation qualité : NF EN ISO 9001:2015. Retrieved from: www.bivi.afnor.org: <https://bivi.afnor.org/notice-details/grille-dautoevaluation-qualite-nf-en-iso-90012015/1297776>.
- Demkiv, Y.M. 2018. The ISO 9001 International Standards in a System of the Banking Services Quality Management. *Business Ethics and Leadership*, 94-102. doi:10.21272/bel.2(3).94-102.2018.
- Domingues, J.P., Reis, A.M., Fonseca, L.M., Putnik, P.Á. 2019. The added value of the ISO 9001:2015 international standard from an auditors' perspective: A CB-SEM based evaluation. *International Journal for Quality Research*, 967-986. doi:10.24874/IJQR13.04-15.
- Echour, S., Nbigui, T. 2020. Motivations related to the quality management system and benefits of its implementation in the company: state of the art. 2020 IEEE 13th International Colloquium of Logistics and Supply Chain Management (LOGISTIQUA), 1-5. doi:10.1109/LOGISTIQUA49782.2020.9353877.
- Fonseca, L.M., Domingues, J.P., Machado, P.B., Harder, D. 2019. ISO 9001:2015 Adoption: A Multi-Country Empirical Research. *Journal of Industrial Engineering and Management*, 27-50. doi:10.3926/jiem.2745.
- Gaspar, M.L., Popescu, S.G., Dragomir, M., Unguras, D. 2018. Defining strategic quality directions based on organisational context identification; case study in a software company. *Procedia - Social and Behavioral Sciences*, 615-623. doi:10.1016/j.sbspro.2018.04.042.
- Georgiev, S., Georgiev, E. 2015. Motivational Factors for the Adoption of ISO 9001 Standards in Eastern Europe: The Case of Bulgaria. *Journal of Industrial Engineering and Management*, 1020-1050. doi:10.3926/jiem.1355.
- Hoyle, D. 2017. ISO 9000 quality systems handbook : using the standards as a framework for business improvement. New York, Routledge.
- Hussain, T., Eskildsen, J.K., Edgeman, R. 2018. The intellectual structure of research in ISO 9000 standard series (1987-2015): a Bibliometric analysis. *Total Quality Management and Business Excellence*. doi:10.1080/14783363.2018.1469977.
- ISO/SC. 2020. Retrieved from: www.iso.org: <https://www.iso.org/fr/about-us.html>.
- ISO9001. 2015. ISO 9001:2015 - Systèmes de management de la qualité - Exigences. Genève, Organisme International de Normalisation.
- Kakouris, A., Sfakianaki, E. 2019. Motives for implementing ISO 9000 – does enterprise size matter? *International Journal of Productivity and Performance Management*, 447-463. doi:10.1108/IJPPM-03-2018-0096.
- Kharub, M., Sharma, R. 2018. An integrated structural model of QMPs, QMS and firm's performance for competitive positioning in MSMEs. *Total Quality Management and Business Excellence*, 312-341. doi:10.1080/14783363.2018.1427500.
- Klute-Wenig, S., Refflinghaus, R. 2020. Quality management for microenterprises and start-

- ups – is the ISO 9001 suitable? *International Journal of Quality and Service Sciences*, 435-446. doi:10.1108/IJQSS-01-2018-0003.
- Lachache, A., Abdelhafid, H. 2019. The role of banking service quality in achieving customers' satisfaction: Evidence from the banks located in Algeria. *Economic Researcher Review (CHEEC)*, 196-212.
- Lleshi, C.S., Lani, L. 2017. Effects of a Quality Management System on the Financial Performance in Banking Sector: Case Study Kosovo. *European Journal of Multidisciplinary Studies*. doi:10.26417/ejms.v4i2.p67-75.
- Magana, M.H., Bakama, E., Mukwakungu, S.C., Sukdeo, N. 2020. The Implementation of ISO 9001:2015 to Improve Quality Service: A Descriptive Study on a South African Service Organization. 2020 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM), 1230-1234. doi:10.1109/IEEM45057.2020.9309854.
- Njuguna, Z.K., Bett, S. 2018. Quality management initiatives and performance of commercial banks in Makueni County, Kenya. *International Academic Journal of Human Resource and Business Administration*, 81-100. Retrieved from: http://www.iajournals.org/articles/iajhrba_v3_i4_81_100.pdf.
- Ortiz-Rangel, D., Rocha-Lona, L., Bada-Carbajal, L.M., Garza-Reyes, J.A., Nadeem, S.P. 2021. Implementation of Quality Management System ISO 9001 in A Telecom Network Operation Centre – A Case Study. *Proceedings of the 11th Annual International Conference on Industrial Engineering and Operations Management Singapore*.
- Psomas, E., Vouzas, F., Kafetzopoulos, D. 2014. Quality management benefits through the “soft” and “hard” aspect of TQM in food companies. *The TQM Journal*, 431-444. doi:10.1108/TQM-02-2013-0017.
- Purwanggono, B., Bakhtiar, A., Rahman, R. 2018. Analysis of ISO 9001:2015 certification readiness of JP-Graha product of Jasaraharja Putera using gap analysis. *SHS Web of Conferences*. doi:<https://doi.org/10.1051/shsconf/20184901005>.
- Pyzdek, T., Keller, P. 2013. *The Handbook for Quality Management: A Complete Guide to Operational Excellence* (2ed.). États-Unis, McGraw-Hill .
- Sá, J.C., Vaz, S., Carvalho, O., Lima, V., Morgado, L., Fonseca, L., . . . Santos, G. 2020. A model of integration ISO 9001 with Lean six sigma and main benefits achieved. *Total Quality Management and Business Excellence*. doi:10.1080/14783363.2020.1829969.
- Sanchez-Lizarraga, M.A., Limon-Romero, J., Tlapa, D., Baez-Lopez, Y., Puerta-Sierra, L., Maciel-Monteon, M. 2021. Enablers and Barriers for a Quality Management System Implementation in Mexico: An Exploratory Analysis. *Trends in Industrial Engineering Applications to Manufacturing Process*, 263-287. doi:10.1007/978-3-030-71579-3_12.
- Sawant, M.A., Yadav, O.P., Rokke, C. 2018. A practical quality management system implementation framework for small-sized companies. *International Journal Intelligent Enterprise*, 5(1/2), 173-193. doi:10.1504/IJIE.2018.091188.
- Siltori, P.F., Rampasso, I.S., Martins, V.W., Anholon, R., Silva, D., Pinto, J.S. 2020. Analysis of ISO 9001 certification benefits in Brazilian companies. *Total Quality Management and Business Excellence*. doi:10.1080/14783363.2020.1756246.
- Stanojeska, M., Minovski, R., Jovanoski, B. 2020. Top management role in improving the state of QMS under the influence of employee's involvement: Best practice from the food processing industry. *Journal of Industrial Engineering and Management*, 93-119. doi:10.3926/jiem.3031.

- Tahir, M. 2017. A Study of Critical Success Factors for ISO 9001 Implementation in the Manufacturing Sector of Punjab, Pakistan. *Journal of Social Sciences and Humanity Studies*, 18-24.
- TheISOSurvey. 2020. The ISO Survey of management system standard Certifications - 2019 - Explanatory note. Genève: International Organization for Standardization. Retrieved from: <https://www.iso.org/the-iso-survey.html>.
- Tigre-O.F., Tubón-Núñez, E.E., Carrillo, S., Buele, J., Salazar-L.F. 2019. Quality Management System Based on the ISO 9001:2015: Study Case of a Coachwork Company, 1-6. doi:10.23919/CISTI.2019.8760816.
- Valmohammadi, C., Kalantari, M. 2015. The moderating effect of motivations on the relationship between obtaining ISO 9001 certification and organizational performance. *The TQM Journal*, 503-518. doi:10.1108/TQM-05-2014-0042.
- Vasic, S., Delic, M., Brkljac, N., Vrhovac, V., Zizakov, A.M. 2020. Relations Between Key Elements of Quality Management: A Dematel Method Approach. *Proceedings on 25th International Joint Conference on Industrial Engineering and Operations Management–IJCIEOM: The Next Generation of Production and Service Systems*, 235-243. doi:10.1007/978-3-030-43616-2_25.
- Zerhouni, A.B. 2016. Investigating the factors influencing banks' adoption and development of e-banking, the case of Algeria. Retrieved from: <http://bura.brunel.ac.uk/handle/2438/14727>.