**1. INTRODUCTION**

**1.1 Overview**

The quality of airline services in Libya has been declining noticeably. With unsuitable infrastructure and primitive airport facilities, it is no surprise that the airline companies are struggling to provide high quality services, minimize losses, and increase customer satisfaction. In fact, one of the factors that might determine the quality level of the airline services in Libya is the lack of competition. There are two governmental companies – Libyan Airlines and Afriqiyah Airways – and one private company – Buraq Air. It is clear that customers have very limited choices to use. Although the quality of services provided by these companies might become unacceptable at certain times, customers may have to use the same airline company provided poor quality.

Surprisingly, there has been no serious scientific effort undertaken by these companies to evaluate and improve current processes in order to enhance quality, reduce costs, and maximize profits. Like most of the governmental organizations in Libya where top management and employees’ commitment to the organization is somewhat lose, the airline industry is no difference. Such organizations lack a clear vision and mission, and they normally operate in a classic, sometimes non-efficient manner whether the company is making profit or loosing. Therefore, the need for process improvement initiatives cannot be more emphasized.

Quality management has long been established as an important strategy for achieving competitive advantage. Traditional quality initiatives such as statistical quality control, zero defects, and total quality management have been key initiatives for many years. Six Sigma, however, is considered as a recent quality improvement initiative that has gained popularity and acceptance in many industries across the globe. [4]

Although the Six Sigma approach to quality and process improvement has been used predominantly by manufacturing organizations, currently the popularity of Six Sigma in service organizations is growing exponentially, especially in banks, hospitals ,financial services, the airline industry, and utility services, to just name a few .The objective of a Six Sigma strategy in service processes is to understand how defects occur and then to devise process improvements to reduce the occurrence of such defects which improve the overall customer experience and thereby enhance customer satisfaction. [3]

**1.2 Project Goal**

This project aims to reduce the delay in departure of Libyan Airlines flights at Benina Intel Airport by nearly 50%. Using Six Sigma DMAIC methodology, the root causes of the delay will be identified and eliminated. The project started in late May, 2015 and is expected to be terminated around the end of July of the same year. Indeed, the project was initially started in April, 2014, but due to security reasons led to the suspension of all operations at Benina Intel Airport, the project was postponed until the mid-2015.

**1.3 Project Outline**

Besides a general introduction of the project in chapter 1, the work of this project is divided to four additional chapters. Chapter 2 will discuss in detail the Six Sigma methodology – its origin, definition, main tools, benefits, and limitations. Chapter 3 will introduce the case study of Libyan Airlines examining the current state of the company as well as the define and measure phases of the Six Sigma DMAIC. Chapter 4 will reveal a detailed discussion of set of tools used in the analyze and improve phases of the DMAIC approach and propose an improvement plan for process improvement and delay reduction. Finally, chapter 5 will conclude the project and suggest some extensions for future work.