
Exploring the Relationship among Service Quality, Customer Satisfaction and Customer Loyalty after Post Pandemic Era

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ABSTRACT

Introduction: Taiwanese airline brands' profits have increased since 2010. With the increase in demand of air traffic, air transportation has affected national or international economies. Considering the Taiwan aviation industry for example, the factor of customer satisfaction comes from two types of airlines which are Low Cost Carriers (LCCs) and Full-Service Carriers (FSCs). In other words, these two types of airlines are moderated to service quality and customer satisfaction. There are two specific service quality dimensions: airline tangibles and quality of personnel. This study aims at the research on two types of airlines in Taiwan, that moderate two variables, which are service quality and customer satisfaction.

Literature review/research gap: According to the literature review, service quality, customer satisfaction and customer loyalty have positive impacts. Furthermore, this research takes the airline types as a moderating variable. The main research gap of this study is to understand the interference effect of the airline type for customer satisfaction and customer loyalty. And moreover, the main objectives of this study are to understand the development trends of Taiwan airlines in the aviation industry and to provide China Airlines with some suggestion about the marketing and management strategies through the results of this analysis.

Research method: This study measures the quality of service, customer satisfaction and customer loyalty in three variables. In addition, this study took airline types as a moderating variable between service quality and customer satisfaction. In order to measure the airline type with other variables, the framework is based on the literature. According to the framework, this study establishes the following hypotheses: H₁: There is a significant effect between service quality and customer satisfaction; H₂: There is a significant effect between customer satisfaction and customer loyalty; H₃: There is a significant effect between service quality and customer loyalty; H₄: Airline types moderate an effect between service quality and customer satisfaction.

Findings: The purpose of this study is to investigate the relationship of service quality, customer satisfaction and customer loyalty. This study also adapts airline type as moderating to investigate the impact on service quality and customer satisfaction. From the data analysis, this study has made some managerial implications. The short-term strategy is that China Airlines should be to cooperate with other tourism industry and provide more promotions; the medium-term strategy is that China Airlines should enhance reputation of Taiwan's Tiger Airlines by using unique Taiwanese culture; the long-term strategy is that China Airline should provide opportunities for customers to participate in charity activities. And finally the future expectation is that China Airlines should offer more business strategies that contribute to customers.

Theoretical and practitioner implications: (1) Short-term strategies: China Airlines should be to cooperate with other tourism industry and provide more promotions. (2) Medium-term strategies: China Airlines should enhance Tiger Airlines Taiwan's reputation by unique Taiwan culture. (3) Long-term strategies: China Airline should provide opportunities that customer can participate in charity activities.

Keyword: Service quality, Customer satisfaction, Customer loyalty, Airline type

BACKGROUND AND MOTIVATION

With the growth in general, the distance between countries has become shorter. The exchanges between countries continues to increase. What is more, the great benefits that come with it has made international exchanges are even more important. Some of the effects are economic mobility, cultural exchange and the application of technology. Compared with older times, people's perception of the world is stronger and is accompanied by a direct impression. Nevertheless, the demand from people is no longer enough

and has even reached a higher level. This means that people want to experience more. For instance, Korea was one of the most mysterious places in the world. It was full of people who lived with their kings' faith, and they were controlled by the government, living without dignity and only the worship of their leaders. Also, it was isolated from the out-side world, so it was not easy to go there. Wassler and Schuckert (2017) regarded that transportation became an irreplaceable element. For this reason, transportation was so important for economic, social and culture successes in every community. Veterník and Gogola (2017) regarded that transportation

has been become more improved and evolved, and it has become more flexible and efficient. It truly has shortened the distance from place to place and plays an important role for all in the world. Critical for the growth of the globalized economy is the movement of people and merchandise that cross international boundaries (Anderson and Villa, 2015). It followed that the growth of the tourism industry in Asia was not only leads a significant economic development, but also becoming the world's second largest travel region (Hornig et al., 2012). Because of this global trend, the need for and the evaluation of transportation have become hot issues in the tourism literature (Liu and Lee, 2016).

Because of changes in the Taiwan tourism policy, this also leads to the development of the aviation industry. As shown in table 1, Taiwanese airline brands' profits have increased since 2010. With the increase in demand of air traffic, air transportation has affected national or international economies. Thus, there is a great increase in academic articles in the aviation industry. The competition between aviation companies has become more severe, so the service quality in aviation industry is getting more attention (Hu and Ho, 2016). Service quality and customer satisfaction have been increasingly recognized as a key factor of business and an advantage tool for competition (Tsafarakis et al., 2017). The relevant academic articles point out that the relationship between customer satisfaction and service quality is inseparable. The contribution of the research extends to customer loyalty, which means that customers could make repurchases and ensure the sustainable operation of airlines.

Until 1978, the aviation industry was regulated and more private airlines began to emerge. Recently, these has been a large increase in the number of low price ticket and low-cost carriers that attract passengers (Koklic et al., 2017). Considering the Taiwan aviation industry for example, the factor of customer satisfaction comes from two types of airlines which are Low Cost Carriers (LCCs) and Full-Service Carriers (FSCs). In other words, these two types of airlines are moderated to service quality and customer satisfaction. The research from Lu (2017) tests Taiwan passengers' demand of LCCs and FSCs and identifies their perceptions of the demand for necessary services and the assessment of the importance of the determinants as well. Koklic et al. (2017) placed importance on customer satisfaction from LCCs and FCSs in future research. There are two specific service quality dimensions: airline tangibles and quality of

personnel. Future research should test other dimensions as predictors of customer satisfaction. That is to say, this study aims at the research on two types of airlines in Taiwan, that moderate two variables, which are service quality and customer satisfaction.

PURPOSE OF THE STUDY

This research focuses on the connection between service quality, customer satisfaction and customer loyalty in the aviation industry. According to the literature review, service quality, customer satisfaction and customer loyalty have positive impacts. Yet, there is little research on the two types of airlines in the aviation industry. Furthermore, this research takes the airline types as a moderating variable. This study takes China Airlines as an example. The main objectives of this study are:

- (1) To investigate the relationship between service quality and customer satisfaction of Taiwan airlines;
- (2) To explore the relationship between service quality and customer loyalty of Taiwan airlines;
- (3) To investigate the relationship between customer satisfaction and customer loyalty of Taiwan airlines;
- (4) To understand the interference effect of the airline type for customer satisfaction and customer loyalty;
- (5) To understand the development trends of Taiwan airlines in the aviation industry;
- (6) To provide China Airlines with some suggestion about the marketing and management strategies through the results of this analysis.

LITERATURE REVIEW

When it comes to the international sphere, there is the word was globalization. Also, the internationalization of products means that it is related to globalization. Globalization for every product or marketing means that it could be adapted by every country and culture. The aviation industry is also one kind of the internationalization of industry in the world. It has played an important role between countries. The brands in the aviation industry come from different countries, meaning that they have different cultural factors. Of course, the aviation industry also has a system to separate different marketing techniques, such as in long-haul and short-haul flight. International Air Transport Association (IATA) states that the value of aviation or their purpose was to work together with governments, businesses

Table 1. Aviation Industry Revenue Growth Rate

		2012	2011	2010	2009	2008
1	China Airline	0.28%	-4.27%	34.41%	-17.92%	-1.40%
2	EVA AIR	4.81%	-2.12%	42.48%	-19.17%	-2.63%
3	UNI AIR	11.12%	7.90%	22.07%	10.14%	-4.79%
4	TransAsia Airways	8.67%	4.62%	46.74%	5.46%	16.37%
5	MANDRIN AIRLINES	4.47%	1.75%	37.82%	-12.41%	2.95%

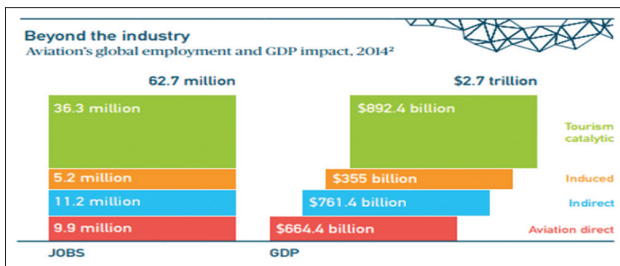


Figure 1: Aviation's Global Employment and GDP Impact

RANK	AIRPORT	TOTAL CARGO	CHANGE
1	Hong Kong International Airport	4,415,983	▲ 6.0%
2	Memphis International Airport	4,258,531	▲ 2.9%
3	Shanghai Pudong International Airport	3,181,654	▲ 8.6%
4	Incheon International Airport	2,557,681	▲ 3.8%
5	Ted Stevens Anchorage International Airport	2,492,754	▲ 3.0%
6	Dubai International Airport	2,367,574	▼ -3.1%
7	Louisville International Airport	2,293,231	▲ 3.5%
8	Narita Airport	2,133,542	▲ 5.6%
9	Frankfurt Airport	2,131,976	▲ 1.8%
10	Taoyuan International Airport (Taipei)	2,088,727	▲ 6.2%

Figure 2: Top 10 Airports by Cargo Tones

and customers and create the value of aviation. It is also mentioned that there were 104,000 flights, meaning that there were 9.8 million passengers traveling every day in 2014. According to Figure 1, the aviation industry in the world creates 62.7 million jobs. The global economic impact was around 2.7 trillion U.S dollars, and the global share of GDP of 3.5% is supported by the aviation industry.

Figure 2 shows that the value of cargo transport was 35% of the world's total trade in 2017. Also, the number of world's top 10 long-haul traffic was increased.

Taiwan Aviation Industry

In Taiwan, the earliest development of the aviation industry was the government's need for national defense and this also led to future development. Taiwan is located in Southeast Asia, so Taiwan is an important area to the region. From Taiwan flying to other Southeast Asia countries only takes an average of 2.55 hours. There are 17 airports in Taiwan that provide services. In particular, Taiwan Taoyuan International Airport is one of the major gateways to the world. In order to expand Taiwan's international airline services, Taiwan opened six more airports, and more international operations and cross strait charter flights. It developed Taiwan's aviation industry to have a better development (Civil Aeronautics Administration Ministry of Transportation and Communication, 2016). The brands of Taiwan airlines, include China Airline, EVA Airways Corporation, Mandarin Airlines, UNI AIR, Far Eastern Air Transport and Tiger Airlines (MOTC, 2016). Due to government policy, the passenger load has increased. In 2016, there were 63.25 million passengers traveling between various airports. Comparing

with the previous year, it increased 8.8%. There were 52.41 million passengers from China and cross-strait flights, which meant that it increased to around 8.4%. There were 10.84 million (10.7% increase) passengers on domestic routes. Loading and unloading of cargo by various airports reached a total of 2.23 million tons. This was more than the previous year which was around 2.23 million (a 3.8% increase) (MOTC, 2016).

Service Quality

Service is in every part of life. In other words, service may be found everywhere or at every moment (Lisch, 2014). Also, service quality of the company and customers have a significant relationship (Parasuraman et al, 1985). Compared with service quality and product quality, customers are hard to notice it. Furthermore, service quality is between service and customer's prospective services (Oliver, 1981). Service quality became entities and invisible services when a customer receives them. Service quality consists of two parts: expected service and perceived service. The scope of service quality covered not only the results, but also the service process (Grönroos, 1984), and is known as service as a product in the process of participating in the consumption. Thus, service quality is also called the main factor of customer satisfaction and brand quality. Moreover, the effect of service quality is a key impact of customer expectations on service quality (Hansen and Bush, 1999). It can be said that customers are impressed by service initiative and content (Parasuraman et al, 1985; Zeithaml et al, 1993). Quality of service as an indicator of research enhanced the usefulness of the study (Dabholkar et al, 2000). The summarized literature is shown in Table 2.

Service quality is the center of many industries. Furthermore, it drives many different factors, so many studies have a quality of service content. Parasuraman et al. (1985) regard that quality of service is initially summarized by 10 factors that affect service quality. Eventually, the study of the quality was divided into five dimensions, and that is SERVQUAL (Parasuraman et al, 1988). It was adapted by different industries, and it has been widely applied by many industries. Questionnaire of service quality had been applied to various industry and measured in every current situation. SERVQUAL could be adjust to be used in other scales. For example, LODGSERV was adjusted to become AIRQUAL (Koklic et al., 2017). In the future, more studies will be conducted on service quality's research. It takes the basis of service quality to a new level.

Customer Satisfaction

Satisfaction is the feeling a customer has after using the product. Thus, the satisfaction of the enterprise is in

Table 2: Definitions of Service Quality

Scholar (s)	Year	Definitions
Oliver	1981	Service quality is between service and customer's prospective services.
Grönroos	1984	Service quality become entities and invisible services when customers receive services.
Parasuraman et al.	1985	Service quality in company for customers was a significant relationship.
Zeithaml	1993	Customer is emphasized by service initiative and content.
Hansen and Bush	1999	Service quality is also known as the main factor of customer satisfaction and brand quality
Pratibha A Dabholkar	2000	Quality of service is an indicator of research enhancing the usefulness of the study.
R. Lisch	2014	Service is in every part of life. Service can be found everywhere, or in every moment

existence, but it doesn't mean that there is no method to measure it. Many studies used a scale to measure the index of satisfaction, which means it is based on satisfaction to understand how customers feel when they consume under their own brand. Companies could review or improved measure from customer satisfaction to achieve higher customer satisfaction. In 1967, a subjective well-being (SWB) under the relevance was put forward (Diener et al., 1999). Furthermore, the subjective sense of happiness was the main cause of happiness and longevity of life. SWB is the feeling of happiness in life (Busseri and Sadava, 2011). In other words, SWB was the feeling of emotion and it was divided into positive feelings and negative feelings. Of course, happiness and emotional feelings were positively related, but these were independent. Life and emotional satisfaction was the same satisfaction, including leisure entertainment, family atmosphere and work environment (Schimmack, 2008) and is regarded as satisfaction as often used by enterprises, and it was the main factor for customers to repurchase and promote brand loyalty (Anderson et al., 1994). However, enterprises have more difficulty knowing the customer satisfaction and the relationship between the profit in the short term. Due to the establishment the satisfaction for repurchase behavior takes a long time to measure (Anderson and Sullivan, 1993). Customer satisfaction and customer expectations of service are observed in this direction. This means that this relationship is affected by the customers repurchase behavior (Lawler, 1973; Parasuraman et al., 1985; Zeithaml et al., 1993). Choi et al. (2013) regarded that customer satisfaction was the overall satisfaction of the customer after purchasing the product or service. Oliver (2014) used satisfaction and service quality to develop cumulative satisfaction. This satisfaction refers to meant the customers pure pleasure when they use the product. This became a measure of the standard.

Westbrook (1981) regarded that customer satisfaction was determined by three dimensions which were namely

employee satisfaction, environmental satisfaction and product satisfaction. Customer satisfaction was divided into more facets (Wiley, 1991), including the quality of the product, the speed of the transaction, staff knowledge of the product, good service, after-sales service, competitive pricing, product quality, user satisfaction, the possibility of repurchase and the immediacy of the service. From expected service quality to service quality, there are five separations of factors. These are quality of service, product quality, price, environment and personal factors (Zeithaml and Bitner, 1996). Customer satisfaction is divided into three elements, including quality of food, the level of prices, evaluation of services and hotel's satisfaction (Gupta et al., 2007). Xie et al. (2017) regarded that satisfaction was dominated by a number of factors, including product quality, service quality, perceived quality and value, customer choice and customer loyalty. De Vos and Witlox (2017) took SWB for the main foundation, and developed to apply satisfaction for travel, long-term benefits, travel options, travel preferences and place of residence. Ettema et al. (2011) used SWB and adjusted it as self-report satisfaction (STS) for a travel scale. It measured -4 to 4, in order to measure the satisfaction. From negative increase to positive decrease, and positive increase to negative decrease. Mustafa et al. (2016) measured student under the high knowledge of education as high service quality for the emotional satisfaction and preference behavior. Customers were the main factor for development of satisfaction period. 14 airport services to measure customer satisfaction were used. (Bezerra and Gomes, 2015). Cao (2016) used a SWLS scale to measure life satisfaction for a city area.

The previous information on customer satisfaction research has shown that customers have a perceived relationship with the expected service. Furthermore, it suggests that customers repurchase certain brands and have a positive word-of-mouth. Customer satisfaction is known as satisfaction with a particular brand's cumulative satisfaction. Enterprise could use two kinds of satisfaction to measure the quality of product, service quality, repurchase intention and loyalty, and improve the satisfaction to higher levels.

Customer Loyalty

Customer loyalty is a unique advantage for business. In addition to keeping existing customers in mutually beneficial relationship in the simplest way, potential customers can be led by customer loyalty. On the other hand, the advantages for organization are the benefits and enhancement of the acceptance of a company. Therefore, the enterprise investment in customer loyalty is a key aspect for long-term management. Fuentes-Blasco et al. (2014) regarded that customer loyalty was the most important influencing factor for sales in business, and it also was an asset in a company's competition (Dekimpe et al., 1997). Customer loyalty and customer purchase

Table 3: Definitions of Customer Loyalty

Scholar (s)	Year	Definitions
Gremler and Brown	1996	Customer loyalty and customer purchase intention has a significant effect.
Dekimpe et al.	1997	Customer loyalty is an asset in a company's competition.
Mittal and Lassar	1998	Customers will not have any idea for price. It becomes a stable income.
Oliver	1999	Behavior loyalty represents a constant loyalty, and attitude loyalty is positive for loyalty.
Fuentes-Blasco et al.	2014	Customer loyalty is the most important influencing factor for sales in business.
Marakanon and Panjakajornsak	2017	Staff should know the demand of customers, and needs to obtain the trust from customers, then obtain more loyalty.

intention had a significant effect, so a customer will not have any idea for price (Gremler and Brown, 1996). It became a stable income (Mittal and Lassar, 1998). Staff should know the demand of customers, and need to obtain the trust from customers, then getting more loyalty (Marakanon and Panjakajornsak, 2017). Oliver (1999) regarded that customer loyalty affected two aspects which were customer behavior and attitude. Behavior loyalty represented a constant loyalty, and attitude loyalty was positive for loyalty (Oliver, 1999). The summarized literature is shown in Table 3.

The relationship between customer loyalty and satisfaction has a large number of research that shows a significant effect. For enterprise, sustainable management is the main goal, so customer loyalty is one of the most important factors. Dimension of customer loyalty, as Stum and Thiry (1991) point out, should be measured by behavior loyalty. Therefore, there are four dimensions: repurchase, purchase other products, recommendation to others and no feeling to other brands. Repurchase intention: the willingness to repurchase; purchase behavior: the rate of purchase; subordinate intention: whether one recommends to others (Jones & Sasser, 1995). Achrol and Kotler (1999) divided customer loyalty by repurchase intention and recommendation intention. Kim, Park and Jeong (2004) regarded that customer loyalty's dimension kept relationships with a company and recommended to others. Nazari et al. (2014) pointed out different ideas about loyalty's dimension. There were six factors that affect customer loyalty, including mind promises, buying other products, reducing the time of seeking products, positive word-of-mouth, repurchase intentions and reducing other brands' loyalty.

Marakanon and Panjakajornsak (2017) connected customer loyalty to perceived quality, perceived risk and trust, and then sought, measuring for the environmental protection industry. Because of perceived quality, perceived risk and trust are main factors for the green industry. Because Asian

marketing is a new area, it has explosive potential (Lee and Wong, 2016). For this reason, there are three aspects for measuring customer loyalty, which are efficiency, usability and privacy. Research on corporate social responsibility and customer loyalty in Taiwan found that there is an indirect impact between them (Chang and Yeh, 2017). Koklic, Kukar-Kinney and Vegelj (2017) divided the aviation industry into LCCs and FSCs, and divided customer loyalty into two parts: repurchases and recommends, and then took it to measuring the aviation industry. For enterprise, sustainable management was the main goal, so customer loyalty was one of the most important factors. Furthermore, staff should know the demand of customers, and need to obtain the trust from customers, then achieve more loyalty (Marakanon and Panjakajornsak, 2017). Enhance word-of-mouth and the stable of loyalty are necessary.

Airline Type

Two types of airlines are currently active worldwide. The main difference between LCCs (Low-cost carriers) and FSCs (Full-service carriers) is price. When it comes to LCCs, extra charges for extra service is needed. FSCs (Full-service carriers): According to the NBAA (National Business Aviation Association, NBAA), the definition is called general aviation. Furthermore, the main business activity in general aviation is business aviation. Business aviation's definition is related to organization, enterprise or business for single people. FSCs had 9 business factors (Cento, 2009).

- (1) The main business is including passenger transport, freight and maintenance;
- (2) Use Hub-and-spoke network to connect the flight in all regions;
- (3) All flight: Attributes include long-range, medium-range and short-range;
- (4) Alliance Development: Operating more than two airline companies together;
- (5) Vertical product differences: The use of electronic service to connect ground services or products and in-flight product;
- (6) Customer relationship management (CRM);
- (7) Management of price;
- (8) Multi-pipe sales;
- (9) Global distribution system (GDS).

Kim and Park (2017) measure customer and airline industry with 8 items: reservation, ticketing, check-in, baggage handling, cabin facilities, in-flight services, aircraft operations and marketing. Hunter (2006) measures two types of airlines and devices five dimensions, such as selling mode, selling scale, transport mode, market image and the management of bookings. Daft and Albers (2013) use 11 dimensions to measure the function of airlines: basic route design, labor intensity, cooperation policy, target passenger groups, role of air cargo, strategic supplier integration, passenger transfer, frequent flyer

programs, fleet homogeneity, owning airport facilities and flight crew skills. In order to understand the two kinds of airline's, Cento (2009) divided every function into different costs. According to the research, LCCs were cheaper by around 51%. Murakami (2011) researched the effect of LCCs to FSCs, measuring the impact of social welfare of low-income country immigrants in America. The China high speed rail(HSR) and Low-cost carrier's (LCC) interacted for measuring the transportation industry (Wang and Zhang, 2017). Lu and Mao (2015) researched the relevance of low-cost airlines and airports. The result was that Taiwan's airports were likely to attract foreign low-cost airline businesses. Kim (2015) measured customer's feelings by two kinds of airlines in Korea and pointed out that there were different perceive values between LCCs and FSCs in order to examine the relevance between customer satisfaction and customer behavior (Koklic, Kukar-Kinney and Vegelj, 2017). Take airline type as a moderating affect to separate passengers.

According to the literature, two airline types are the world's major aeronautical forms. When the low-cost carriers join the aviation industry, it has made a significant impact on full-service carriers. Low-cost carriers and full-service carriers have their unique characteristics. It made most of the aviation industry focus on how to improve customer loyalty.

Relationship of Variables

Service quality and customer satisfaction have significant effects on communication software (Lien, Cao and Zhou, 2017). Furthermore, it has been pointed out that customer satisfaction is used to understand customer's demand. Yeo, Thai and Roh (2015) use port service quality (PSQ) to measure that customer satisfaction have different impacts on satisfaction. Iberahim et al. (2016) measured the service quality for banks. The measured result was that customer satisfaction and service quality had positive effects. Furthermore, it helped the promotion in future. (Leong et al., 2015) Service quality and customer satisfaction had significant effect. The most significant effect is responsiveness. Koklic et al. (2017) pointed out that there is the same result of the aviation industry in their study. Based on previous studies of service quality and customer satisfaction, this study suggests that service quality has an impact on customer satisfaction. Therefore, the following hypothesis is offered:

H₁: There is a significant effect between service quality and customer satisfaction.

Customer Satisfaction and Customer Loyalty

Atulkar and Kesari (2017) measured the hedonic customer satisfaction in retail industry. The conclusion of the study

is that hedonic satisfaction is easy to experience because of the atmosphere in the store. This enhances customer loyalty. Another research concerned atmosphere, customer satisfaction and loyalty. The research of post-purchase behavior pointed out that the main factor for building passenger's loyalty was satisfaction during cruise travel (Han and Hyun, 2018). Koklic et al. (2017) mentioned that, when staff were conducting service, the staff promise could build both loyalty, which was attitude loyalty, and behavior loyalty. Based on previous studies of customer loyalty and customer satisfaction, this study suggests that customer satisfaction has an impact on customer loyalty. Therefore, the following hypothesis is put forward:

H₂: There is a significant effect between customer satisfaction and customer loyalty

Koklic et al. (2017) mentioned that service quality has significant effect on behavior loyalty. Hosseini et al. (2015) pointed out that, wherever the service to customer occurred, the customer will accumulate the experience, and the experience is loyalty. The study mentioned that, when service quality has effect on a brand, it will transfer and become trust, and trust means loyalty (Zehir et al., 2011). Customer loyalty is indeed the factor in service industry competition. Quality of customer relationship management affects customer loyalty (Nyadzayo and Khajezadeh, 2016). When it was in high brand quality, the level of customer loyalty became more significant. Based on previous studies of service quality and customer loyalty, this study suggests that service quality has an impact on customer loyalty. Therefore, the following hypothesis is offered:

H₃: There is a significant effect between service quality and customer loyalty.

Airline types have different characteristics. Therefore, when it comes to consumption, it means that customers can make their own choice in airline types. Koklic et al. (2017) investigated that LCCs and FSCs to focus on tangible services. Good service made the customer satisfied, and they will recommend the brand to their friends or family. Eventually, they will choose the same airline brand. Thus, it proves that airline type has a moderated service quality on customer satisfaction. Lu (2017) divided customer into different types. Furthermore, Lu mentioned that customers will choose on airline, which is based on what services they will receive. This will make them satisfied. Kim (2015) measured two kinds of airline effect on customer satisfaction. Perceived value was the main factor that made an impact on customer satisfaction. Based on previous studies of service quality and customer satisfaction, this study suggests that airline types have a moderating effect on service quality and customer satisfaction. Therefore, the following hypothesis is offered:

H₄: Airline types moderate an effect between service quality and customer satisfaction.

Research Framework

This study measures the quality of service, customer satisfaction and customer loyalty in three variables. In addition, this study took airline types as a moderating variable between service quality and customer satisfaction. Based on the relevant research and literature, Figure 3 provides the conceptual framework guiding this study.

Research Hypotheses

In order to measure the airline type with other variables, the framework is based on the literature. According to the framework, this study establishes the following hypotheses:

- H₁: There is a significant effect between service quality and customer satisfaction.
- H₂: There is a significant effect between customer satisfaction and customer loyalty.
- H₃: There is a significant effect between service quality and customer loyalty.
- H₄: Airline types moderate an effect between service quality and customer satisfaction.

KMO and Bartlett Test Value

In this study, researcher used Kaiser Meyer Olkin (KMO) is used to measure the sampling adequacy of the data. KMO > 0.8 indicates good; KMO > 0.7 shows moderate; KMO > 0.6 shows ordinary; KMO < 0.5 shows unacceptable. In Table 4, KMO was 0.921; the Bartlett test was 1683.512; the P-value was less than 0.001. The results indicate that KMO and Bartlett test had good sampling adequacy and could be used for factor analysis.

Demographic Analysis

The main respondents are female (58.3%). The main age is between 21-30 years old (61.1%). Most of the

respondents hold bachelor degrees (69.4). The most common occupation is student (31.9%), the second is service industry (19.4). Average monthly income is between NT\$20,001-NT\$35,000 (37.5%). Most of the respondents have had a flight experience of 1-3 times (77.8%), and 4.2% were more than 10 times. The demographic analysis of sample structure is shown in Table 5.

Factor Analysis

This section applied factor analysis to extract factors (dimensions). This study employed Kaiser-Meyer-Olkin and the Bartlett Sphericity test to determine whether the questionnaire was suitable for factor analysis. The KMO value is between 0 and 1. When the KMO value is > 0.5 it means that the variables are suitable for factor analysis. The greater the KMO value is, the more appropriate for conducting factor analysis (Kaiser, 1960). About the Bartlett Sphericity test (H₀: unsuitable for factor analysis), Bartlett (1951) proposed that if the significant level of $\alpha = 0.05$ and the, P-value is <0.001, the variables are appropriate for conducting factor analysis. In addition, this study extracted the factors (dimensions) with eigenvalues exceeding 1 with the principle component method and maximum variation rotation based on the Kaiser criteria. According to Nunnally and Berstein (1994), the factor loadings are necessary to exceed 0.4. Otherwise, the item should not be retained.

Service Quality

According to the results of factor analysis using principle component analysis to determine the basic components, Table 6 indicates that the eigenvalue of 3 factor is greater than 1, and the total variance explanation was 75.501%.

The factor loadings of 22 classified service items in importance are shown in Table 7. The researcher named 3 factors as dimensions in accordance with service items which they had. Three dimensions are explained as follows:

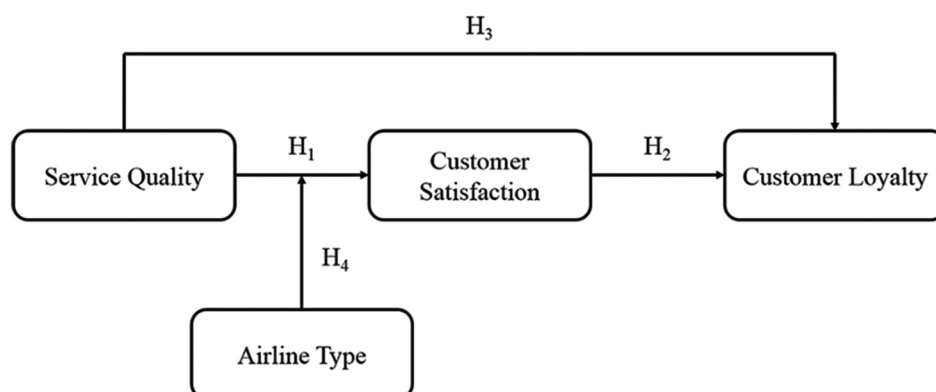


Figure 3: Research Framework

Table 4: KMO and Bartlett’s Test Value

The Importance of Service Quality	KMO	Bartlett test	P-value
	0.921	1683.512	0.000*

* $p < .001$.

Table 5: Demographic Analysis

Demographic Variable	Frequency	Percent	Cumulative Percent
Gender			
Male	30	41.7%	41.7%
Female	42	58.3%	100%
Age			
Under 20	9	12.5%	12.5%
21-30	44	61.1%	73.6%
31-40	16	22.2%	95.8%
41-50	2	2.8%	98.6%
over 51	1	1.4%	100%
Education			
Below Junior High School	1	1.4	1.4%
Senior High School	5	6.9%	8.3%
Junior College	3	4.2%	12.5%
Bachelor Degree	50	69.4%	81.9%
Master Degree	12	16.7	98.6%
Doctorate Degree	1	1.4%	100%
Occupation			
Business	13	18.1%	18.1%
Public Servants	7	9.7%	27.8%
Farmer/Fisher	0	0%	27.8%
Service Industry	14	19.4%	47.2%
Worker	4	5.6%	52.8%
Student	23	31.9%	84.7%
House worker	2	2.8%	87.5%
Retired	0	0%	0%
Others	9	12.5%	100%
Average monthly income			
Less than NT\$20,000	19	26.4%	26.4%
NT\$20,001-NT\$35,000	27	37.5%	63.9%
NT\$35,001-NT\$50,000	18	25.0%	88.9%
NT\$50,001-NT\$65,000	6	8.3%	97.2%
Above NT\$65,001	2	2.8%	100%
Number of Average yearly flights			
1-3 times	56	77.8%	77.8%
4-6 times	9	12.5%	90.3%
7-9 times	4	5.6%	95.8%
>10 times	3	4.2%	100%

Factor 1: Reliability

This dimension refers to whether flight attendants could provide service on time, consistently and without mistake. The in-flight service must enable passengers to feel that

Table 6: VARIMAX (before the rotation)

Factor	Eigen Value	Variance Explained	Total Variance Explained
	%	%	%
1	13.797	62.715	50.971
2	1.767	8.031	64.520
3	1.046	4.757	75.501

Table 7: Factor Analysis of Service Quality

Service Items	Factor Loading	
Reliability		
Q14	I believe that the flight attendants of China Airlines are reliable.	0.889
Q16	I believe that the flight attendants of China Airlines are polite and friendly.	0.888
Q17	I believe that the flight attendants of China Airlines can help each other and provide better service.	0.875
Q11	I believe that the flight attendants of China Airlines can serve passengers efficiently.	0.855
Q18	I believe that the flight attendants of China Airlines provide different needs for passengers.	0.854
Q12	I believe that the flight attendants of China Airlines are always willing to help passengers.	0.827
Q19	I believe that the flight attendants of China Airlines will pay attention to passengers.	0.819
Q7	I believe that the flight attendants of China Airlines are trained and qualified.	0.803
Q15	The flight attendants of China Airlines made me feel at ease during the transaction.	0.802
Q8	I believe that the flight attendants of China Airlines are familiar with their work.	0.802
Q5	I believe that the flight attendants of China Airlines have a decent and clean look.	0.773
Q10	I believe that the flight attendants of China Airlines will inform passengers when to perform service.	0.759
Q13	I believe that the flight attendants of China Airlines will not be too busy to provide service.	0.745
Q20	I believe that the flight attendants of China Airlines understand the needs of passengers.	0.695
Q21	I believe that China Airlines will maintain the best interests of the passengers.	0.691
Q22	I believe that the service hours provided by China Airlines are convenient for passengers.	0.636
Q6	I believe that the facilities of China Airlines can be coordinated with the services provided.	0.622
Q9	I believe that the flight attendants of China Airlines will assist in ensuring that passengers fill in correct information.	0.602
Empathy		
Q3	I believe that China Airlines has unique facilities in the cabin.	0.764
Q4	I believe that China Airlines has provided additional services on the plane.	0.696
Tangibles		
Q2	I believe that China Airlines has enough legroom in the cabin.	0.892
Q1	I believe that China Airlines has comfortable on-board seating.	0.817

KMO: 0.921 Bartlett: 1683.512 P value: 0.000***

the service was trustworthy. Therefore, this factor was named reliability.

Factor 2: Empathy

This dimension refers to whether flight attendants could provide passengers with personalized services or extra service. The character of this service is what made guests feel at home. Therefore, this factor was named empathy.

Factor 3: Tangibles

This dimension refers to the actual facility or equipment. All the feelings from the entities around the passengers are the most practical proof that passengers feel. Therefore, this factor was named tangibles.

Customer Satisfaction

This study used nine items to measure customer satisfaction, to carry on factor analysis, extracting four factors. The total cumulation explained variance was 71.197%. The value of KMO was 0.912, which is higher than 0.5 and the P-value was 0.000 (<0.001). This means the variable was suitable for factor analysis. The factor analysis of customer satisfaction is displayed in Table 8.

Customer Loyalty

This study used six measure items to measure customer loyalty, to carry on factor analysis, extracting two factors. The total cumulation explained variance was 63.290%. The value of KMO was 0.790, which is higher than 0.5 and the P-value was 0.000 (<0.001). This means this variable was suitable for factor analysis. The factor analysis of customer loyalty is displayed in Table 9.

Reliability Analysis

(1) Reliability Analysis:

A Cronbach's α value of > 0.7 indicated a high reliability; a Cronbach's α value of < 0.35 indicated low reliability and needed to be deleted. Therefore, the researcher used Cronbach's α to analyze the reliability of the three dimensions proposed in this study. The three dimensions and unity performed high reliability meaning that the relationship between each service item showed high consistency Table 10.

Table 8: VARIMAX (before the rotation)

Factor	Eigen Value	Variance Explained
1	%	%
	6.408	71.197

Table 9: VARIMAX (before the rotation)

Factor	Eigen Value	Variance Explained
1	%	%
	3.797	63.290

KMO: 0.790, Bartlett: 241.673 P-value: 0.000***

One-way ANOVA

One-Way ANOVA is a kind of statistical model which can analyze more than three variables of differences. It can be used in studies to develop an explanation for the data. Table 11 shows the relationship between age and variables. The variable of service quality has significant effect ($p = 0.005, p < 0.01$) on the age of 41 to 50 year-olds.

Table 12 shows the relationship between education and the independent variables. The variables of service quality has significant effect ($p = 0.013, p < 0.05$) on the education of respondents who have doctorate degrees.

Table 13 shows the relationship between occupation and the independent variables. The variables of airline types have significant effect ($p = 0.033, p < 0.05$) on the occupation of public servants.

Table 10: Reliability Analysis

Variables	Number of Items	Cronbach's α
Service Quality	22	
Reliability	18	0.897
Empathy	2	0.922
Tangibles	2	0.936
Customer Satisfaction	9	0.938
Customer Loyalty	6	0.963

Table 11: One-Way ANOVA of Age Versus Service Quality

Variable	Service Quality	
	Frequency	Average
Age		
Under 21	9	3.82
21-30	44	3.86
31-40	16	3.91
41-50	2	2.16
Above 51	1	4.55
F		4.102
p		0.005**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 12: One-Way ANOVA of Education versus Service Quality

Variable	Service Quality	
	Frequency	Average
Education		
Below Junior High School	1	4.55
Senior High School	5	3.83
Junior College	3	3.53
Bachelor Degree	50	3.86
Master Degree	12	3.91
Doctorate Degree	1	1.55
F		3.153
p		0.013*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$,

Table 14 shows the relationship between average yearly flight is taken and the independent variables. The variable of service quality and customer satisfaction has significant effect ($p = 0.011, p < 0.05; p = 0.023, p < 0.05$) on passengers who take flights more than ten times a year. The variable of airline types has significant effect ($p = 0.042, p < 0.05$) on passengers who take flights 7 to 9 times a year

Regression Analysis

This study used regression analysis to examine the correlation between service quality, customer satisfaction and customer loyalty. This section also displays airline type, which has an influence on service quality and customer satisfaction.

Service Quality and Customer Satisfaction

This study adopted service quality as the independent variable and customer satisfaction as the dependent variable to conduct the regression analysis. Hypothesis one (H_1) in the study has established that service quality has a significant effect on customer satisfaction. As shown in Table 15, the β value was 0.877, and the Adjusted- R^2 was 0.766, which indicates that the independent variable

of this model explains 76.6% of the variance in the dependent variable. Furthermore, the P-value is 0.000 (< 0.001), which means that the independent variable has significant influence on the dependent variable. According to the analysis of the result, the β value has a positive value, and the P-value reached a level of significance. Therefore, service quality positively affects customer satisfaction. Namely, service quality plays an important role in increasing customer satisfaction, thereby supporting H_1 .

Customer Satisfaction and Customer Loyalty

This study adopted customer satisfaction as the independent variable and customer loyalty as the dependent variable to conduct the regression analysis. Hypothesis two (H_2) in the study has established that customer satisfaction has a significant effect on customer loyalty. As shown in Table 16, the β value was 0.433, and the Adjusted- R^2 was 0.176, which indicates that the independent variable of this model could explain 17.6% of the variance in the dependent variable. Furthermore, the P-value is 0.000 (< 0.001), which means that the independent variable has significant influence on the dependent variable. According to the analysis of the result, the β value was a positive value, and the P-value reached a level of significance. Therefore, customer satisfaction positively affects customer loyalty. In other words, customer satisfaction plays an important role in increasing customer satisfaction, thereby supporting H_2 .

Service Quality and Customer Loyalty

This study adopted service quality as the independent variable and customer loyalty as the dependent variable to conduct the regression analysis. Hypothesis three (H_3) in the study has established that service quality has a significant effect on customer loyalty. As shown in Table 17, the β value was 0.357, and the Adjusted- R^2 was 0.115, which indicates that the independent variable of this model could explain nearly 11.5% of the variance in the dependent variable. Furthermore, the P-value was 0.002 (< 0.05), which means that the independent variable has significant influence on the dependent variable. According to the analysis of the

Table 13: One-Way ANOVA of Occupation Versus Airline Type

Variable	Airline Type	
	Frequency	Average
Occupation		
Business	13	3.62
Public servants	7	2.94
Farmer/Fisher	0	0
Service industry	14	3.88
Worker	4	3.61
Student	23	3.76
House worker	2	3.64
Retired	0	0
Other	9	4.08
F	2.461	
p	0.033*	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: One-Way ANOVA of Average Yearly Flight Versus Three Variables

Variable	Service Quality		Customer Satisfaction		Airline Type	
	Frequency	Average	Frequency	Average	Frequency	Average
Frequency						
1-3 times	56	3.86	56	3.86	56	3.86
4-6 times	9	4.08	9	4.08	9	4.08
7-9 times	4	3.78	4	3.78	4	3.78
More than 10 times	3	2.65	3	2.65	3	2.65
F	3.993		3.387		2.874	
p	0.011*		0.023*		0.042*	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15: Regression Analysis of H₁

Independent Variable	Dependent Variable	β	AR ²	P-value
Service Quality	Customer Satisfaction	0.877	0.766	0.000***

*P<0.05, **P<0.01, ***P<0.001

Table 16: Regression Analysis of H₂

Independent Variable	Dependent Variable	β	AR ²	P-value
Customer Satisfaction	Customer Loyalty	0.433	0.176	0.000***

*P<0.05, **P<0.01, ***P<0.001

Table 17: Regression Analysis of H₃

Independent Variable	Dependent Variable	β	AR ²	P-value
Service Quality	Customer Loyalty	0.357	0.115	0.002*

*P<0.05, **P<0.01, ***P<0.001

result, the β value was a positive value, and the P-value reached a level of significance. Therefore, service quality positively affects customer loyalty. In other words, service quality plays an important role in increasing customer loyalty, thereby supporting H₃.

The Moderating Effect of Airline Types

This study adopted corporate image as the moderate variable. Hypothesis four (H₄) in the study has established that corporate image mediates the effect of service quality on customer satisfaction. This study verified the influence through hierarchical regression analysis. As shown in Table 18, in Model 1, service quality was the independent variable; customer satisfaction was the dependent variable. The β value was 0.877 and the Adjusted- R² was 0.766, which indicates that the independent variable of this model could explain 76.6 % of the variance in the dependent variable. Furthermore, the P-value was significant because of 0.000 the P-value of (<0.001). In Model 2, airline type was added as a second independent variable. The β values were 0.869 and 0.018, both of which are positive values. The Adjusted- R² was 0.763, which indicates that the independent variable of this model could explain 76.3 % of the variance in the dependent variable. Furthermore, the P-value was 0.785. According to the analysis of the result, the β value is a positive value, but the P-value didn't reach a level of significance. Therefore, airline type moderates directly between service quality and customer satisfaction, but airline type does not moderate a significance between service quality and customer satisfaction, thereby supporting H₄.

Findings

The purpose of this study is to investigate the relationship of service quality, customer satisfaction and customer

Table 18: Hierarchical Regression Analysis of H₄

	Independent Variable	β	AR ²	P-value
1	Service Quality	0.877	0.766	0.000***
2	Service Quality	0.869	0.763	0.000***
	Airline Type	0.018		0.785

*P<0.05, **P<0.01, ***P<0.001

loyalty. This study also used airline type as moderating to investigate the impact on service quality and customer satisfaction. The conclusions and suggestions are meant to encourage the direction of research in the future.

a. Service Quality Affects Customer Satisfaction Positively

According to the research, service quality is a very important standard for a company because it directly affects customer satisfaction. Providing high quality of service brings high customer satisfaction and indirectly increases competitiveness among peers. The results of this study are consistent with previous research results. The results of the investigation are that the service quality has a significant impact on customer satisfaction. Lisch (2014) regarded that service providers should notice every factor rounding customers. By this reason, it can lead to higher customer satisfaction. Higher customer satisfaction achieves customer loyalty, and allows customers to buy products again, eventually, consolidating the quality of the brand. For the aviation industry, the quality of service is the most important criterion for evaluation. It can be said that it is an industry that depends on the quality of service. Therefore, the airline company should encourage employees to maintain the quality of service that is provided by employees at all times. To ensure that customer satisfaction is achieved, it is very important that the process can be more stable.

b. Customer Satisfaction Affects Customer Loyalty Positively

According to research, when customers have good satisfaction with a product, they will repurchase the same product or purchase the same brand of product and will even introduce it to others. Oliver (2014) regarded that satisfaction is a very critical factor for the customer because it contains the reasons that a customer is willing to repeat purchases and provide introductions to others. This achieves the result of making a profit. The results of this study are consistent with the previous research results. The result of this research is that customer satisfaction has a significant effect on loyalty. Various factors of satisfaction directly affect customer loyalty. When the satisfaction is higher, a higher percentage may make the customer ignore the dissatisfaction. For the aviation industry, the flight attendants should understand and realize the needs of the customers to achieve satisfaction. This will enable

the customers to have stable loyalty and introduce more people to become customers with a good reputation.

c. Service Quality Affects Customer Loyalty Positively

According to this study, good service quality will result in good customer loyalty. On the contrary, unsatisfactory service quality may cause customers not to purchase again, and it also enables customers to disseminate bad experiences. Marakanon and Panjakajornsak (2017) regarded that different levels of service quality will result in a relatively low degree of customer loyalty, and influence on behavior loyalty and attitude loyalty. The results of this study are consistent with the previous research results. The result of investigation shows that service quality has a significant impact on customer loyalty. Therefore, for obtaining long-term customer loyalty, service providers must ensure the quality of service quality at all times. It can also ensure that customers have a positive experience when sharing experiences with others. The most important point in the process of achieving loyalty is the experience of the customer being served for the first time. The first good experience is the most effective.

d. Airline Type Has a Moderating Effect Between Service Quality and Customer Satisfaction

Airline type can be divided into low-cost aviation and general aviation. The different types of aviation are derived from various aspects of airline business considerations and understanding of customer needs. Kim and Park (2017) refer that customers' demands for boarding an aircraft are different. The airline company has a corresponding aviation type to make passengers become customers. The results of this study are consistent with the previous research results. The result of investigation show that airline type has a moderating effect on service quality and customer satisfaction. Therefore, the airline type of service can provide customers with the most needed travel needs. It can achieve good customer satisfaction. Each customer has different requirements for travel. An airline company should examine their aviation capabilities and obtain customer satisfaction in the most effective ways possible without losing quality service and loyalty.

Theoretical and Practitioner Implications

China Airlines started with general aviation as its main business. After joining with Tigerair Taiwan, customers have more choices. According to the research results, customers who are between 41 and 50 years of age and are highly educated who average yearly flights of more than ten times have a higher demand for service quality. It follows that passengers between 41 and 50 years of age who are highly educated may need to travel more frequently. When they general aviation flights and low-cost aviation flight, they do not want to have different service qualities under different

airline types. Therefore, China Airlines should provide some service that are not included in the budget of low-cost airlines. When customers take low-cost aviation flight, they're no longer need to worry about the service quality. For customer satisfaction, people whose average yearly flights total more than ten times, they need a higher level of satisfaction. Compared with service quality, the impact of satisfaction is higher. It is suggested that customers with a high-frequency of boarding planes are more familiar with the flight process than those with lesser frequencies. They believe that airlines should provide a satisfactory boarding experience for customers. Because of the customer's own values, satisfaction has a clear correlation with the number of rides. Thus, China Airlines should have a better understanding and record of customers who were a high frequency of flights. For example, window seats or special needs for flyers who do not want to be disturbed is a place to start. Giving a good flight experience is closer to the passengers' needs. The results of this study on airline types shows that airline type is relevant to customers' occupations, especially for that customers who travel an average of 7 to 9 times per year. The results indicate this for customers who are public servants and passengers who travel at a high frequency every year. They influence differences in airline types. For the appointment, compared with other occupations, those who are public servants and often go aboard are in constant of income and time. When choosing an airline type, they must carefully assess the conditions and requirements for boarding. Therefore, China Airlines should provide special passenger boarding plans for public servants so that their choices and needs can be satisfied when they choose an airline.

a. Short-term strategies: China Airlines should be to cooperate with other tourism industry and provide more promotions.

China Airlines is a representative airline in Taiwan. The quality of the brand is high. Also, China Airlines have its own travel agency which is YesTrip. YesTrip has diverse travel plans for customers, but the main businesses are for China Airlines and some travel plans with China Airlines are not significant cheaper than other airlines. Therefore, the short-term strategy should be to cooperate with other tourism industry and provide more promotions for China Airlines. Through other tourism industries marketing plans, China Airlines can increase sales channels. China Airline can provide the most cost-effective travel plan for the tourism industry after assessment, making a new cross-industry alliance strategy.

b. Medium-term strategies: China Airlines should enhance Tiger Airlines Taiwan's reputation by unique Taiwan culture.

Medium-term strategies may make a difference between other aviation industries. Tiger Airlines Taiwan is currently

the only Taiwanese low-cost airline. There are not so many customers know the special of Tiger Airlines Taiwan. So, Tiger Airlines Taiwan should increase point-to-point routes or increase flight frequency, providing passengers with more travel plans. Also, using Taiwan culture to provide service. They can enjoy the culture of Taiwan only at Tiger Airliens Taiwan.

- c. Long-term strategies: China Airline should provide opportunities that customer can participate in charity activities.

For the long-term strategies, China Airlines already have a great performance for CSR. Because of the China Airlines is a representative airline in Taiwan, China Airlines can make more opportunities for customer who willing to join international charity activities. For example, China Airlines provides a travel plan to the country. The ticket price can be select for extra charge for charity activities. Join more charity activities can make more countries aware of China Airlines' brand, and also, promoting the brand in more countries. On the other hand, flight ticket is not only a flight ticket for customers who are willing to join the charity activities.

- d. Future expectations: China Airlines should offer more business strategies that contribute to customers.

China Airlines' airline types include general airline and low-cost aviation. By this research, China Airlines has an analysis result from passenger perspective, hopping the result will maximize the value of low-cost airlines and the quality of general airlines. For instance, making a record for frequency customers about their demands or habits of consumption. Providing discount or promotion for customers' who are first time to choose China Airlines or Tiger Airlines Taiwan. Furthermore, enabling China Airlines to develop more potential customers in the future, will increase stable loyalty from regular customers.

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