

PERSONALITY AND ITS AFFECT ON CONSUMER SATISFACTION AND  
LOYALTY: AN AIRLINE INDUSTRY PERSPECTIVE

by  
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## ABSTRACT

The objective of this study is to determine if personality has a significant impact on consumer satisfaction and loyalty. The airline industry in the United States is often characterized by volatility with inconsistent revenue and profits from pandemics, natural disasters, and competition. One way to improve profits is to increase consumer satisfaction and loyalty. This study explores how personality impacts satisfaction and loyalty in the United States airline industry. Data were collected through an online survey in 2018 through Amazon Mechanical Turk and linear regression was employed to analyze the data. Data were collected about sample demographics – the Big Five personality types, loyalty, satisfaction, service quality, and trust. The study found that personality influences satisfaction more than it influences loyalty. This research can be used to increase the understanding of consumer satisfaction and loyalty in the United States airline industry, laying the groundwork for future studies about the connections between personality, satisfaction, and loyalty.

Keywords: airlines, linear regression, loyalty, personality, satisfaction

## 1 INTRODUCTION

Ample literature exists analyzing consumer satisfaction and its effect on businesses. These studies show that high consumer satisfaction leads to success by generating profits through repeated business. Consumer satisfaction can be influenced by many things in the airline industry, including broad topics such as service quality, price, and image, and subcategories of those topics, such as leg room (Ostrowski et al., 1993). Additionally, many studies have been conducted about different personality types regarding the general population. The “Big Five,” is a widely accepted view that there are five distinct categories regarding personalities: extraversion, agreeableness, openness, conscientiousness, and neuroticism. Each trait is a continuum, and individuals can fall anywhere on the spectrum of each category.

In a few studies, the relationship between brand personality and consumer satisfaction has been analyzed. Such studies include analysis of denim jean brand personalities and customer loyalty (Su & Tong, 2016) and satisfaction and loyalty from shopping mall experiences (Kim et al., 2015). Even fewer studies evaluated how consumer personality affects satisfaction. One such study examined the role of consumer personality on loyalty and satisfaction in mobile services (Smith, 2020). This study found that customers who are higher on the agreeableness, neuroticism, and openness spectrums are more likely to be satisfied with their mobile services than other personality types. To the knowledge of this author, no such studies have been conducted in the U.S. airline industry. The goal of this study is to explore the Big Five Personality traits, as well as additional factors such as trust, service quality and their influence on consumer satisfaction and loyalty in the U.S. airline industry.

The research objective for this study is to answer the following two research questions:

*RQ1.* Does personality influence satisfaction in the U.S. airline industry?

*RQ2.* Does personality influence behavioral loyalty in the U.S. airline industry?

By studying and learning about these factors, U.S. airline companies can use their resources to ensure that their consumers are more satisfied and create enhancements in customer service, airline designs, and operations effectiveness, leading to higher consumer retention and profit margins. The remainder of the paper includes the literature review, research methodology, analysis and results, discussion, and conclusion.

## **2 LITERATURE REVIEW**

Previous relevant literature is discussed below to develop an understanding of pertinent topics. The sections cover, in order, personality, how personality impacts satisfaction and loyalty, the United States airline industry, and trust leading to satisfaction and loyalty. For a summation of the literature review, see the appendix.

### *2.1 Personality*

Until the general acceptance of the Big Five Model, the research field of personality was fragmented and unable to identify core personality traits (John et al., 2008). The Big Five Model traits are: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Earlier theories include Gordon Allport's list of 4,000 personality traits (1927), Raymond Cattell's 16 Personality Factors (1986), and Hans Eysenck's three-factor theory (1973). Many personality theorists felt Cattell's factors were too broad and

Eysenck's too narrow. Thus, the Big Five Theory was created. Each trait in the theory is broad enough to encompass most personality traits that people have but narrow enough that it can be applied to individuals. Similarly to the Big Five Model, the Five-Factor theory, solidified by McCrae and Costa (2003) offers a scale of the five personality factors of a continuum between two extremes where most people lie. Sârbescu and Boncu (2018) compared the Five-Factor Model to the Big Five Model to learn about similarities and differences between the two. They discovered that most personality studies use the same base factors, and those factors hold true across most studies. Therefore, the Five-Factor Theory Model and the Big Five Model can be used interchangeably.

Some have raised concerns about the ongoing use of the Big Five Model in so much academic research. Rosenström et al. (2017) studied the accuracy of the Big Five Model. The conclusion of the research was that the Big Five Model is still accurate and can be used in studies. However, Ones and Wiernik (2019) argue that the Big Five traits can be accurate, but there is intrinsic overlap between all of the categories because people are too dynamic and difficult to divide into strict types.

## 2.2 *Personality Impacting Satisfaction and Loyalty*

There is no universally agreed upon concept of satisfaction in literature, rather, there are various viewpoints. Halstead et al. (1994) defines satisfaction as the response resulting from a consumer's comparison of performance of product or service to a standard held by the consumer prior to sale. Kotler and Keller (2009) hold a similar definition of satisfaction: a person's feelings of happiness and pleasure or disappointment that result from the performance of a product or service aligning with their expectations. Cina (1990) states that satisfaction can occur when the customer's perceived experience either matches or exceeds



expectations (as cited in Ostrowski et al.,1993). In contrast, Mano and Oliver (1993) view satisfaction as the attitude change in the consumer during product use and post-consumption assessments. Satisfaction has been examined in many industries, such as the effect of service quality on satisfaction in the rideshare industry (Ziyad et al. 2020), showing that three of five service excellency factors studied significantly predicted satisfaction. Satisfaction of U.S. and Chinese tourists in restaurants (Jia, 2020) has also been studied, showing that cross-culturally U.S. tourists are more likely to give lower ratings on online platforms than Chinese tourists. According to Brakus et al. (2009), brand experience directly impacts both satisfaction and loyalty.

Often paired with satisfaction, loyalty is highly regarded by many businesses for good reason. Loyal consumers pay less attention to competing brands and advertising, are less price-sensitive, and create positive word of mouth (Desai & Mahajan, 1998). Additionally, building upon the definition of satisfaction provided by Cina (1990), Ostrowski et al. (1993) states that customer loyalty that leads to repeat business can occur only when the experience provided is “excellent,” a level that far usurps simply exceeding expectations.

A study by Seibert and Kraimer (2001) showed that of the Big Five personalities, extraversion had a high impact of career satisfaction and success, where workers who measured high on the neuroticism scale were less likely to be satisfied with their careers. Ciunova-Shuleska and Palamidovska-Sterjadovska (2019) studied the Macedonian banking industry with a focus on extraversion and neuroticism to find that extraversion has a significant impact on satisfaction while neuroticism has no direct impact. However, the study found that neuroticism indirectly negatively influences satisfaction when mediated by a negative effect. These two studies are from distinctly different industries, but there are many

other studies about satisfaction, loyalty, and personality. Using the implicit theory of personality, Huang and Wu (2020) study how personality can predict college satisfaction, concluding that college satisfaction can be predicted, though life satisfaction cannot. With such diverse and numerous studies completed in the personality and satisfaction sector, it can be reasonably assumed that personality has a significant impact on many aspects of life.

### 2.3 *Trust Leading to Satisfaction and Loyalty*

Similarly to satisfaction, trust does not have one agreed upon meaning. Trust has various definitions, generally stemming from past research in psychology and sociology (Pennington et al., 2003). Regardless of the definition, trust has been regarded as one of the most influential factors in business. Much research has studied trust and its effect on satisfaction and loyalty. Singh and Sirdeshmukh (2000) studied factors that influence loyalty and concluded that satisfaction, trust, and perceived value are the principal antecedents of loyalty overall. Akbar and Parvez (2009) agree, asserting that service quality and trust are two of the most important precursors to consumer loyalty. Furthermore, previous studies show that satisfaction is a strong indicator of loyalty. It is logical to assume that, because trust and satisfaction both lead to loyalty, they also have an influence on each other. The linear relationship between satisfaction and trust is debated, and there are valid arguments that support trust leading to satisfaction and vice versa. Beyari and Abareshi (2018) studied trust and satisfaction in the context of e-commerce. They concluded that the most impactful factor leading to satisfaction in the social commerce landscape was trust. Oliver (1980) also argues that trust directly influences satisfaction. However, this is not always true. Researchers studied the principal antecedents to passenger loyalty and interviewed passengers of two major airline companies in the Barcelona airport (Forgas et al., 2010).

They concluded that, while trust does play an important role in consumer loyalty in the airline industry, it is more influential relating to low-cost airlines than conventional ones. Forgas et al. (2010) also concluded that satisfaction is the principal precursor to trust, directly contradicting the view of trust that eOliver (1980) holds. Because studies have been conducted that find that trust influences satisfaction and vice versa, it is possible that they have a mutual influence on each other. For the purposes of this study, trust will be considered a direct influence on satisfaction.

#### 2.4 *The U.S. Airline Industry*

According to Hapsari et al. (2017), airlines should be receptive to consumer needs and preferences. High service quality is one of the key driving factors behind satisfaction and loyalty. Ostrowski et al. (1993) studied factors in selecting flights and service quality evaluation of flights from airline consumers. This study found that the way service quality is perceived in the airline industry is unique. Only one out of thirty respondents of the survey reported their service quality was “near excellent.” This consumer perception of less than excellent service leads to low levels of commitment and brand loyalty. Oftentimes airline consumers pursue flights with the lowest cost, regardless of brand reputation or their experience with that particular brand. Other studies of the U.S. airline industry concluded that there is a strong need for differentiation of product offerings between airline companies (Teichert et al., 2007). This product differentiation and consumer segmentation can lead to repeat business and more consumer loyalty with certain airline brands. Wongleedee (2016) argues that many factors have a positive influence on a consumer’s perception of service quality in airlines, but timeliness of service showed the highest influence on consumer satisfaction. Utilizing this, it can be assumed that if timeliness of service is increased,

consumer satisfaction will also increase. Wongleedee (2016) also concluded that the personality of the service provider and satisfaction of service were second and third most influential on passenger perception of service quality. As it has been shown that passenger satisfaction is positively correlated with service quality in the U.S. airline industry (Khudhair et al., 2019), high service quality will always increase consumer satisfaction, though this is difficult to obtain because of consumer sensitivity to price variations. Though there have been countless studies on consumer satisfaction in relation to service quality in the airline industry worldwide, there are far fewer studies on various other factors relating to satisfaction, and no studies analyzing the effects of personality on satisfaction and loyalty in the industry. Overall, the U.S. airline industry is diverse in consumer needs, especially considering there are different factors of in-flight service quality leading to satisfaction that are important (An & Noh, 2009). Though satisfaction is attainable in the airline industry, there are very low levels of consumer loyalty to airline brands.

### **3 RESEARCH METHODOLOGY**

#### *3.1 Survey Design and Data Collection*

Table 1 shows all factors, both independent and dependent, and previous studies that validate the terms used. Additionally, it shows a description of what each variable means for the purpose of this study. To investigate the effect that the Big Five personality types have on consumer satisfaction and loyalty, a survey was conducted among airline passengers. The 39-item questionnaire was developed for the context of the study, measuring variables including but not limited to satisfaction, service quality, loyalty, and five personality traits: extraversion, openness, agreeableness, neuroticism, and conscientiousness. Also surveyed

were categorical variables including, but not limited to, gender, birth year, income, level of education, and employment status.

**Table 1. Construct descriptions.**

<b>Term</b>	<b>Description</b>	<b>Source</b>
Neuroticism (NE)	Contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense.	John et al. (2008)
Extraversion (EXTR)	Implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality.	John et al. (2008)
Openness (OPEN)	Describes the breadth, depth, originality, and complexity of an individual's mental and experiential life.	John et al. (2008)
Agreeableness (AGREE)	Contrasts a prosocial and communal orientation toward others with antagonism and includes traits such as altruism, tendermindedness, trust, and modesty.	John et al. (2008)
Conscientiousness (CON)	Describes social prescribed impulse control that facilitates task and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks.	John et al. (2008)
Satisfaction (SAT)	The response resulting from a consumer's comparison of performance of product or service to a standard held by the consumer prior to sale.	Halstead et al. (1994)
Service Quality (SQ)	The expectations of customers from a service offering, the perception of the customers after receiving the service, and their eventual satisfaction and loyalty to the service provider.	Hasan et al. (2019)
Trust (TRU)	One party's willingness to depend on another party with a feeling of relative security even though negative consequences are possible.	Pennington et al. (2003)
Behavioral Intention (BI)	Consumers recognize one brand is better than other alternatives and form preferences based upon their evaluations of service quality.	Khan (2013)
Commitment (COMM)	A brand-specific commitment to repurchase is generated and the intention to return is formed.	Khan (2013)

At the time of the survey, respondents must have flown at least one commercial airline flight in the previous 12 months, be at least 18 years old, live in the United States, and

complete the survey from within the United States in order to have their responses considered within the data set. The continuous variables mentioned are measured on a five-point semantic Likert scale according to the following statements: 1 = “Strongly Disagree” and 5 = “Strongly Agree.” The survey items developed were constructed as closely as possible to items from previous studies that have been previously validated. Respondents were informed that the survey was anonymous, and they were asked to provide honest answers.

Data were collected in 2018 through Amazon Mechanical Turk (MTurk). MTurk is a data collection method that provides large samples of participants at a low cost. MTurk allows for elimination of response bias because of its anonymous responses and the researcher can offer a monetary incentive for completion of the survey. It has been shown that MTurk participants are just as representative of the population as traditional survey methods with gender, education, and birth year all being sufficiently represented and matching the population more closely than other types of samples, such as undergraduate or internet samples (Buhrmester et al., 2011).

In total, 708 responses were collected. After screening for responses that didn't fit the aforementioned parameters including age, completion of the survey from outside the United States, incomplete responses, and responses from the same IP address, 624 observations remained. To incentivize completion of the survey, lessen duplicates, and ensure the survey was completed by respondents from inside the United States, 1.00 USD was offered for completion. Respondents were notified that in order to receive payment the survey must be completed in full, it must be from a unique (non-duplicate) IP address, and it must be taken from inside the United States.

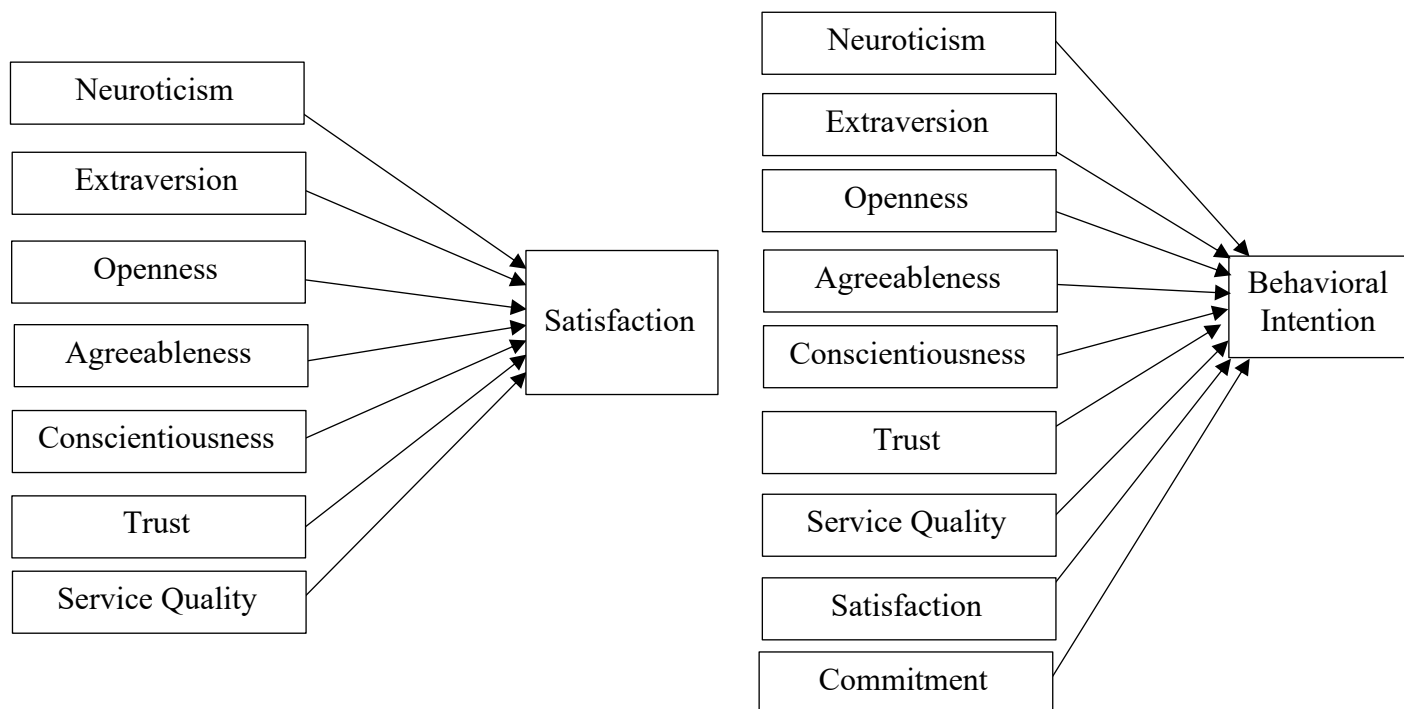
### 3.2 OLS Regression Models

Given the research questions previously mentioned, ordinary least squares (OLS) regression models were developed to analyze the data, leading to influential factors in studying satisfaction and behavioral loyalty. The models are as follows, with SAT=satisfaction; NE=neuroticism; EXTR=extraversion; OPEN=openness; AGREE=agreeableness; CON=conscientiousness; TRU=trust; SQ=service quality; BI=behavioral intention loyalty; and COMM=commitment loyalty:

$$SAT = \alpha_0 + \alpha_1 NE + \alpha_2 EXTR + \alpha_3 OPEN + \alpha_4 AGREE + \alpha_5 CON + \alpha_6 TRU + \alpha_7 SQ + \alpha_8 Gender + \alpha_9 YearBorn + \alpha_{10} Income + \varepsilon$$

$$BI = \beta_0 + \beta_1 NE + \beta_2 EXTR + \beta_3 OPEN + \beta_4 AGREE + \beta_5 CON + \beta_6 TRU + \beta_7 SQ + \beta_8 SAT + \beta_9 COMM + \beta_{10} Gender + \beta_{11} YearBorn + \beta_{12} Income + \varepsilon$$

Additionally, conceptual research models were developed to illustrate the regression models and research questions. These conceptual research models are shown in Figure 1.



**Figure 1. Conceptual Research Models.**

While satisfaction is a dependent variable in the first regression model, it is characterized as an independent variable in the second model in which behavioral intention is the dependent variable. This is because satisfaction has a significant influence on loyalty (Ostrowski et al. (1993).

A description of the coding for all categorical variables used in the analysis is shown in Table 2. The coding displays how dummy variables in the regression analysis were coded. The variable coded as “0,” is the base variable, and was the one in which the most data points fell.

**Table 2. Coding of Categorical Variables.**

<b>Variable</b>	<b>Options</b>	<b>Coding</b>
Gender	Female	0
	Male	1
Birth Year	1988 - 2000	0
	1968 - 1987	1
	1946 - 1967	2
Income	Less than \$25,000	1
	\$25,001 - \$45,000	2
	\$45,001 - \$65,000	3
	\$65,001 - \$100,000	0
	Greater than \$100,001	4

### 3.3 *Regression Model Evaluation*

The two regression models were developed to determine the impact of the independent variables on the two dependent variables, satisfaction and behavioral intention loyalty. It is important to note that satisfaction is a dependent variable in the SAT regression model but an independent variable in the BI regression model. Categorical variables included in the models are gender, birth year, and income. The models were developed based on previous studies that define the independent and dependent variables (Table 1). The BI model includes conative commitment loyalty since it has been shown to be a factor of BI loyalty



(Oliver, 1999). Before analyzing the data, data were examined for regression diagnostic assumptions to ensure the data are adequate. The assumptions tested include the following: linearity, homogeneity of variance (homoscedasticity), normality, multicollinearity, and unusual or influential data.

According to the UCLA: Statistical Consulting Group (n.d.), it is imperative that independence and linearity are not violated, while it is not crucial that homoscedasticity and normality assumptions are confirmed. With that in mind, linearity was tested first. Each dependent variable was measured for linearity against each independent variable. A scatterplot of the standardized predicted values was obtained against the standardized residuals. Within the scatterplot, a Loess fit line was applied and, using the curve, the relationship of standardized predicted to residuals was roughly linear, around zero. After observing the plots, it was shown that a majority of the dots were centered around zero, satisfying the linearity assumption. Next, in order to test homoscedasticity, another graph was created that plotted the regression standardized predicted value against the residuals. This graph showed that the variance around zero is scattered uniformly and randomly. The result, no pattern in the homogeneity graph, means the homogeneity of variance assumption is satisfied. The third assumption is the normality of residuals. This assumption must be met in order for the  $p$ -tests of linear regression to be valid. Q-Q (quantile-quantile) plots were created, and the data fit the line. Additionally, the absolute value for skewness was less than one and kurtosis was less than two for all variables except satisfaction. Using a visual test of the Q-Q plots plus the factors listed above, the normality assumption was verified. In order to test multicollinearity, the variance inflation factor (VIF) was used. A VIF over ten is generally considered problematic. In the satisfaction model, none of the VIFs exceeded three.

In the BI model, none of the VIFs exceeded four, indicating low multicollinearity for both models. Finally, influential data was tested. Each model, SAT and BI, were tested using Cook's Distance (Cook's D). The higher the Cook's D, the more influential the data point. Both equations had a Cook's D close to zero, indicating that no data points were significantly influential. With all linear regression assumptions satisfied and no influential data points present, the analysis was then conducted.

## **4 ANALYSIS AND RESULTS**

### *4.1 Descriptive Statistics*

The descriptive statistics for the categorical variables are summarized in Table 3 and the descriptive statistics for the continuous variables are summarized in Table 4. The demographics are as follows: (1) there are fewer females (43.9%) than males (56.1%); (2) respondents born between 1988 and 2000 comprised 38.8% of the sample; (3) the income category with the greatest number of respondents shows an annual income ranging from \$65,001 to \$100,000 (24.7%); (4) a strong majority of respondents flew in economy (84.6%); (5) leisure was the top reason for flying (83.5%); (6) the educational level of the sample is primarily categorized by a four-year college degree (45.8%); and a majority of respondents were employed at the time of the survey (88.8%).

### *4.2 Factor Analysis*

An exploratory factor analysis was conducted to ensure that each item was within the parameters of that construct and to reduce the number of variables. Factor analysis was completed using all of the continuous variables in the study, ensuring that there was no overlap between construct items. Yong & Pearce (2013) discuss two methods for deciding what variables to keep. One of these methods is retaining all factors that are above the

**Table 3. Descriptive Statistics of Categorical Variables.**

<b>Variable</b>	<b>Options</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Female*	274	43.9
	Male	350	56.1
Birth Year	1988 – 2000*	242	38.8
	1968 - 1987	234	37.6
	1946 - 1967	148	23.6
Annual Income	Less than \$25,000	79	12.7
	\$25,001 - \$45,000	144	23.1
	\$45,001 - \$65,000	138	22.1
	\$65,001 - \$100,000*	154	24.7
	Greater than \$100,001	109	17.5
Seat Class	First Class	26	4.2
	Business Class	70	11.2
	Economy Class	528	84.6
Reason for Flying	Business	103	16.5
	Leisure	521	83.5
Education	Less than high school	2	0.30
	High school graduate	71	11.4
	Some college	185	29.6
	Four-year college degree	286	45.8
	Graduate or professional degree	80	12.8
Employment Status	Employed	554	88.8
	Unemployed	61	5.10
	Retired	9	1.40

*Note:* \* is reference category; n=624

**Table 4. Descriptive Statistics of Continuous Variables.**

<b>Construct</b>	<b>Mean</b>	<b>SD</b>	<b>CA</b>	<b>CR</b>	<b>AVE</b>
NE	2.6388	1.17052	0.933	0.933	0.735
EXTR	3.0654	1.09214	0.905	0.897	0.635
OPEN	4.0135	0.77626	0.879	0.889	0.616
AGREE	3.9290	0.79846	0.842	0.834	0.501
CON	4.0446	0.74135	0.885	0.878	0.590
TRU	3.7881	0.92324	0.933	0.882	0.652
SAT*	3.7881	0.92324	0.919	0.864	0.680
SQ	3.6111	1.03347	0.933	0.850	0.653
BI*	3.9307	0.90350	0.913	0.856	0.597
COMM	3.2179	1.13096	0.901	0.800	0.500

*Notes:* SD=Standard Deviation; CA=Cronbach's  $\alpha$ ; CR=Composite reliability; AVE=Average Variance Extracted; n=624; \*=dependent variable

eigenvalue of 1 (Kaiser, 1960), while Jolliffe (1986) suggests retaining factors above 0.70. Both of these methods were employed in the dimension reduction.

Table 5 shows the factor analysis results for the personality constructs used in the study. Each item for each construct is shown, along with the loading, mean, and standard deviation of each question. Two personality items from the trait of agreeableness were shown to have a loading  $< 0.70$  and were therefore omitted from the analysis. The factor analysis for all non-personality continuous variables is compiled in Table 6. Two commitment loyalty items were shown to have a loading  $< 0.70$  and were therefore omitted from the analysis.

**Table 5. Factor Analysis of Personality Constructs.**

<b>Constructs and item</b>	<b>Loading</b>	<b>Mean</b>	<b>SD</b>
<i>Neuroticism</i>			
1 I get stressed out easily	0.870	2.69	1.327
2 I worry about things	0.844	3.07	1.374
3 I fear for the worst	0.867	2.57	1.334
4 I am filled with doubts about things	0.878	2.60	1.319
5 I panic easily	0.826	2.25	1.231
<i>Extraversion</i>			
1 I talk a lot to different people at parties	0.869	2.87	1.337
2 I feel comfortable around people	0.751	3.35	1.238
3 I start conversations	0.845	3.23	1.291
4 I make friends easily	0.736	3.15	1.240
5 I don't mind being the center of attention	0.775	2.72	1.309
<i>Openness</i>			
1 I get excited by new ideas	0.780	3.97	0.888
2 I enjoy thinking about things	0.813	4.06	0.916
3 I enjoy hearing new ideas	0.788	4.10	0.901
4 I enjoy looking for a deeper meaning in things	0.784	3.96	0.993
5 I have a vivid imagination	0.756	3.99	1.036
<i>Agreeableness</i>			
1 I sympathize with others' feelings	0.725	4.07	0.902
2 I am concerned about others	0.723	4.04	0.940
3 I respect others*	0.649	4.25	0.879
4 I believe that others have good intentions	0.754	3.68	1.004
5 I trust what people say*	0.685	3.46	1.058

*Conscientiousness*

1 I carry out my plans	0.713	4.05	0.873
2 I pay attention to details	0.770	4.28	0.825
3 I am always prepared	0.743	3.84	0.992
4 I make plans and stick to them	0.803	3.98	0.917
5 I am exacting in my work	0.807	4.06	0.874

Note: \*=Item excluded from analysis

**Table 6. Factor Analysis on Non-Personality Constructs**

<b>Constructs and items</b>	<b>Loading</b>	<b>Mean</b>	<b>SD</b>
<i>Trust</i>			
1 The airline is trustworthy	0.842	3.98	0.921
2 The airline is always honest and truthful to its customers	0.792	3.74	1.010
3 The airline has high integrity	0.819	3.77	1.029
4 Overall the airline can be trusted completely	0.776	3.65	1.083
<i>Satisfaction</i>			
1 My choice to use this airline was a wise one	0.824	3.96	0.933
2 I am satisfied with my overall experience with this airline	0.832	4.07	0.948
3 My expectations of service with this airline had been met	0.818	4.06	0.918
<i>Service Quality</i>			
1 I would say that this airline provided superior service	0.778	3.49	1.113
2 I believe that this airline offered excellent service	0.831	3.65	1.103
3 This airline provided high-quality service	0.815	3.70	1.087
<i>Behavioral Intention Loyalty</i>			
1 I intend to fly this airline again	0.763	4.13	0.925
2 I will speak favorably about this airline to others	0.783	3.81	1.083
3 I will recommend this airline to my relatives and friends	0.783	3.77	1.102
4 I will use this airline for flights to other destinations	0.762	4.01	0.946
<i>Conative Commitment Loyalty</i>			
1 If I have to choose among airline brands, this airline is my first choice*	0.698	3.46	1.163
2 I prefer to fly with this airline as opposed to competitors	0.711	3.42	1.214
3 I would be willing to pay a higher price for this airline over other airlines*	0.664	2.59	1.245
4 I would prefer this airline even if another airline provides the same quality service	0.750	3.02	1.206

Note: \*=Item excluded from analysis

### 4.3 Results

The analysis was conducted in steps to analyze the change between variables. The SAT model had three steps. The first step included the categorical variables birth year, income, and gender. Step two included trust and service quality and step three included all personality constructs. The BI model had four steps. Similarly to the SAT model, the first step was all the categorical variables. Step two added commitment loyalty. Step three added trust, service quality, and satisfaction. Step four included all the personality constructs.

The results for the SAT model are displayed in Table 7. The categorical variables mentioned below refer to the coding of such variables in Table 1. The overall regression results show the significant factors as birth year 2 ( $\alpha_9 = 0.102, p < 0.001$ ), income 1 ( $\alpha_{10} = -0.053, p < 0.10$ ), TRU ( $\alpha_6 = 0.350, p < 0.001$ ), SQ ( $\alpha_7 = 0.420, p < 0.001$ ), EXTR ( $\alpha_2 = -0.070, p < 0.05$ ), OPEN ( $\alpha_3 = 0.095, p < 0.001$ ), and AGREE ( $\alpha_4 = 0.093, p < 0.05$ ). That is, six variables were major factors in influencing satisfaction: birth year 2, trust, service quality, openness, agreeableness, and extraversion. Another significant variable includes income 1, though this variable had a  $p$ -value of 0.063.

The BI model results are displayed in Table 8. The overall regression results show the significant factors as gender 1 ( $\beta_{10} = -0.041, p < 0.10$ ), COMM ( $\beta_9 = 0.259, p < 0.001$ ), SAT ( $\beta_8 = 0.347, p < 0.001$ ), TRU ( $\beta_6 = 0.224, p < 0.001$ ), and SQ ( $\beta_7 = 0.144, p < 0.001$ ). That is, four variables were major factors in influencing behavioral intention loyalty: commitment loyalty, satisfaction, trust, and service quality. Another significant variable includes gender 1, though this variable had a  $p$ -value of 0.053. None of the personality traits examined were significant in influencing behavioral intention loyalty.

Table 7. OLS Regression Results – Satisfaction Model

Variables	Step 1				Step 2				Step 3							
	Unstd. coeff.	Std. Coeff.	Sig.	b	Unstd. coeff.	Std. coeff.	Sig.	b	Unstd. coeff.	Std. coeff.	Sig.	b	Unstd. coeff.	Std. coeff.	Sig.	
Gender																
1	-0.184	0.069	0.008**	-0.076	0.043	0.043	0.082*	-0.017	0.044	0.044	0.082*	-0.017	0.044	-0.010	0.044	0.701
Birth Year																
1	0.055	0.079	0.483	0.074	0.050	0.050	0.136	0.062	0.049	0.049	0.136	0.062	0.049	0.035	0.049	0.206
2	0.285	0.091	0.002**	0.218	0.057	0.057	0.000***	0.207	0.056	0.056	0.000***	0.207	0.056	0.102	0.056	0.000***
Income																
1	-0.271	0.119	0.023**	-0.105	0.075	0.075	0.161	-0.139	0.075	0.075	0.161	-0.139	0.075	-0.053	0.075	0.063*
2	-0.205	0.099	0.038**	-0.086	0.062	0.062	0.168	-0.086	0.061	0.061	0.168	-0.086	0.061	-0.042	0.061	0.157
3	-0.019	0.100	0.851	0.007	0.063	0.063	0.915	0.000	0.061	0.061	0.915	0.000	0.061	0.000	0.061	0.996
4	-0.026	0.107	0.806	0.013	0.067	0.067	0.849	0.005	0.065	0.065	0.849	0.005	0.065	0.002	0.065	0.933
TRU																
				0.363	0.037	0.037	0.000***	0.328	0.038	0.038	0.000***	0.328	0.038	0.350	0.038	0.000***
SQ				0.357	0.033	0.033	0.000***	0.351	0.032	0.032	0.000***	0.351	0.032	0.420	0.032	0.000***
NE								0.019	0.021	0.021		0.019	0.021	0.025	0.021	0.379
EXTR								-0.055	0.023	0.023		-0.055	0.023	-0.070	0.023	0.018**
OPEN								0.106	0.032	0.032		0.106	0.032	0.095	0.032	0.001*
AGREE								0.101	0.032	0.032		0.101	0.032	0.093	0.032	0.002**
CON								0.051	0.035	0.035		0.051	0.035	0.043	0.035	0.144
Adj. R <sup>2</sup>														0.622		0.645
ΔR <sup>2</sup>														0.585		0.023

Notes: p<0.10\*; p<0.05\*\*; p<0.001\*\*\*; Reference variables: Female, 1988-2000, \$65,001-\$100,000 (See Table 1)

Table 8. OLS Regression Results – BI Model

Variables	Step 1					Step 2					Step 3					Step 4					
	Unstd. coeff.	Std. Coeff.	$\beta$	Sig.	b	Unstd. coeff.	Std. Coeff.	$\beta$	Sig.	b	Unstd. coeff.	Std. Coeff.	$\beta$	Sig.	b	Unstd. coeff.	Std. Coeff.	$\beta$	Sig.		
	b	SE	$\beta$	Sig.	b	SE	$\beta$	Sig.	b	SE	$\beta$	Sig.	b	SE	$\beta$	Sig.	b	SE	$\beta$	Sig.	
Gender																					
1	-0.247	0.072	-0.136	0.001***	-0.120	0.054	-0.066	0.027**	-0.075	0.037	-0.041	0.041**	-0.074	0.038	-0.041	0.053*					
Birth Year																					
1	0.023	0.082	0.012	0.784	0.072	0.062	0.039	0.243	0.034	0.042	0.018	0.415	0.028	0.042	0.015	0.505					
2	0.243	0.095	0.114	0.011**	0.206	0.071	0.097	0.004**	0.084	0.048	0.039	0.085*	0.069	0.049	0.032	0.160					
Income																					
1	-0.299	0.124	-0.110	0.016**	-0.075	0.093	-0.028	0.421	-0.031	0.063	-0.011	0.628	-0.014	0.065	-0.005	0.829					
2	-0.214	0.103	-0.100	0.039**	-0.087	0.078	-0.040	0.263	-0.023	0.052	-0.011	0.657	-0.010	0.053	-0.005	0.852					
3	-0.028	0.104	-0.013	0.791	0.042	0.078	0.019	0.588	0.023	0.053	0.010	0.665	0.028	0.053	0.013	0.603					
4	-0.040	0.112	-0.017	0.722	-0.071	0.084	-0.030	0.396	-0.019	0.056	-0.008	0.740	-0.020	0.056	-0.009	0.718					
COMM																					
					0.525	0.024	0.657	0.000***	0.203	0.020	0.254	0.000***	0.207	0.020	0.259	0.000***					
SAT									0.382	0.034	0.366	0.000***	0.363	0.035	0.347	0.000***					
TRU									0.232	0.034	0.237	0.000***	0.219	0.035	0.224	0.000***					
SQ									0.122	0.032	0.140	0.000***	0.126	0.032	0.144	0.000***					
NE													-0.015	0.018	-0.020	0.404					
EXTR													0.008	0.020	-0.010	0.691					
OPEN													0.032	0.028	0.027	0.255					
AGREE													0.043	0.028	0.038	0.122					
CON													0.001	0.030	0.001	0.975					
Adj. R <sup>2</sup>			0.040				0.460				0.756				0.757						
$\Delta R^2$							0.420				0.296				0.001						

Notes: p<0.10\*; p<0.05\*\*; p<0.001\*\*\*; Reference variables: Female, 1988-2000, \$65,001-\$100,000 (See Table 1)



## 5 DISCUSSION

There is little existing literature about factors that affect consumer satisfaction in airlines beyond literature that primarily discusses service quality. While it is clear that service quality has a significant impact on both satisfaction and loyalty, there are very few studies that show other significant factors. Of those studies, there are none that examine personality and its effect on satisfaction and loyalty in the U.S. airline industry.

In terms of consumer demographics, those who have an annual income of \$25,000 or less are less satisfied than those who make between \$65,001 and \$100,000, all else remaining constant. One of the possible reasons for this can be attributed to low willingness to fly for budgetary reasons such as taking time off from work and flights being relatively expensive compared to other modes of transportation. Additionally, those with a lower annual income may have less flying involvement and therefore, be inherently less satisfied with their airline experience. Another demographic that is shown to be a highly significant predictor of satisfaction is birth year: those born between 1946 and 1967 are more likely to report being satisfied than those born between 1988 and 2000. This generation is often known as “baby boomers.” Although baby boomers are known as difficult customers (Cohn & Taylor, 2010), it is possible that baby boomers are more satisfied with today’s travel landscape because they remember the commercialization of planes and the increased ease of travel airline transportation provides.

As expected, service quality and trust were found to be positive and statistically significant. The effect of service quality and trust on satisfaction have been studied extensively in various industries worldwide. This study reveals that three of the five personality traits examined (agreeableness, extraversion, and openness) have an impact on

consumer satisfaction. Therefore, the results of this study show the answer to *RQ1*. – “*Does personality influence satisfaction?*”. Openness and agreeableness both have positive coefficients, showing that those who measure higher on the openness and agreeableness continuums will be more satisfied. Because those with a high level of openness enjoy trying new experiences, they would intrinsically be more satisfied with a potential new airline experience or a new place to travel. Additionally, those who measure high on levels of agreeableness are often perceived as considerate, kind, and understanding. Again, it is sensible that those who consider themselves understanding people would be more satisfied: it can be assumed that they forgive mistakes or mishaps during service more easily.

Unlike agreeableness and openness, extraversion was found to have a negative effect. Those who measure higher on the extraversion continuum are less likely to be satisfied with their airline experience. The reason for this may be twofold: first, extraverts are known for being sociable, assertive, and positive. On an airline flight with little room for physical movement and socialization, extraverts may be forced to be less sociable and therefore less satisfied. Second, there are often problems in airports such as gate changes, delays, and baggage issues. If customer service is not satisfactory and not able to help with such issues in a pleasant and beneficial manner, extraverts who require positive reinforcement from their environment may feel unsatisfied with not just the customer service but the airline experience as a whole.

While personality is shown to have a significant impact on consumer satisfaction, the behavioral intention loyalty model has no significant personality factors. The loyalty model only has one statistically significant categorical variable, gender. The result shows that men are less likely to be loyal to airlines than women. Melnyk et al. (2009) studied loyalty

differences between genders and concluded that women are more likely to be loyal to individuals while men are more likely to be loyal to a group. It is possible that, of the women surveyed, many have had positive experiences with individual service workers of a certain airline and, by extension, feel loyalty to that airline through their positive experiences with an individual. It is also possible that men are less likely to view airlines as a group and therefore are less loyal to them.

Other significant factors that affect behavioral intention loyalty include trust, service quality, satisfaction, and commitment. This comes as no surprise as commitment is a subset of behavioral loyalty and directly factors into it. Additionally, trust, service quality, and satisfaction have been studied and proven to have a direct impact on loyalty (Akbar & Parvez, 2009; Singh and Sirdeshmukh, 2000).

The implications of this study are advantageous to airline companies. Since satisfaction directly impacts loyalty and satisfied consumers are more likely to spread positive word of mouth (Ranaweera & Prabhu, 2003), this study identifies ways that airline companies can segment and target consumers to influence satisfaction through identification of consumer personality types. This can also lead to higher consumer retention and profit margins. U.S. airline companies can employ these findings to more effectively utilize resources to create enhancements in customer service, airline designs, operations improvements, and streamline their strategies.

## **6 CONCLUSION**

This study investigated factors that have an impact on consumer satisfaction and loyalty in the U.S. airline industry with a focus on the Big Five Model of personality traits. Overall, satisfaction in the U.S. airline industry is not high. The analysis revealed that

satisfaction is influenced by different personality traits, whereas behavioral intention loyalty is not significantly impacted by those traits. Service quality and trust were found to be significant in both the satisfaction and loyalty models. Further demographics, such as birth year, annual income, and gender, were found to have an impact on the dependent variables. Birth year and annual income affected satisfaction and gender influenced behavioral intention loyalty. In summary, airlines in the U.S. have many opportunities to utilize personality information to increase satisfaction. Though personality does not influence behavioral loyalty, airlines still have the opportunity to use trust, service quality, and commitment to increase behavioral loyalty levels. In addition, this finding implies that airlines can focus on improving trust, service quality, and commitment without heavily considering personality of consumers, which are uncontrollable factors from the perspective of airlines.

While this study uncovered that the personality of individual consumers does influence satisfaction, future research can investigate how to use psychology or other various airline factors to influence consumer satisfaction. Future research could explore the different types of loyalty in-depth and then analyze how psychology can have an impact on loyalty, as well as studying what factors in particular increase satisfaction among different personality types.

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## 8.0 APPENDIX

<b>Author Name &amp; Date</b>	<b>Title</b>	<b>Factors Studied</b>	<b>Methodology</b>	<b>What was significant</b>
Ostrowski et al., 1993	Service Quality and Customer Loyalty in the Commercial Airline Industry	Factors in selecting flight, service quality evaluation of flight, carrier image, retained preference	A continuous survey of U.S. airline passengers in 35 of the largest U.S. airports. Self-administered questionnaire	Perceived service quality differences exist in the commercial airline industry. Low perceptions of excellence lead to low levels of loyalty.
John et al., 2008	Paradigm Shift to the Integrative Big-Five Trait Taxonomy: History, Measurement, and Conceptual Issues	Personality dimensions, Big Five Model	Summarize findings from a large data set of self-reports on measures of three personality tests from a sample of undergraduates in California	Offers a detailed review of the most available research of personality types and evaluations. Also shows how influential the Big Five Model is.
Allport, 1927	Concepts of trait and personality	Personality concepts	No data were collected	There are five procedures for recognizing personality, ranging from recognizing the trait to the admission of values.
Cattell, 1986	The 16PF personality structure and Dr. Eysenck	Personality structure, sphere of behaviors	No data were collected, rather, data from several previous studies was analyzed	The 16 PF personality structure, though it has received criticism, has overwhelming evidence that it is a replicable and reliable personality structure.
Eysenck, 1991	Dimensions of personality: 16, 5, or 3?	Personality models, 16PF, PEN theory, Big Five Theory	No data were collected, rather, data from several previous studies was analyzed	The 16PF model is too broad and not replicable, and not enough is known about openness, agreeableness, and conscientiousness to validate the Big Five Theory. The PEN model is the most accurate personality theory.
McCrae & Costa, 2003	Personality in adulthood: A five-factor theory perspective	Five Factor Theory, Big Five Model	No data were collected, rather, data from several previous studies was analyzed	The Five Factor Theory is widely accepted as an adequate classification of personality traits and contains the following five factors: neuroticism, extraversion, openness, agreeableness, and conscientiousness.
Sârbescu & Boncu, 2018	The resilient, the restraint and the restless: Personality types based on the Alternative Five-Factor Model	Alternative Five-Factor Model	Data collected from two samples and more than 1,000 participants drawn from the general population.	The Five-Factor Model was compared to the Big 5 Model to see similarities and differences. Most personality studies use the same base factors, and they hold true across most studies.
Rosenström et al., 2017	A Parsimonious Explanation of the	Personality types, five-factor	Estimates were made from a meta-analysis of	The Big Five Model is still applicable and encompasses the

	Resilient, Under controlled, and Overcontrolled Personality Types	inventory, clustering, RUO (resilient, under controlled, overcontrolled) personality types	212 studies and 144,117 individuals	scope of personality accurately. RUO prototypes are subsets of the Big Five traits.
Ones & Wiernik, 2019	On “New” Personality Types: An Industrial, Work, and Organizational Psychology Perspective	Conscientiousness, industrial psychology	Unsupervised machine learning clustering method	The Big 5 Personality traits can be accurate, but personalities are difficult to divide into “types” with little to no overlap.
Halstead et al., 1994	Multisource Effects on the Satisfaction Formation Process	Satisfaction, business alumni	A model was formed and tested among alumni of Eastern undergraduate business schools	Satisfaction is the response resulting from a consumer’s comparison of performance to prior standards. Use of performance constructs in satisfaction models may lead to incomplete understandings.
Kotler & Keller, 2009	Marketing Management, 13th Edition	Creating customer value, satisfaction, and loyalty	No data were collected	Satisfaction is a person’s feelings of happiness and pleasure or disappointment that result from the performance of a product or service aligning with their expectations.
Cina, 1990	Five Steps to Service Excellence	Service excellence satisfaction, five step plan, customer needs	No data were collected	Satisfaction occurs when consumer expectations are met or exceeded.
Mano and Oliver, 1993	Assessing the Dimensionality and Structure of the Consumption Experience: Evaluation, Feeling, and Satisfaction	Product satisfaction, affect	Business graduates at a midwestern university were given a questionnaire	Satisfaction is the attitude change in the consumer during and after product use.
Ziyad et al., 2020	Influence of Service Excellence on Consumer Satisfaction of Ridesharing Industry	Service quality, satisfaction, ridesharing	Questionnaire-based surveys were carried out by users of two rideshare companies	Out of five service excellency factors, three (assurance, empathy, and responsiveness), were significant predictors of satisfaction.
Jia, 2020	Motivation and satisfaction of Chinese and US tourists in restaurants: A cross-cultural text mining of online reviews	Satisfaction, restaurant, cross-culture, online reviews, tourism	Reviews were collected from dianping.com and yelp.com	U.S. tourists are more likely to give lower ratings than Chinese tourists.
Brakus et al., 2009	Brand Experience: What Is It? How Is It Measured? Does It Affect Loyalty?	Brand experience, marketing, customer	Graduate-level business students were asked to describe an experience	Brand experience directly impacts satisfaction and loyalty. The pattern of extended experiences can also affect how experiences

		experience management	with a brand of their choice	are evaluated by consumers overall.
Desai and Mahajan, 1998	Strategic role of affect-based attitudes in the acquisition, development, and retention of customers	Customer loyalty	No data were collected, but further research can be done based on this study	Consumers are consistently evolving, and companies should focus on retaining their business. Retained customers pay less attention to competing brands, are less price-sensitive, and create favorable word of mouth.
Seibert and Kraimer, 2001	The Five-Factor Model of Personality and Career Success	Big Five Theory, career success	About 500 employees from a diverse set of occupations and organizations were surveyed	Those who measured high on the extraversion scale had a high impact of career success, while those who measured high on the neuroticism scale were less likely to be satisfied with their careers.
Ciunova-Shuleska and Palamidovska-Sterjadovska, 2019	Model of satisfaction involving affect and personality traits	Big 5 Personality traits, heavy focus on neuroticism and extraversion, satisfaction, Macedonia	Questionnaires for data collection.	In the Macedonian banking industry, this study found that extraversion has a direct effect on satisfaction, while neuroticism has no direct impact, but it indirectly negatively influences satisfaction when mediated by a negative affect
Huang and Wu, 2020	Other-contingent extraversion and satisfaction: The moderating role of implicit theory of personality	Implicit theory of personality, life satisfaction, extraversion	Students participated in the study in exchange for extra credit. Data collected through surveys and questionnaires.	No support was found for the hypothesis that other-contingent extraversion would predict college and life satisfaction, but results showed the implicit theory of personality moderated the prediction on college satisfaction, though not life satisfaction
Hapsari et al., 2017	The impact of service quality, customer engagement and selected marketing constructs on airline passenger loyalty	Passenger loyalty, customer satisfaction, service quality, airline industry	The perceptions of Indonesian airline passengers were evaluated	Customer engagement has the most influential effect on passenger loyalty, followed by customer satisfaction. Customer satisfaction has the largest total effect on customer engagement. Service quality, perceived value and customer satisfaction also indirectly affect customer loyalty through mediation.
Teichert et al., 2007	Customer segmentation revisited: The case of the airline industry	Airline industry, segmentation	Preference data of almost 6,000 passengers was collected	Differentiation is needed between airline companies but segmenting into business and leisure as is typically done does not appropriately capture the market and shows an inherent misunderstanding of customer needs.

Wongleedee, 2016	Customer Satisfaction as A Factor of Airlines Loyalty Programs Development	Airline, customer satisfaction, Thailand	Thai domestic passengers who traveled to major tourist destinations in Thailand were surveyed	All considered factors had a positive influence on passenger's perception of service quality, however, timeliness of service showed the highest influence whereas the personality of service provider and satisfaction from service were ranked second and third by influence.
Khudhair et al., 2019	Review of Scoping Studies on Service Quality, Customer Satisfaction and Customer Loyalty in the Airline Industry	Service quality, customer satisfaction, customer loyalty	Conducted a degree survey focused on the period from January 2000 to mid-November 2018	Passenger satisfaction is positively correlated with service quality. Also, high quality services will always increase customer satisfaction, though this is difficult to obtain because of consumer sensitivity to price variations.
An and Noh, 2009	Airline customer satisfaction and loyalty: impact of in-flight service quality	In-flight service quality on airlines, consumer satisfaction	A questionnaire was developed and distributed to passengers of a South Korea headquartered global airline company	There are different factors of in-flight service quality that are important according to the customer seat class. These findings imply that airline companies' in-flight service should have different delivery strategies based on the customer seat class.
Akbar and Parvez, 2009	Impact of service quality, trust, and customer satisfaction on customers loyalty	Trust, satisfaction, service quality, customer loyalty	Data were collected from 304 customers of a major private telecommunication company of Bangladesh	Customer satisfaction mediates between service quality and customer loyalty. Trust is an important antecedent of customer loyalty.
Oliver, 1980	A cognitive model of the antecedents and consequences of satisfaction decisions	Satisfaction, cognitive models	2,000 residents of a south-central city and 1,000 students from a major state university were randomly selected to answer a survey measuring attitudes and intentions toward the flu vaccine	Trust has a significant impact on consumer satisfaction.
Beyari and Abareshi, 2018	Consumer satisfaction in social commerce: an exploration of its antecedents and consequences	Social commerce, consumer satisfaction, word of mouth, trust	A questionnaire was distributed to Saudi Arabian students studying in Saudi Arabia and Australia; 300 students responded	Trust was found to be the dimension that impacted consumer satisfaction most strongly in the context of social commerce. Increasing the trust of the consumer in social commerce websites will automatically increase consumer satisfaction.

Singh and Sirdeshmukh, 2000	Agency and Trust Mechanisms in Consumer Satisfaction and Loyalty Judgements	Satisfaction, trust, loyalty, framework	No data were collected; primarily a literature review with a proposed model	Satisfaction, trust, and perceived value are the principal antecedents of loyalty. The authors propose a new loyalty model showing such findings.
Forgas et al., 2010	Antecedents of airline passenger loyalty: Low-cost versus traditional airlines	Loyalty, satisfaction, trust, perceived value	A questionnaire was designed, and 1,710 interviews were conducted in the Barcelona Airport involving two traditional airline companies	Trust plays a more important role in low-cost airline companies than conventional ones. Satisfaction is the principal antecedent of trust.