



Applying a Risk Management Approach in Controlling QMS Processes and Interactions with the Relevant Interested Parties: The Case of an Airport

Belmir Fouzi *, Hanae El Idrissi, Jebbour Nouzha
LCME Laboratory, USMBA, Morocco

Abstract:

Fes Airport, run by the National Airports' Office in Morocco, aspires to be certified by the ISO 9001: 2015 standard; Hereby, it has to meet the needs of the stakeholders' expectations in an attempt to promote the airport activities, it has also to take into consideration the risks that are related to the various actors who have well-set priorities and expectations.

The aim of this article is to shed light on the interconnection between the various participants in an attempts to meet the new requirement 4.2 of the ISO 9001: 2015 and to examine the dangers of the integrated management system (QSE) taking into consideration the proposal of an action plan to monitor interfaces, and to promote the application of an integrated approach, in collaboration with concerned participants as well as the amelioration of an integrated management system to realize the various goals set by the different participants and satisfy the passengers.

Keywords: ISO9001: 2015, Integrated management system QSE, Risk management, interested parties, the interface contract.

Introduction

A quality management system represents the whole [1] of the actions put in place by the company who wishes to own a quality approach or a continuous improvement in the goal to increase the tone of the proposed service. Put in place a quality approach is to put in place a set of actions to increase the satisfaction of clients and interested parties. It is, however, an effort involving the whole of the company and driving most of the time[2,3] to changes in the work habits, or even some organizational changes.

Similarly, the case of the FES SAISS airport which contains a multitude of actors who participate by assuring the service, but whose visions are therefore divergent so: how can we improve the level of quality by taking into account the complexity of the airport structure? How to reconcile the priorities and constraints of different actors to improve the quality management system? Which is an approach that helps to put the essential [4,6]actions for the resolution of quality issues conditioned by the involvement of all interested parties in condition to respect the standards contained in the ISO 9001 certification

Several revisions of this standard have been carried out up to the latest version ISO 9001:2015, which developments are remarkably more significant than those brought by the revision 2008.This standard, which brings various changes such as: risks management through a preventive approach represents a fundamental element of the revised standard, their identification, qualification and management because the quality is a result of a good management of these risks, overflowing as well the strict perimeter of the service delivered. Also the rewriting of the standard has taken into account the evolution of the world and businesses in its choice of vocabulary, but also in its level of abstraction which simplifies its implementation for all sectors of activity, including services.

* Email: fouzi.belmir@usmba.ac.ma

This new version attaches great importance to the context of the organization certified and interested parties with two new clauses that appear (4.1 and 4.2) which require a better taking into account the context of the Organization: context analysis, identification of interested parties and the understanding of their expectations.

1 Context of the airport

1.1 Description

The FES SAISS airport is one of the Moroccan Airports managed by the national office of airports which represents a huge logistic crossroads of loads and flows: supply of aircraft in kerosene, traceability of baggage, guidance arrivals/departures, attribution of the parking...

This Airport has implemented an integrated management system[7] quality, environment, health and safety, which is a part of the overall approach to sustainable development of the office. It guarantees the development of airport activities, the protection of the environment, the backup of life quality in the airport and its surroundings as well as the satisfaction of clients and passengers by taking into account their current and future needs [8,9], the preservation of health and security of persons and the improvement of work conditions.

The integrated management system (IMS) of the airport ensures that the whole staff accedes, in order to gladden clients with services adapted to their needs in condition to ensure the prevention of pollution and the continuous improvement of performance.

The airport's IMS meets the requirements of the standard ISO 9001 version 2015 to improve the quality management system, the OHSAS 18001:2007 for health and safety management and ISO 14001:2015 for the environmental management system.

1.2 The Interested parties

The airport is an organizational system composed of several actors and interested parties with different functions and different areas of responsibility, who work independently [10,11] in order to allow the airport to achieve its objectives and carry out its functions in the most efficient way with a willingness to serve to the best, their common client which is the passenger, by maintaining a high level of service's quality. These interested parties are:

- The Office: Through these services at FES SAISS airport, which main objective is to ensure the management, it plays the role of a manager who assumes the responsibility and the animation of the platform. It is the leader of the site, its equipments and services, but in reality, its responsibility is, in many cases, shared with administrations or private corporations on which it has rarely authority.
- Border Police: The staff has the responsibility to ensure the safety on the territory of the airport and to preserve the passengers' clients' and partners' sense of security. The staff of the unit patrolled airports on a daily basis in the different sectors of the airport and they exercise a continuous presence in the control areas and boarding areas.
- Customs: It is responsible for the perception of rights and customs taxes, the recovery of the taxation, for the fight against the illicit trafficking and the control of goods and people across the border while ensuring the respect of regulations, apply to the import, in the field of control of technical standards, sanitary, veterinary and phytosanitary measures and protection of the intellectual property.
- Handlers: the handlers have for mission the achievement of assistance benefits to the operations of the soil (passenger assistance, baggage treatment, freight assistance...). In air logistics, the agent of handling ensures some hardware operations, commercial, for the account of a carrier not possessing facilities in the airport where it carries on its activity. In FES SAISS airport we distinguish between two handling companies: The first one is called "RAM handling" which is a subsidiary of the company "Royal Air Maroc" and Swissport which represents the global supplier of services to the ground and air cargo to the aviation industry.

When the objective of the handlers is to facilitate passengers' access, the police and customs put the emphasis on the safety, source of multiple controls. That is why the management system must develop an approach to arbitrate the divergent interests of the actors and to anticipate the hazards, while pursuing the essential goal which is the satisfaction of passengers.

2. Interfaces formalization between the interested parties

2.1 Process Map

Another tool has been developed for a better interfaces' identification at the airport is the process map which provides a holistic view of the platform's operations [12]. It makes easy to view the process and their interactions.

For the current map of the airport, certainly it contains all of the process which constitutes the platform, but the interactions are not identified also the interested parties. That is why a revision of the latter has been conducted.

The new map is as follows:

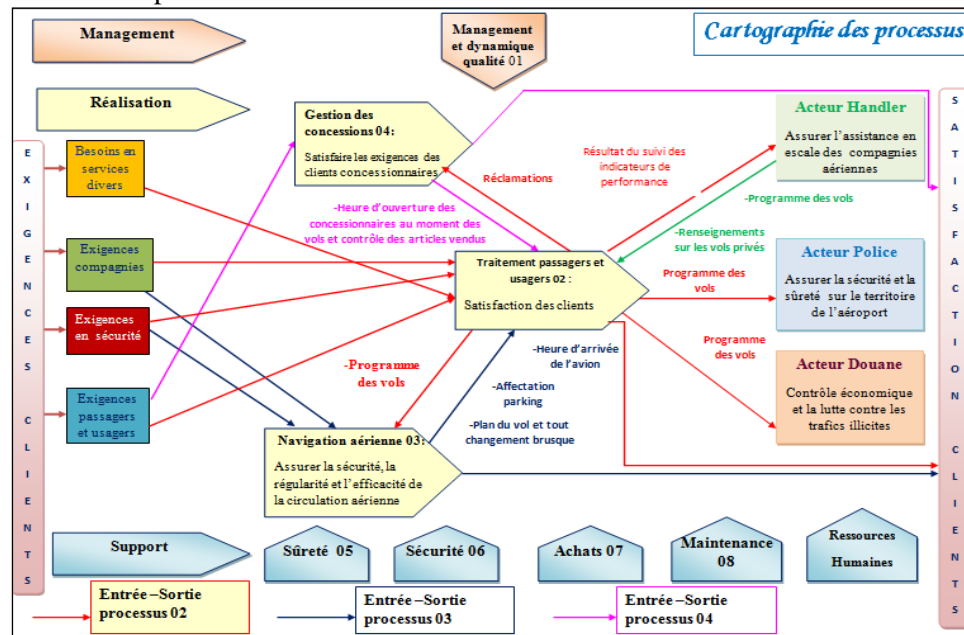


Figure 1-The new process map (figure caption)

The new version of the Map identifies:

- The Business Processes
- The type of process
- The input and output data of each process
- The purpose of the processes
- Interactions between the various processes of realization
- The definition of interested parties
- Interactions between the interested parties and the processes

Under penalty that the process map will be difficult to understand, the interactions have been defined only between the processes of realization. This new version allows:

- To better understand the operation of the airport
- To Identify the main Inputs/Outputs
- To facilitate communication between the interested parties and the manager of the airport
- Strongly involve the interested parties of the platform.

2.2 Risk Management

Risk management represents an implicit requirement of various versions of the certification ISO 9001, which aims to identify all the risks defined as a combination of gravity and a probability or frequency.

It is based on three important points:

- The first axis is the definition of an accident scenarios[13], this step helps the risk manager to determine the actions and the facts that may cause a failure thing that has an influence on the conduct of the activity and thus on the process.
- The second axis is the identification of scenarios 'causes and consequences.
- The third one is the estimation of the probability and the severity: it is the most important point which consists on the risk evaluation in a range of notes that

- Maybe be chosen according to the method used for risk analysis.

During this work we have opted for a very famous method of risk management, which is " Failure Modes and Effects Analysis ", to make it easier and in order to determine a lot of risks which influence the airport's service this step has been done in collaboration with the pilot process of treatment of passengers and users of the airport, 2 members of the border police and 2 members of the customs and 2 members of handlers.

The main goal of this collaboration is to put in place an action plan accepted by all the interested parties. It represents their first step in working together.

The most critical risks have been identified through the application of the Pareto law, it represents a graphic which is very useful to determine the most critical risks, it is based on the calculation of the criticism.

This curve allows the risk manager to identify 20% of failures which have 80% of negative effects. Ours is worded as follows:

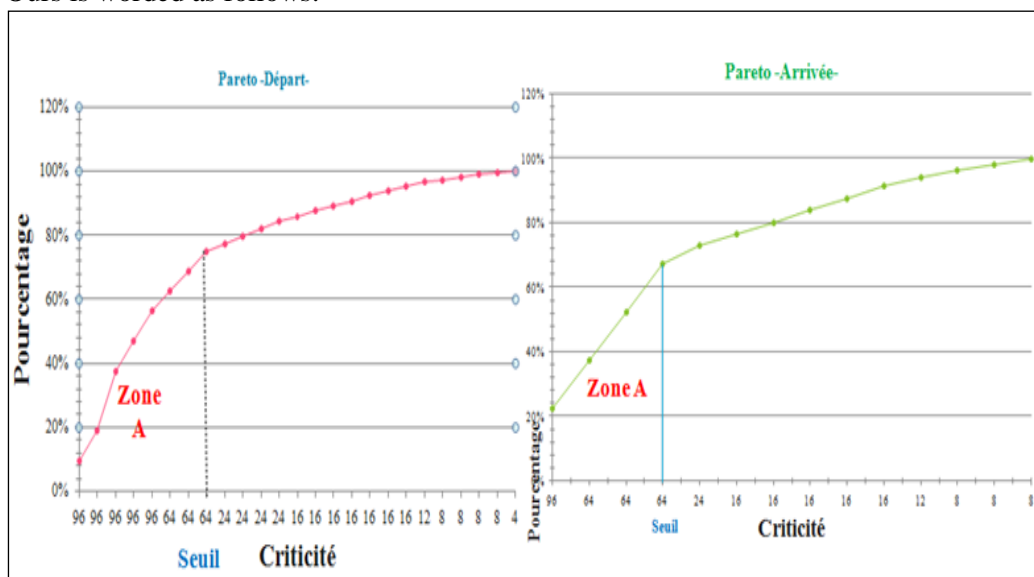


Figure 2-Pareto law of the departure and arrival process (figure caption).

The most critical risks which have been identified by the application of the Pareto Law are:

- Risks related to the lack or the inadequacy of the officers of boarding police in the boarding, in the inspection and control post, and in the entrance to the terminal.
- Risks related to the inadequacy of the number of officers of the customs at the customs control
- Risks related to the time of registration formalities.

Subsequently the causes identified thanks to the "Failure Modes and Effects Analysis" have been represented in a structured way, thanks to ISHIKAWA diagram (7M) whose interest is to make a shared vision and specifies the possible causes of a situation also to allow its decomposition into several dimensions (material, management, labor, financial means, hardware, method, environnement) to constitute a tool for dialog or shared diagnosis between the actors. This diagram allows identifying the causes and their possibility of evolution, it is necessary to consider the negative causes which reinforce the problem and hinder the smooth running of the process.

3. Action Plan

3.1 Service commitment

Several actors are present in the airport; they have divergent visions to the treatment of the passenger process that's why the quality referred is never reached due to this divergence which make the service badly jugged by the passengers. An action plan must be put in place to remedy the situation After a lot of meetings with the representatives of the interested parties two service commitments have been proposed:

- ✓ The first one between the airport's director and the group leader of the border police
- ✓ The second one between the director and the group leader of the customs

These Service Commitments include a set of clauses which have been defined between the two interested parties to take into account their expectations and needs.

The objective of these documents is to combine the efforts of each one in order to avoid breaks in the chain of services and to improve the satisfaction of the passenger [14] and to strengthen the effectiveness of each of the two partners. These commitments are also intended to facilitate the communication between the manager of the airport and the Border Police/customs and to reconcile between the cross-border control and quality of service, although the missions of the Border Police and the customs are part of a normative context very forced but the quality of service must be taken into account in order to meet and to satisfy their common client which is the passenger.

In accordance with the clauses contained in the commitments, the different interested parties undertake to provide to passengers:

- Clear and relevant information
- An airport easy and pleasant thanks to facilities and adapted equipments
- The assistance of a staff courteous, attentive and professional
- Services adapted to the personal and professional needs
- Means and an Organization adapted in case of disrupted situation
- An attentive listening to improve the satisfaction.

This action aims to reconcile the Mission Control with the overall quality of service expected by the passenger, to build a quality relationship based on respect and courtesy in order to accelerate and facilitate the treatment of passengers.

3.2 Creation of the local comity of quality

The second action consists in the creation of a local committee of quality Constituted by:

Airport Manager

Referent quality of the airport

Pilot process of the processing of passengers and users

Referent quality of the Border Police

Referent quality of the Customs

Referent quality of the handlers

These 6 persons will represent the different parties constituting the airport[15] whose mission is to organize meetings where they can treat the whole failures and problems that influence the quality of service in the platform, to analyze risks using the appropriate tools and to put in corrective actions in order to improve and develop the organization.



This step will also help the interested parties discussing their needs and expectations in order to improve the interactions and to avoid problems in long term, so it will encourage to put on a participative approach where all actors make part.

3.3 Records-registrations

The third action is to create the records. The risk analysis made allows to distinguish all the most critical risks, in our case the allocation of human resources by the different parties [16], presents itself

a risk which has the greatest influence on the quality of service on departure as well as on arrival process, this is why registrations have been proposed to leader of border police and customs groups in order to record on a weekly basis the average or number of officers to be present daily at each post supervised by the interested party once they receive the flight program.

In this way the office through its services within the airport will have a written trace in order to ensure the coherence between the number of passengers and the agents present to serve them on the other hand to improve the interaction between the various interested parties.

In turn, The director of the airport will be able to ensure compliance with the registrations completed by the border police and customs by providing daily follow-up to the information desks responsible for providing for each flight the manpower engaged by each interested party.

4. Follow up of the approach

In order to ensure the effectiveness and ensure the follow-up of the approach a dashboard has been created with the following indicators:

Indicator 1: Overall rate of the actions put in place

Indicator 2: Overall rate of effective actions

Indicator 3: satisfaction rate of passengers at the airport level

Indicator 4: satisfaction relative to the sheet (customs offices, registration...)

Indicator 5: Rate of unavailability of the equipment for the safety and the treatment of passengers.

Indicateur	Mesure	Objectif	Responsable du calcul
Taux global des actions mises en place	$I1 = \frac{\text{Nombre des actions mises en place}}{\text{Nombre total des actions}}$	90%	Pilote processus TPU
Taux global des actions efficaces	$I2 = \frac{\text{Nombre des actions efficaces}}{\text{Nombre total des actions}}$	90%	Pilote Processus TPU
Satisfaction des passagers au niveau de l'aéroport	$I3 = \frac{(K * \text{nb « Mauvais »} + \text{nb « Passable »} * 2 + \text{nb « Bon »} * 3 + \text{nb « Très bon »} * 4 + \text{nb « Excellent »} * 5))}{\text{(nombre total de passagers ayant attribué une note entre 1 et 5)}}$	90%	Pilote Processus TPU
Satisfaction relative à la signalétique (bureaux des douanes, Enregistrement, Bureaux de la PAF)	$I2 = \frac{((\text{Orientation I(2.1)} + \text{Écrans des vols I(2.2))})}{2}$	80%	Pilote Processus TPU
Taux d'indisponibilité des équipements de la sûreté et	$I3 = \text{moyenne } ((\text{Ti Eq1}) / (\text{Ts Eq1}) + (\text{Ti Eq2}) / (\text{Ts Eq2}))$	0.9%	Pilote Processus TPU

Figure 3-Dashboard to follow up the approach (figure caption)

The Dashboard represents a means which allows the pilot process to ensure the follow-up of the approach it includes the key performance indicators needed to measure the actual progress in relation to the forecasts. This approach can be useful to any airport seeking to improve the interactions [17] between the interested parties also to opt for one of the tools of risk management in order to define, organize, plan and put in place all the means and actions to achieve the objectives set.

CONCLUSION

The approach developed has the vocation to be a lever for interested parties to act jointly to improve the effectiveness of the quality management system put in place at the airport by involving the various parties to make the quality a primary purpose to be achieved which helps to:

- Increase the satisfaction of passengers and follow the evolution of the quality of service
- Reconcile between the formalities of the cross-border control and the quality of service.
- Highlight the strengths and areas for improvement in terms of quality of service delivered to passengers.

Basically the approach followed helps to combine the efforts of each part in order to avoid breaks in the chain of services and to improve the satisfaction of the passenger and to strengthen the effectiveness of the interested parties and of the airport generally.

However to create a collective effort the expectations and needs of the different parties must be identified as well as the interactions and links to have a better control of the interfaces and to understand the functioning of the organization, the contributions of each part to improve the quality of service and to use the appropriate methods for risk management and to follow the evaluation of proposed actions.

All the same the airport will be able to benefit from this approach to make his first step toward the certification ISO 9001:2015 by the answer to two new requirements namely:

- Understanding the context of the firm, the determination of the relevant interested parties, the clear identification of their needs and their expectations and their formalization through interface contracts, while proposing indicators and tools for their control.
- The approach based on the risks combined with the process approach, using two tools (Failure Modes and Effects Analysis and the 7M) in an optic of prevention and anticipation.

REFERENCES

1. Brandenburg Hans, Wojtyna Jean Pierre, **2003**. *L'approche processus- mode d'emploi-*, Editions d'Organisation.
2. Desroches Alain, MARLE Franck, Raimondo Emilio, VALLEE Frédérique, **2010**. *Le management des risques des entreprises et gestion de projet*, Lavoisier Editions.
3. Faucher J, Pratique de l'AMDEC, **2009**. Dunod Editions.
4. Froman Bernard, **2010**. GEY Jean-Marc, BONNIFET Fabrice, *Qualité sécurité environnement*, Edition Afnor.
5. Gillet Florence, **2006**. *Bâtir un système intégré qualité /sécurité /environnement* (de la qualité au QSE), Eyrolles Editions.
6. Iribane P. **2003**. *Les tableaux de bord de la performance*, Dunod Editions .
7. Ishikawa K. **2007**. *La gestion de la qualité*, Dunod Editions
8. Landy Gérard, **2011**. *AMDEC Guide pratique*, AFNOR Editions.
9. Leray J. **2006**. *Gestion des risques et performance*, afnor Editions
10. Mouglin Y. **2004**. *La cartographie des processus Maitriser les interfaces*, Edition d'organisation.
11. Molho D, Dominique FP. **2009**. *Tableaux de bord outils de performance*, Eyrolles Editions
12. .lity Management System. ISO 9001:2008 ISO 9001 Standard. Qua
13. ISO 9001 Standard .Quality Management System. ISO 9001:2015
14. Brown LD, Hua H, and Gao, C. **2003**, A widget framework for augmented interaction in SCAPE.
15. Belmir F, Boumchita H. **2004**. « Mise en œuvre de l'approche processus dans le cadre d'un système de management de la qualité conforme à l'ISO 9001 :2000 », Revue Marocaine de Génie Civil- LPEE- N°108- 4ème Trimestre
16. Belmir F. **1998**. « Introduction à l'AMDEC et aux Arbres des Défaillances » ; Actes du colloque « Des outils pour améliorer la qualité », organisé par le CERIMME ; Casablanca ;15 octobre.
17. Belmir F, Kerboub A, Zerrouq F. **2015**. Proposition d'une méthode d'analyse et de maitrise des risques SST ; Actes du Colloque international ERVD'3.