Analysis of Customer Satisfaction between Airlines Classified as Low-Cost Carriers (LCC) and Full-Service Carriers (FSC)–A Perspective from Macau Clients

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Abstract—The global aviation industry has a high-competition market. In recent years, the aviation industry has focused on providing customers with goods and services; service quality and customer satisfaction are vital and will influence customer repurchasing. Two significant strategic positions dominate the market: Full-Service Carrier (FSC) is a traditional air carrier that offers in-flight entertainment, which is included in the ticket price. Low-Cost Carriers (LCC) are used to minimize flight ticket prices by reducing operating costs and providing less in-flight entertainment for passengers. Nevertheless, no work has yet been published determining if airline clients from Macau are more inclined to full-service or low-cost carriers. The main objective of this work is to investigate and analyze the most relevant factors in service quality for airline clients from Macau and, secondly, evaluate specificities of flight services in three stages: pre-flight, in-flight, and post-flight services. The third aspect is passenger preference analysis. The proposed methodology is based on a quantitative approach with a survey designed to determine the main concerns of Macau Airlines customers. Primary data was collected from 105 valid responses from Macau residents or expatriate workers living in Macau. A bias ratio formula is considered to extract information from the data. The findings indicate that consumers are more satisfied with full-service carriers' goods and services than low-cost carriers and prove that service quality influences customer loyalty and satisfaction. Future works should deepen their understanding of strategic planning to use this preference for full-service carriers' growth.

Keywords—customer satisfaction, customer loyalty, Full-Service Carrier (FSC), Low-Cost Carrier (LCC), bias ratio formula, Macau

I. INTRODUCTION

The competition between Low-Cost Carriers (LCC) and Full-Service Carriers (FSC) has increased in the fast-paced aviation sector. These two unique airline models meet various passenger demands and preferences. This research compares customer satisfaction levels between these two types of airlines. Understanding the elements influencing passenger satisfaction is critical for both airlines' success.

This research compares satisfaction between Low-Cost Carriers (LCC) and Full-Service Carriers (FCS) in the aviation sector. The researchers hope to understand better the aspects that influence passenger happiness and the intention to repurchase. The research investigates whether LCC's cost-effective approach or FSC's extensive offerings meet passenger expectations for long-term success.

The challenge with comparing customer satisfaction between Low-Cost Carriers (LCC) and Full-Service Carriers (FSC) is determining which airline model best matches passenger expectations. LCC and FSC take different approaches, and understanding their strengths and shortcomings is critical for airlines' long-term success. Furthermore, service quality, cost-effectiveness, and passenger loyalty substantially impact customer satisfaction. The goal is to balance these aspects so that passengers have an excellent flying experience while retaining airline profitability.

Some issues that can be explored in the context of comparing customer satisfaction between Low-Cost Carriers (LCC) and full-service carriers, such as service quality dimensions, cost-effectiveness vs. amenities, passenger expectations, loyalty and repurchase intentions, global reach and network connectivity, operational efficiency, cultural and regional variations, marketing strategies, emerging trends, and policy and regulations.

For the context of the service quality dimension, we can investigate the impact of several quality factors on passenger satisfaction, including tangibility, responsiveness, personalization, and connectedness. In addition, we can determine whether LCC streamlined services for FSC's total offers are more aligned with passenger expectations.

For the context of cost-effectiveness versus amenities, we can investigate the trade-off between cost-effectiveness (a characteristic of LCC) and in-flight amenities (provided by FSC). In addition, we can determine whether passengers prioritize price or additional features when selecting an airline.

We can determine passenger preferences and expectations in the context of passenger expectations. What do travelers want more: inexpensive fares or a luxurious flying experience? In addition, we can consider things like legroom, meal options, entertainment, and luggage policy.

For the context of loyalty and repurchase intention, we can investigate how satisfied travelers' loyalty leads to recurrent purchases, which compares the chance of passengers repurchasing LCC tickets against FSC. Finally, we can also assess the impact of global reach and network connectivity.

The primary goal of this study is to compare customer satisfaction among Low-Cost Carriers (LCC) and Full-Service Carriers (FSC) in the airline sector. We hope that by analyzing the aspects influencing passenger satisfaction, we can provide significant insights into airline plans and passenger experiences.

The different viewpoints from this work attempt to investigate the strategic focus on other purposes. The strategic focus on network profitability is the top priority for full-service airlines like American Airlines and Lufthansa.

They run several hubs, which makes it possible for marginal routes to continue if they transfer passengers from a hub to extremely lucrative routes. Conversely, point-to-point connectivity and route profitability are the main priorities of low-cost carriers. Typically, they steer clear of cross-funding poor performance. By contrast, the strategic focus on fleet composition is that low-cost airlines frequently operate a uniform fleet reach of just one kind of aircraft. For instance, all 800+ aircraft operated by Southwest Airlines are Boeing 737 models. Full-service airlines match several aircraft types to specific routes with a diverse fleet. For example, Denver-based, low-cost airline Frontier Airlines operates more than 130 aircraft, all members of the Airbus A320 family. In addition, the strategic focus on operating bases and full-service airlines prioritizes big-city airports for convenience and image. In contrast, low-cost carriers favor secondary airports with lower fees. Furthermore, the strategic focus on channels of distribution and income sources, which is full-service airlines, prioritizes the profitability of their networks while providing a more excellent arrange of services, such as improved in-flight amenities. In addition to providing less expensive rates, low-cost airlines prioritize point-to-point connections and often have more restrictive seating configurations and limited services.

The research explores factors that influence the difference between low-cost and full-service carriers. For low-cost airlines, we can understand the crucial factors, such as affordability, point-to-point connectivity, stimulating demand, and market competition. Meanwhile, low-cost carriers are renowned for their reasonably priced tickets, enabling a more comprehensive range of people to travel by air. They serve budget-conscious tourists who put money conservation first. However, the low-cost carriers avoid hubs and concentrate on direct links between specific city pairs. Passengers' travel is made more accessible, and layover durations are decreased. In addition, the low-cost carriers encourage more people to fly by providing lower tickets, stimulating demand for air travel. The expansion of the industry benefits from this action.

On the other hand, full-service carriers may follow a set of strategies to increase public awareness. Significantly, to stay competitive, Full-Service Carriers (FSC) must increase efficiency, cut costs, and improve services because of the healthy competition brought about by low-cost carriers. By contrast, for carriers with full-service carriers, passengers can connect to a wide range of locations across the globe via full-service carriers' vast global networks, which include several hubs. They act as essential conduits for international transit. However, a full-service carrier provides various services and facilities, such as meals, frequent flyer programs, cozy seats, and in-flight entertainment. Travelers from business and those looking for an upscale experience are drawn to these services. Not only for full-service carriers of business and long-haul travel, but full-service carriers provide the comfort and amenities of passengers, which are crucial on long-haul flights, which is where full-service carriers shine. They service tourists, families, and business travelers. In summary, full-service carries cargo and freight, which plays a vital role in international trade and logistics by transporting cargo and freight in addition to people.

This paper's main objective is to investigate and analyze the research questions, such as the primary research question for the factors of dimensional factors in service quality and the second research question for the flight services in three stages, including pre-flight services, in-flight services, and post-flight services. Furthermore, the third research question is for passenger preference statistics. Therefore, this paper should be able to answer some questions such as customer expectations, customer satisfaction, loyal customer re-purchasing behavior, and challenges faced by full-service carriers and low-service carriers. Meanwhile, some suggestions have been made for resolutions to the drawbacks.

II. LITERATURE REVIEW

A. An Overview of the Airline Industry

To lift the competitiveness of an airline and increase income, the company's reputation and customer service are essential sectors. The aim is to provide global information about the airline industry and review the existing literature on customer loyalty and satisfaction. Customer satisfaction and other factors that generate sales revenue and affect the company's profit income determine an airline's success or failure. Hence, word-of-mouth is one of the most effective forms of promotion for consumers.

International Civil Aviation Organization (ICAO) research findings for the post-pandemic period stated that the global economic recovery in post-COVID-19 depends on the worldwide trade network and connectivity. The resumption of passenger travel and trade makes a significant sustainable developmental contribution to nations, even the global (Air Transport Bureau, 2023). Air transportation plays a vital role in sustainable development. It became a fundamental transport mode, providing faster and more convenient access to various destinations (Eboli *et al.*, 2022).

The researchers focus on the importance of Air transportation worldwide and its sustainability. This also reflects that competitiveness will keep increasing in the future. Thus, customer satisfaction and customer loyalty will influence the annual revenue directly.

B. Customer Loyalty

Customer loyalty is a relationship of trust between customers and businesses when buying and selling goods or services. This relationship is built through buying and selling experiences, and it will directly affect the business reputation, consumer repeat purchases, and annual sales revenue. A positive reputation needs to take a lot of time to build up. In contrast, an unpleasant buying and selling experience will destroy all the previous efforts. It will affect the annual sales revenue. Furthermore, the company may go bankrupt.

From the Marketing strategy perspective, the 4 Ps of marketing, which are price, place, product, and promotion, which are called the marketing mix, should be defined as strategies or actions to drive the business to success (Tellis, 2006).

Corporate image is a business or brand that the public recognizes the most as the corporate identity or reputation (Gray, 1986). Consumers can trust the brand because of their loyalty to the corporate brand. The corporate image is essential because the aspect of the company name is the company's first appearance to the customer, according to

social media, for example.

A marketing strategy creates a sustainable competitive advantage to prosper a company by choosing successful sales channels to attract potential customers. Effective marketing strategies are crucial to increase the market share in this highly competitive market.

Service quality promotes a step-by-step method to meet customers' needs and satisfaction by generating sales revenue and developing a profitable organization. A high standard of service quality is essential because it will affect flight ticket repurchasing, corporate image, and annual profit.

Customer satisfaction measures surveys and ratings of products and services for a company's continuous growth. It is essential that a higher rating in customer satisfaction will attract more potential customers to increase the market share (Oliver, 1997).

Customer loyalty is an ongoing positive relationship between customers and businesses. The company intends to provide more rewarding gifts to benefit its loyal customers. Customer loyalty is crucial, affecting customer repurchasing and increasing market share.
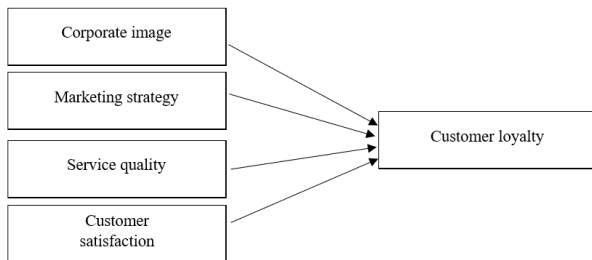

Fig. 1. Proposed conceptual framework.

C. Customer Satisfaction

The contrast theory claims a gap exists if the customers' expectations are high and the airline service quality is low. In this situation, the customers will feel disappointed and have unpleasant feelings for the airline. After the gap becomes more extensive, the airline's image will be destroyed, eventually affecting the annual profit (Isac & Rusu, 2014).

Cognitive dissonance theory (Acharya *et al.*, 2018) states that human behavior is inconsistent with personal thought. For instance, airlines always launch discounted coupons to customers, but coupon limitations may lead consumers to spend above their budgets. It may require the purchasing amount to reach a certain level, for instance, a specific price on spending over MOP$500 for the discounted coupon redemption. Some people may want to get the coupons, but this will cause them to be over budget for the month. This action may make them feel confused after purchasing goods or services. As we studied their theory, we found that most companies nowadays use such marketing strategies to track their customers and increase their customer spending on goods and services.

Meanwhile, The Value Percept Theory (Miller, 2022) also states that companies should provide suitable benefits or allowances to encourage the staff to increase their job satisfaction. The airline should set up KPIs to monitor each department's working performance and a thorough staff reward system to motivate the staff's working performance. These KPIs included vital staff retention, the level of staff absenteeism, and staff productivity. These KPIs can measure staff performance and customer satisfaction as an annual measurement.
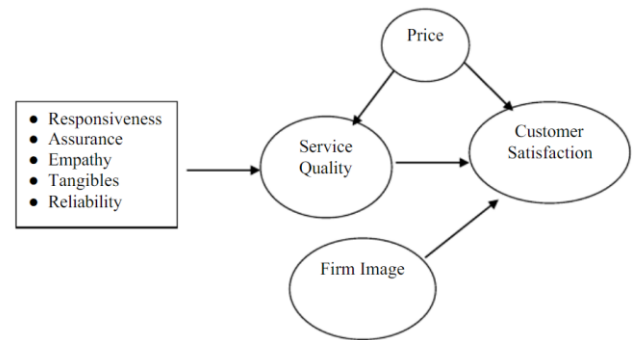

Fig. 2. A model of customer satisfaction in the context of professional services.

III. METHODOLOGY

This research uses the quantitative method to identify customer satisfaction between full-service and low-cost carriers. An online customer satisfaction survey with 27 questions is designed, ranging from personal preferences for using low-cost carriers to full-service carriers, inflight meals, inflight entertainment, the convenience of purchasing flight tickets, aircraft cabin tidiness, cabin service quality, and flight on-time performance. This survey aims to understand consumers' real needs and concerns, lower airline complaints, and build a positive image for the public.

The research method is to apply quantitative questionnaires by collecting 105 feedback from different industries and demographics, considering the requirement of having previously used FSC and LCC. For the questionnaire assessment, this research paper uses a 5-rating scale to score the result from the highest on "very good" to the lowest on "very poor" for the moderated rankings, which include poor, satisfactory, and good choices.

IV. RESULT AND DISCUSSION

This section will analyze and present the collected data using demographic methods to determine some approaches to improve the airline's reputation and rebuild customer confidence.

A. Findings Analysis

For a better reference, the analysis presented here will consider the following criteria for the analysis indicators:

1. FSC vs. LCC Ratio (%) >= 100%, which means "over customer expectation."

2. FSC vs. LCC Ratio (%) >= 85% but below 99%, which means "meet customer expectations."

3. FSC vs. LCC Ratio (%) >=75% but below 84%, which means "service can do better."

4. FSC vs. LCC Ratio (%) =<74% and below, which means "service did not meet customer expectations."

Accounting for the FSC vs LCC Ratios (%), the findings showed that the survey respondents selected a Full-Service Carrier (FSC) as their first preference based on comparing the carrier-provided service and overall customer satisfaction. For FSC, most survey respondents said their services exceeded their expectations; they are more likely impressed by the question of customer service and inflight entertainment. The survey result is based on 27 questions and 105 responses.

Table 1. Questionnaire feedback data analysis with the corresponding comparison between FSC and LCC base on the value and ration

The ratio of customer satisfaction between Low-Cost Carriers (LCC) and Full-Service Carriers (FSC)

	FSC vs. LCC Value	FSC vs. LCC ratio (%)
1. Purchasing tickets via internet	50.0/49.1	101.8%
2. Chinese nationality preference	44.6/55.4	81%
3. Respondents from the educational industry	46.2/53.8	86%
4. Age range 26-35 preference	44.2/55.8	79%
5. 2-5 times of traveling by aircraft	48.5/51.5	94%
6. Low-cost carrier vs. Full-service carrier	50.5/49.5	102%
7. Traveling destination: Asia	45.8/54.2	85%
8. Traveling purpose: vacation	51.8/48.2	107%
9. Flights with in-flight meal	64.2/35.8	179%
10. Flight with in-flight entertainment	67.8/32.2	210%
11. Flight with free check-in luggage	61.9/38.1	162%
12. Online purchasing flight ticket preference	51.7/48.3	107%
13. Booking via Online traveling agent	42.9/57.1	75%
14. Convenient to choose an airline seat	53/47	113%
15. Choosing Economy class preference	42.5/57.5	74%
16. Satisfied with usual in-flight service	47/53	89%
17. Satisfied with airport check-in and ground service	47.2/52.8	89%
18. Satisfied with self-check-in service	46/54	85%
19. Satisfied with cabin cleanliness	45.3/54.7	83%
20. Satisfied with the seat comfort	51.1/48.9	104%
21. Satisfied with the lavatory tidiness	43.7/56.3	78%
22. Satisfied with flight on-time performance	50/50	100%
23. Satisfied with overall service quality	45.7/54.3	84%
24. Satisfied with flight safety and reliability	43.2/56.8	76%

In 10 out of 24 questions, the FSC vs. LCC Ratio (%) >= 100%, which means "over customer expectation." The survey respondents selected full-service carriers.

In addition, in 6 out of 24 questions, the FSC vs. LCC Ratio (%) >= 85% but below 99%, which means "meet customer expectation." The survey respondents selected full-service carriers.

Moreover, in 7 out of 24 questions, the FSC vs. LCC Ratio (%) >=75% but below 84%, which means "service can do better." The survey respondents selected full-service carriers.

Finally, in 1 out of 24 questions, the FSC vs. LCC Ratio (%) =<74% and below, which means "service did not meet customer expectation." There are "ZERO" survey respondents selected full-service carriers.

B. Recommendations for Customer Satisfaction Questionnaire

From the results presented, some recommendations are offered for the industry.

As seen from the table below, five service quality dimensional factors have been used: airline tangibles, reliability, time response of airlines, empathy, and corporate image.

Table 2. Service quality dimension factors

Service Quality Dimensions	Corresponding Factors
Airline tangibles	Provide quality of goods and services
Reliability	On-time departure and arrival service
Time response of airlines	Prompt handling of requests or complaints
Empathy	Understand customer needs and expectations
Corporate image	Reward customers from purchasing

Airline tangibles included seats, in-flight entertainment, and in-flight meals. Reliability means an effective program of aircraft maintenance to ensure flight safety. Furthermore, the time response of airlines means when situations occur and how fast the airline answers customers' questions. It will have a negative consumer empathy and corporate image if the response time is too long.

Customers are the primary income source for airlines. Flight safety and customer service are the primary considerations when customers choose an airline. A set of procedures and pieces of training for all airline staff should be established to enhance security and safety awareness. In addition, airlines should provide problem-solving and professional training related to customer service to airline staff.

The recommendations are focused on flight services in three stages: pre-flight, in-flight, and post-flight services.

For "Pre-flight service," the factors included check-in service, on-time departure, ticket booking convenience, customer service response, and overall customer satisfaction, showing significant positive responses from the respondents.

For "In-flight service," the factors included in-flight meals, in-flight entertainment, seat comfort and cleanliness, lavatory tidiness, seat space, and legroom, showing that there were significant positive responses from the respondents.

For "Post-flight service," the overall service quality showed significant positive responses from the respondents.

In addition, there was significant satisfaction with airline flight safety and reliability in both low-cost carriers. And full-service carriers from the customer satisfaction questionnaire. In my opinion, periodical customer satisfaction questionnaires need to be examined for continuous improvement to maintain the standard of airline flight safety and reliability. The process of conducting the required questionnaires includes creating a series of practical questions, disseminating the questionnaires, and collecting and analyzing the results.

V. Conclusion

In conclusion, the data analysis using the bias ratio analysis showed significant differences between full-service carrier passengers and low-cost carrier passengers according to service quality, pre-flight, in-flight, and post-flight services. Full-service carrier passengers fly from full-service carriers because they can benefit from the baggage claims, the choice of in-flight entertainment services, and the quality of in-flight meals. Low-service carrier passengers fly from the low-service carriers because they can benefit from the lower flight fares to meet their budget travel, especially for short-distance flights.

As stated by (Green, 2021), customer satisfaction will be influenced by several factors, such as empathy, language, convenience, etc. The full-service carrier passengers will have high standard expectations if an unexpected delayed flight has occurred. The airline ground service staff will need immediate assistance to reissue the new flight schedule tickets or refund the flight ticket fee to the affected passengers. It is well worth it to keep up the high standard of service in a full-service carrier.

Based on this research, the airlines should provide internal training to all staff to maintain their communication skills and language proficiency. An effective communication training program for airline ground service staff should include phone manners, conflict resolution, and email correspondence training.

From (Eboli *et al.*, 2022), it is recommended that service quality is essential in improving airline performance. If airline ground service staff have good communication skills, it could help the operations run smoothly in the airport and online and offline ticketing offices. Thus, this will also benefit the corporate image, which could receive a higher customer service ranking in Skytrax and a higher ranking in the world's best airline. The Skytrax ranking measures an airline's ability to achieve a high service quality worldwide. Therefore, achieving a higher ranking in the world airline industry is crucial.

As a third conclusion, the results indicate that airlines should provide various methods for purchasing airline tickets and offering self-online check-in services. Therefore, the passenger could benefit from less time purchasing flight tickets and waiting for check-in. Thus, full-service carrier passengers would have time to plan their vacations. As business travelers are more time-sensitive, punctuality is considered an essential requirement. So, offering self-online check-in services could benefit most business travelers.

Relating to a study by (Ho *et al.*, 2013), flight pre-flight booking convenience is critical for positive passenger expectations. This somehow presents a corporate image to airline passengers. In general, low-cost carriers find it hard to provide the convenience of pre-flight booking. So, a full-service carrier has a higher competitive advantage than a lower-service carrier.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Chi Hou Chiang had planned and conducted the research, collecting and analyzing the data and completed the paper; Lobo Marques and João Alexandre provided professional ideas, and provided his full effort in the whole process; all authors had approved the final version.

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