CHAPTER 1: INTRODUCTION

Research Background

The management of inventory in airlines is particularly important because an inefficient inventory management system has potential to cause significant loss of earnings for the airline. Inventory management in airlines involves management of seating inventory, managing repair and maintenance spare parts, and management of fuel inventory, along with other aspects which include inventory of products that are to be used for hospitality and hosting services (Costantino, et al., 2018). This study is specifically focused on inventory management of maintenance spare parts as it is one of the main aspects of airline operations. A problem in maintenance due to inefficient spare parts management leads to a significant impact on airline operations and may results in grounding of air crafts. Ultimately it translates into loss of revenues and profitability.

In companies which are intensive in capital use such as airlines, in which considerable capital is required for the materialization of goods or services, organisational pressures for the fulfillment of production / operation goals generate a subordination of the support areas over the areas of the mission processes of organisations (Tang, 2017). This situation leads to a higher priority being given to the needs of production / operation, to the detriment of the optimization of inventory costs, this in the search to guarantee the continuity of production / operation, and avoid the costs of operational delays and halt (Muriel, et al., 2018).

In this sense, there are differences between the functional areas involved by the maintenance processes, which generate permanent frictions due to different objectives: from Production / Operation, the objective of guaranteeing the continuity of production / operation, with availability high volumes of spare parts in the warehouse and from supply, the objective of optimizing Supply management, with the lowest possible inventory of spare parts (Suryadhini,

Setiawan, and Juliani, 2019). From the cost point of view, the costs of non-availability of a spare part are generated, which can lead to an operational stoppage and thus to loss of profit costs, compared to the costs of availability of spare parts in the warehouse, associated with supply costs, of opportunity of capital, storage and technological obsolescence or physical damage of spare parts (Gu, Zhang, and Li, 2015).

Within the forecasts adopted, some companies with considerable value in their assets, choose to maintain redundancy of equipment, that is to say additional equipment that allows them to maintain their level of production / operation, during the maintenance service. In a different way, other companies choose to store a large volume of spare parts, which allows them to guarantee the availability of spare parts for the maintenance of their equipment, and with it the continuity of their production / operation (Wongmongkolrit, Rassameethes, and Laohakul, 2016). At this point, the contribution of Patriarca, et al., (2016) is worth mentioning, who contrast the alternative of redundant equipment, with the option of increasing the inventory levels of spare parts, and as in a given context, it is more convenient increase inventory levels of spare parts.

In maintenance, the level of service is used to determine the appropriate amount of spare parts to keep in storage, seeking to avoid shortages, and thereby guarantee the continuity of production / operation. Inventory availability is generally measured by the service level of the warehouse, which corresponds to the percentage of times that a spare part is available in the warehouse, when it is required for maintenance (van Jaarsveld, Dollevoet, and Dekker, 2015). In companies that are capital intensive, since interruptions are costly, not only because of lost profits, but also because they affect the fulfilment of commitments, higher service levels are generally handled (AyuNariswari, Bamford, and Dehe, 2019).

Additionally, as indicated by Eruguz, Tan, and van Houtum, (2018), the cost of inventory grows exponentially, as the level of service increases, which implies that a service level of 100% is unattainable in practice. In that order of ideas, the policy of keeping a large volume of inventories in storage just in case, is economically prohibitive, for which the study identifies supply methodologies, such as stock holding contracts by the supplier , spare parts in consignment, or consolidation of stock in distribution centres, which also allow to guarantee an adequate level of service, without keeping spare parts in warehouse, and that can be integrated into a single Maintenance - Supply strategy, which seeks the availability of spare parts to the minor possible cost.

Although studies of spare parts inventory models are evident in the airline industry and these correspond to the application of existing models in specific countries, yet there is dearth of literature that focuses on identifying the importance and impact of spare parts inventory in Qatar airline industry and there is no study that conducts the case study of Qatar Airways. There is a need to apply existing models and theories to determine inventory policies for spare parts with concepts of risk and equipment reliability. The literature needs to be updated and complemented in the light of all maintenance strategies. In this sense, the present study constitutes aims to explore the importance and impact of inventory management of spare parts in Qatar Airways and its relationship with profitability from the perspective of airline industry employees.

For all the above, and given that the inventory models of spare parts developed in past studies, address either parts of the problem, or present models that only consider some of the maintenance or supply strategies employed, the purpose of the present study, which is to emphasise on the need of a comprehensive management model of spare parts for maintenance, in airlines, that aligns the strategies of maintenance and operations and profitability of airlines.

Research Problem

Since there has been an increase in the supply chain management, inventory, and procurement management are critical parts of supply chain management therefore it is critical to explore these aspects within the context of Qatar Airways and its profitability. Wild (2017) argued that inventory and procurement management is crucial aspect of airlines because inefficient management such as shortage of inventory leads to operational losses and increase operation costs. Airline industries have been facing the challenge of managing inventory and procuring materials that lead to the inefficient delivery time (Singamneni et al., 2019). For this purpose, the research study will focus on the management of inventory and procurement, more specifically in case of management of spare parts inventory, in order to increase the efficiency and effectiveness in Qatar Airline.

Significance of Issue

As per the study of Xiao, Yang and Zhang (2015) an effective inventory management is a sustainable source of competitive advantage because it reduces costs, streamlines operations and ensures profitability is high. Nonetheless, airlines needs to constantly seek new inventory management models and ensure that their spare parts are being managed properly to smooth he maintenance operations and that unnecessary delays and halt of flight operations are prevented. By improving spare parts inventory, Qatar Airways can increase its cost of inventory management process, operating costs, smooth operations, minimise maintenance times and costs and minimise ground time of plans. Ultimately enhancing operational performance and ultimately translating it into higher profitability.

Furthermore, Qatar Airways can not only enhance its firms performance through inventory and procurement management but achieve other benefits. Balcik, Bozkir, and

Kundakcioglu (2016) argued that effective inventory control and better procurement activities in case of spare parts required for maintenance of plans help Qatar Airways to optimize capital investment and the use of working capital while having positive impact on liquidity and profitability. Furthermore, Qatar Airways can also improve in terms of wasting resources on unnecessary inventory or stock and warehousing. In addition, improvement in maintenance leads to prevention of ground time, improvement in plan performance, and higher customer satisfaction. In addition, improvement in procurement process will also lead to improvement in relationship with suppliers.

Research Question

Research Questions – The researcher has designed the following questions in order to conduct the research in an effective manner:

- What are the factors pertinent to inventory management in Qatar Airways?
- What are the benefits of improvement in maintenance spare parts inventory for Qatar Airways?
- What is the impact of inventory management and procurement practices on the performance of Qatar Airline?

Structure of the Study

There are five main components in this study. The first component is introductory which presents research background, problem addressed by research, significance of the issue for Qatar Airways, and research questions. The second component provides a comprehensive review of literature revolving around research phenomenon and includes discussion of inventory management in airlines, spare parts inventory management, and theoretical models. The third

chapter presents discussion about methodological structure which includes discussion of research philosophy, methods, data collection instruments, data analysis techniques, sampling and other methodological aspects. The fourth chapter presents results of primary empirical evidence analysis, discussion and implications for Qatar Airways. The last component in the study presents conclusions and recommendations for the study and answers research questions.