

PRIORITIZING OPERATIONAL FAILURES FOR LOW-COST CARRIERS IN SAUDI ARABIA**Fahad G. Alharbi**Graduate Student, Industrial Engineering Department, King Abdulaziz University,
Saudi Arabia**Ahmed A. Bakhsh**Professor, Industrial Engineering Department, King Abdulaziz University,
Saudi Arabia**ABSTRACT**

Low-cost carriers (LCCs) operating under stringent consumer protection regulations face a critical strategic challenge while balancing cost leadership with operational reliability when external operational failures trigger mandatory compensation. This study applied Pareto analysis to identify and prioritize the vital few operational quality failures driving passenger complaints against Flynas in Saudi Arabia domestic market. The results revealed that baggage handling, flight delays and cancellations, and ticketing and reservations collectively generated 80% of passenger dissatisfaction.

Keywords:

Pareto Analysis, Operational Reliability, Strategic Management, Aviation.

INTRODUCTION

The LCC model achieves cost leadership through systematic operational practices designed to minimize unit costs through point-to-point networks that eliminate hub complexity, single-class cabin configurations that maximize seating density, rapid aircraft turnaround times that increase daily utilization, high asset utilization rates that reduce idle capacity, and fleet standardization that lowers maintenance and training expenditures. LCCs in Saudi Arabia, i.e. Flynas and Flyadeal, control about 41% of domestic passenger traffic (GACA, 2022). As these LCCs operate under tight cost constraints, external failure costs can directly undermine their cost advantages achieved through operational reliability. The LCCs may successfully reduce cost per available seat kilometer (CASK) through high aircraft utilization and lean operations yet they may generate significant financial liabilities when operational disruptions trigger mandatory passenger compensation failed by the General Authority of Civil Aviation (GACA). Hence, the current situation raises a strategic tension for LCCs in Saudi Arabia to maintain the cost leadership strategy under GACA passenger protection regulations while they face operational failures (GACA, 2023).

LITRATURE REVIEWS

Abdel Hamid (2017) investigated how service quality dimensions of LCCs at King Khalid International Airport in Riyadh affect passengers satisfaction, using the SERVQUAL model. Alsumairi and Tsui (2017) investigated the impact of LCCs on Saudi Arabia inbound tourism demand using a case study design and econometric analysis of tourism and air transport data. Hassan and Salem (2022) examined how perceived service quality in Saudi LCCs influences airline image, loyalty, and passenger satisfaction during the COVID 19 outbreak, using a modified SERVQUAL model.

The Pareto principle states that approximately 80% of effects result from 20% of causes. Škúrková et. al (2023) argued that combining Pareto analysis with the 8D problem solving methodology provides a practical decision tool for improving process quality and reducing defect related costs in automotive forging. Egbe et al. (2024) claimed that combining Pareto analysis with structured failure mode and effects criticality analysis provides a practical decision tool for optimizing maintenance resource allocation in an oil and gas facility. Kwilinski and Kardas (2024) concluded that the Pareto principle supports strategic prioritization of improvement efforts,

guiding organizations in targeting critical defects, processes, or factors where Industry 4.0 technologies can deliver the greatest quality and performance gains.

Despite extensive manufacturing validation, Pareto application to operational reliability of LCCs in Saudi Arabia domestic market remains limited. This gap is significant given that LCC operational failures immediately trigger mandatory compensation by GACA which creates direct financial consequences as well as strategic challenges. Therefore, the current research addressed this gap through the application of Pareto analysis on Flynas passenger complaints. Flynas is the largest LCC in Saudi Arabia. Hence, the study findings can be highly representative of the broader LCC sector in Saudi Arabia (GACA, 2022).

METHODOLOGY

The study relied on GACA monthly statistical reports providing carrier-specific complaint volumes per 100,000 flights by category from January 2023 to December (GACA, n.d.). The selected range considered the effect of the post-pandemic recovery and GACA new passenger rights rules released in 2023 (GACA, 2023).

Following the established Pareto analysis methodology for this study, the total frequency of each complaint category (f_i) was calculated as follows:

$$f_i = \sum_{m=1}^{24} O_{i,m}$$

Where i denoted the specific complaint category, m for every single month from January 2023 till December 2024, and $O_{i,m}$ is the occurrence of complaint category i and m month.

Each category contribution percentage ($\%C_i$) was calculated using the following:

$$\%C_i = \frac{f_i}{\sum_{i=1}^n f_i} \times 100$$

Where n denoted the number of complaint categories. Then, the cumulative complaint category percentage ($\%C_{cum}$) was computed in descending order for the categories contribution as follows:

$$\%C_{cum} = \sum_{i=1}^n \%C_i$$

RESULTS AND DISCUSSION

By analyzing 341 complaints per 100,000 passengers submitted to GACA against Flynas between January 2023 and December 2024, the complaints were categorized, ranked by frequency, and plotted in Pareto chart as shown in Figure 1.

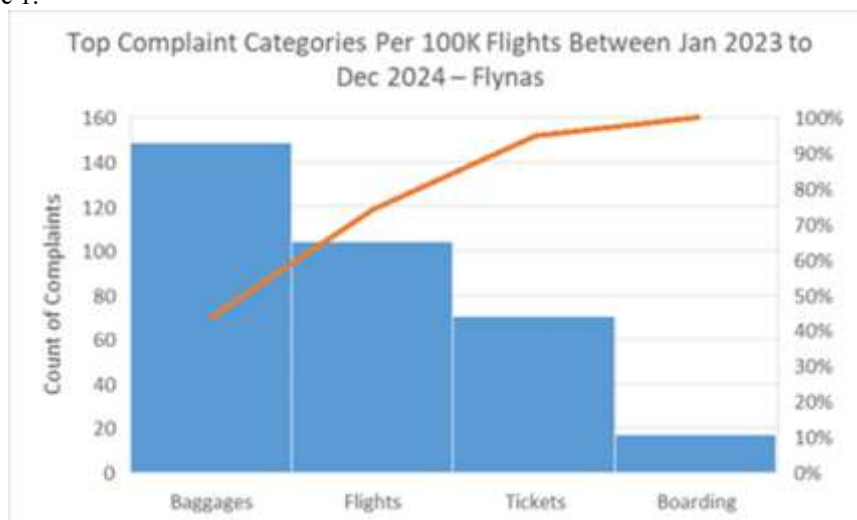


Figure 1 Pareto chart for Flynas passenger complaints

The findings revealed that baggage handling, flight delays and cancellations, and ticketing, respectively, were the vital few causes that generated 80% of the passenger dissatisfaction. Rapid turnarounds compress handling time of baggage which may increase error probability. Additionally, technical issues, crew availability, and

airport constraints may contribute to flight delays and cancellations particularly with minimal buffering schedules. Furthermore, booking system reliability issues, and overbooking practices could lead to ticketing related complaints.

These vital few elements led to GACA compensation fees as external failure costs undermining the cost leadership strategy adopted by Flynas besides other costs related to the brand image and reputation. Therefore, the decision makers in Flynas should consider resolving these challenges to maintain their strategy and stay competitive in the Saudi domestic market.

CONCLUSION

The current study implemented Pareto analysis to investigate the vital few passenger complaints categories impacting Flynas cost leadership strategy in the Saudi domestic market through the implications of GACA passenger protection compensation. Baggage handling, flight delays and cancellations, and ticketing contributed to 80% of the passenger complaints. Thus, Flynas decision makers should consider this strategic challenge to maintain their competitive position. Future work using other strategic analysis tools should be conducted to estimate the monetary effect in accordance with GACA passengers rights protection regulations.

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