An investigation of customer satisfaction with low-cost and full-service airline companies

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ABSTRACT

Using a survey of 382 passengers, this research examines customer satisfaction and its antecedents and consequences in the context of the airline industry. The relationships among airline tangibles, quality of personnel, satisfaction with the airline, the intention to repurchase and intention to recommend the airline are examined. The findings indicate that tangibles and personnel quality positively affect satisfaction, and satisfaction positively influences intentions to both repurchase and recommend. The key contribution is to test the moderating effect of the airline type: a low-cost vs. a full-service carrier. The results reveal a significant moderating effect of airline type on two relationships: personnel quality – satisfaction and satisfaction – repurchase intention. Specifically, the positive effect of quality of personnel on satisfaction is weaker for the low-cost versus full-service airline, while the positive effect of satisfaction on repurchase intent is stronger for the low-cost airline. The study also discusses implications for airline carriers.

1. Introduction

The airline industry was tightly regulated until 1978, when more and more private airlines started to emerge. More recently, there has been a significant rise in the number of private low-cost carriers that emphasize low fares in order to attract passengers (Belobaba, Odoni, & Barnhart, 2015). Airline companies today are faced with various challenges, such as cutting costs, managing fluctuating demand, and meeting the quality requirements (Baker, 2013). In addition to these issues, the intense competition in the global airline industry has intensified the importance of customers' perception of service quality. Numerous studies demonstrate the dependence of airlines' market share, revenues, positive word of mouth, and customer retention on the consumer perception of service quality, and in turn, on customer satisfaction and loyalty (e.g., Anderson, Fornell, & Lehmann, 1994; Forgas, Moliner, Sánchez, & Palau, 2010). In these challenging circumstances of increased competition of low-cost and full-service carriers, calls for an in-depth understanding of in-flight cues guiding relationships between passengers and the airline have been voiced (Loureiro & Fialho, 2016). Several differentiating characteristics between the low-cost and full-service carriers can be identified. While low-cost carriers provide no-frills services at a low and simplified regime fare, full-service airlines focus on providing a wide range of pre-flight and onboard services in different service classes, employing a complex pricing structure (Chiou & Chen, 2010; Loureiro & Fialho, 2016; Reichmuth, 2008). The low-cost airlines operate point-to-point routes mostly from secondary airports (without any connections), whereas the full-service airlines operate a hub-and-spoke model, centered around a set of hubs at primary airports. Cost reduction in the case of low-cost carriers also comes from "free seating", a high density seating configuration, and selling tickets solely online (Reichmuth, 2008). A further difference is in the intense low-cost airlines' use of one type of aircraft, while full-service airlines manage multiple types (Baker, 2013). Some smaller airlines are adopting business models that blend characteristics of both airline types, resulting in "hybrid carriers" (Reichmuth, 2008). Many researchers concur that price is the key decisive factor in choosing a low-cost or a full-service carrier (Anuwichanont, 2011; Dolnicar, Grabler, Grün, & Kulnig, 2011; Martínez-Garcia, Ferrer-Rosell, & Coenders, 2012; Ryan & Birks, 2005), but it is not necessarily nor entirely driving customer satisfaction (Forgas et al., 2010). While low-cost airlines attract consumers on the grounds of value for money, retaining and building loyal customer base remains a great challenge (Rajaguru, 2016). Akamavi, Mohamed, Pellmann, and Xu (2015) even suggest that price is not the decisive factor for customer loyalty to the low-cost airlines. Some authors assert that passengers perceive low fares as a result of efficiency in airline operations rather than diminished service standards (Saha & Theingi, 2009). Given this notion and the fact that

price is easily imitated by competitors, sustainable competitive advantage should go beyond price (Akamavi et al., 2015).

Scholars and practitioners alike have devoted much attention to understanding service quality in relation to customer satisfaction and loyalty. However, research on the role of various service quality dimensions as antecedents of customer satisfaction with low-cost and full-service carriers offers conflicting results and their relative importance remains unclear (e.g., Chiou & Chen, 2010; Rajaguru, 2016). For example, some authors (e.g., Leong, Hew, Lee, & Ooi, 2015; Loureiro & Fialho, 2016) find no significant moderating role of the airline type, while others (e.g., Mikulić & Prebežac, 2011; Rajaguru, 2016) provide empirical evidence of such interactions. Moreover, only few studies employ rigorous statistical procedures to examine potential differences in passengers' perceptions regarding low-cost and full-service carriers.

To address these issues, the present research aims to investigate the relationships among service quality (as demonstrated through airline tangibles and quality of personnel), customer satisfaction and behavioral intentions and, more importantly, the moderating effects of the airline type on these relationships. The study contributes to the existing literature in several ways. First, it examines the moderating role of the airline type by comparing the proposed theoretical model for customers of low-cost and full-service carriers. In doing so, it attempts to disentangle the strength of two customer satisfaction determinants (airline tangibles and personnel quality) across the low-cost vs. full-service airlines. Few previous studies examine whether differences in service quality dimensions between low-cost and full-service carriers exist (Leong et al., 2015). Second, various researchers have ascertained that customer satisfaction is the strongest determinant of behavioral intention (e.g., Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016), but conclusions about the strength of the satisfaction-intention relationship in case of low-cost vs. full-service airlines are mixed (e.g., Curras-Perez & Sanchez-Garcia, 2016; Loureiro & Fialho, 2016). Hence, this study contributes to a better understanding of the relationship between satisfaction and behavioral intention by investigating their interaction with the airline type. Third, this research treats behavioral intention as two separate constructs (i.e., intention to repurchase and intention to recommend), overcoming a well-known limitation in many studies, which precludes a thorough investigation of the impact of customer satisfaction on different key performance outcomes (Suhartanto & Noor, 2012; Walsh & Bartikowski, 2013). Finally, not many studies employ solid statistical procedures to investigate the moderating role of the airline type (Loureiro & Fialho, 2016). By using a multi-group analysis, our study provides a rigorous statistical method to assess the extent to which a latent profile solution generalizes across passengers of two different types of airlines (Morin, Meyer, Creusier, & Biétry, 2016).

The remainder of the paper is organized as follows. Following this introduction, we present theoretical grounding based on which the conceptual model and the research hypotheses are developed. Next, we lay out the methodological approach and present an empirical analysis. The paper concludes with a discussion, implications, limitations and suggestions for future research.

2. Theoretical foundation and conceptual model development

Despite its extant use in the literature, the concept of customer satisfaction continues to attract attention of academic and business community. A vast majority of satisfaction studies draws on the expectancy-disconfirmation model (Oliver, 1997), which assumes a dynamic relationship between consumers' expectations, perceptions of product or service quality, the confirmation or disconfirmation of these expectations based on the gap between expectations and reality, and, finally, resulting satisfaction.

An overview of the existing literature on customer satisfaction in the airline and other industries indicates that customer satisfaction is closely related to service quality. Service quality refers to customers'

overall impression of the relative inferiority or superiority of the organization and its services (Bitner, Booms, & Mohr, 1994). The airlines that provide more quality services have more satisfied customers and, consequently, more passengers, than the airlines with dissatisfied customers (Khan & Khan, 2013).

Based on the SERVQUAL model, Kim and Lee (2011) identified several dimensions of service quality that have an impact on passenger satisfaction: tangibles, reliability, responsiveness, assurance, and empathy. In addition, an alternative service quality measurement instrument, called the AIRQUAL model (Bari, Bavik, Ekiz, Hussain, & Toner, 2001), has been proposed. Based on the SERVQUAL model, the AIRQUAL model is tailored to the specifics of the airline industry and measures service quality along the following five dimensions: aircraft tangibles, terminal tangibles, personnel, empathy, and image.

Customer satisfaction is an indicator of repeated purchases and word of mouth recommendations (Nadiri, Hussain, Ekiz, & Erdogan, 2008). Many studies confirm that more satisfied customers contribute to higher company profits (e.g., Bernhardt, Donthu, & Kennett, 2000). Furthermore, customer satisfaction is a precursor to increased market share, profitability, positive advertising by word of mouth and customer loyalty (Anderson et al., 1994). While some studies consider behavioral intention as a single multi-faceted construct preceded by customer satisfaction (e.g., Forgas et al., 2010; Rajaguru, 2016), others split it into separate constructs to more precisely capture various company-relevant outcomes, such as word-of mouth behavior and loyalty or repurchase intentions (e.g., Saha & Theingi, 2009; Walsh & Bartikowski, 2013).

The existing literature provides mixed evidence of the relationships between service quality, customer satisfaction and behavioral intentions across the low-cost and full-service airline contexts. For example, Loureiro and Fialho (2016) find that services of low-cost and full-service airlines are perceived similarly by the passengers and are unable to uncover significant differences in relationships between satisfaction and its antecedents as well as between behavioral intentions and their determinants across different airline types. The authors argue that competition has driven full-service airlines to lower their prices and provide similar basic service as low-cost airlines. Similarly, Leong et al. (2015) are not able to identify any differences in the causal relationships between the low-cost and full-service airline contexts.

On the other hand, numerous studies do reveal differences in the strength of relationships among the discussed concepts for the two airline types. Specifically, Suhartanto and Noor (2012) show that customers travelling with full-service airlines are more satisfied than those travelling with low-cost carriers. Further, according to their study, satisfaction with low-cost airline providers is most strongly affected by the accuracy of service, employee behavior and price, while for the full-service airline providers, customer satisfaction is also influenced by the physical appearance of the aircraft. Contrary to Suhartanto and Noor's (2012) finding of higher customers' service quality perceptions in case of the full-service than the low-cost carriers, Baker (2013) found that perceived quality of services higher in case of low-cost carriers. Linked to price, Rajaguru (2016) determined that value for money significantly shapes satisfaction with both airline types, whereas service quality plays a prominent role as an antecedent of satisfaction and behavioral intention only for full-service airlines. The contrasting role of service quality and price has also been highlighted in research by Mikulić and Prebežac (2011), who identify a stronger role of service quality in determining customers' loyalty to full-service carriers and a stronger role of price in determining loyalty to low-cost carriers.

Based on these foundations, the current research proposes a conceptual model depicted in Fig. 1. The underlying premise is that customer satisfaction in the airline industry is positively influenced by airline tangibles and quality of personnel. Furthermore, customer satisfaction influences passengers' intention to repurchase from the airline and recommend the airline. More importantly, the model
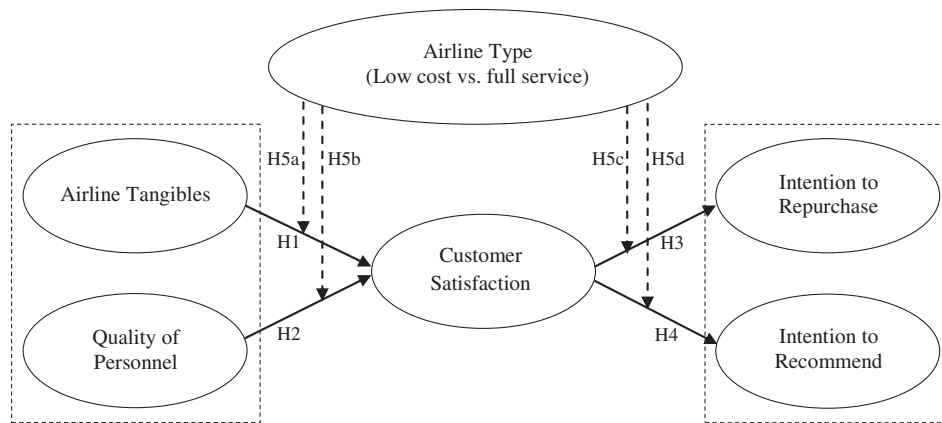
Fig. 1. Conceptual model.

suggests that the airline type moderates the relationships between service quality (airline tangibles or personnel) and customer satisfaction as well as the relationships between customer satisfaction and both types of intention.

3. Hypotheses development

3.1. Determinants and consequences of customer satisfaction

In this study, customer satisfaction refers to as an overall level of contentment with the service experience provided by the airline company (Oliver, 1997). Interestingly, although some authors claim that satisfaction precedes service quality (e.g., Parasuraman, Zeithaml, & Berry, 1988), numerous studies demonstrate that service quality increases customer satisfaction (e.g., Cronin, Brady, & Hult, 2000; González, Comesaña, & Brea, 2007). Among key service quality dimensions, airline tangibles, defined as physical surroundings represented by objects and subjects, have been identified (Nadiri et al., 2008). Nadiri et al. (2008) found airline tangibles to be the most significant driver of satisfaction, although evidence of its strength relative to other factors is inconclusive. For example, some studies indicate that personnel is the key factor in shaping customer satisfaction in the airline industry (e.g., Akamavi et al., 2015; Loureiro & Fialho, 2016). Airline employees need to understand and identify the passengers' desires in order to enhance their satisfaction with the service (Ekinci, Dawes, & Massey, 2008). Integrating research findings from both streams of research above, we suggest that (H1) airline tangibles positively influence customer satisfaction and that (H2) the quality of personnel positively influences customer satisfaction in the airline industry.

H1. The airline tangibles positively influence customer satisfaction.

H2. Quality of personnel positively influences customer satisfaction.

From a company's standpoint, behavioral intentions are among the most pertinent consequences of customer satisfaction. Extant research demonstrates that the more satisfied consumers are with a company, the more likely they are to repurchase from it (e.g., Stathopoulou & Balabanis, 2016; Walsh & Bartikowski, 2013). Similarly, customer satisfaction leads to positive referrals and recommendations for the company (Su et al., 2016). On the other hand, some authors find a negative relationship, that is, dissatisfied customers engage in more word-of-mouth (e.g., Hart, Heskett, & Sasser, 1989). In the airline context, most authors report that customer satisfaction is an indicator of repeated purchases and recommendations (e.g., Curras-Perez & Sanchez-Garcia, 2016; Loureiro & Fialho, 2016; Nadiri et al., 2008; Rajaguru, 2016). In contrast, Forgas et al. (2010) cannot confirm a significant relationship between satisfaction and loyalty for both

airline types. To shed more light on these inconsistencies, we hypothesize a positive influence of customer satisfaction on passengers' intention to repurchase (travel with the same airline) (H3) and to recommend the airline (H4).

H3. Customer satisfaction positively influences intention to repurchase from the airline.

H4. Customer satisfaction positively influences intention to recommend the airline.

3.2. The moderating role of the airline type

Previous studies reveal that services provided by low-cost and full-service carriers are different and are also perceived as such by passengers (Rajaguru, 2016). While full-service airlines rely on superior services, both as demonstrated by airline tangibles (Suhartanto & Noor, 2012) and the quality of service offered by their personnel, the low-cost airlines primarily attract customers by offering lower prices (Chiou & Chen, 2010). Rajaguru (2016) demonstrates that the influence of service quality on customer satisfaction substantially increases in case of full-service as compared to low-cost carriers. Although Loureiro and Fialho (2016) also identify a lower or even insignificant effect of service quality elements on satisfaction for low-cost carriers, they conclude that these relationships do not differ significantly from those for full-service carriers. In light of these findings, we hypothesize that the differences in the level of airline tangibles and personnel service quality between the two airline types have varying degrees of influence on customer satisfaction. Specifically, we propose that the effect of customer perceptions of airline tangibles (H5a) and quality of personnel (H5b) have a stronger (i.e., more positive) effect on customer satisfaction with the airline for full-service as opposed to low-cost carriers, due to the higher emphasis on providing service quality by the full-service (vs. low-cost) airlines.

H5a. Airline type moderates the relationship between airline tangibles and satisfaction, such that the positive relationship between airline tangibles and satisfaction is stronger for full-service as compared to low-cost airlines.

H5b. Airline type moderates the relationship between quality of personnel and satisfaction, such that the positive relationship between quality of personnel and satisfaction is stronger for full-service as compared to low-cost airlines.

We further propose that the airline type moderates the relationships between customer satisfaction with the aircraft carrier and their subsequent intentions to repurchase as well as recommend the airline to others. Interestingly, the existing literature offers inconsistent evidence regarding the moderating role of the airline type in affecting

the relationship between satisfaction and behavioral intention. For example, Leong et al. (2015) found no significant differences in the causal relationship between satisfaction and loyalty across the low-cost vs. full-service airlines. Similarly, according to Loureiro and Fialho (2016), the strength of the relationship between satisfaction and behavioral intention does not differ across the two airline types. In contrast, Forgas et al. (2010) provide empirical support for varying path coefficients from satisfaction to loyalty for a low-cost versus a full-service airline. Likewise, Curras-Perez and Sanchez-Garcia (2016) confirm significant differences in the two airline types in the case of satisfaction influencing word-of-mouth behavior. It is unclear whether these differences had emerged based on the methodology limitations, differing samples, or other factors.

As hypothesized in H3 and H4, satisfaction should be a key driver of future behavioral intentions towards both low-cost and full-service carriers. However, due to the higher importance of elements, such as airline tangibles and personnel, when purchasing from and using full-service airline carriers (Rajaguru, 2016), we have theoretical arguments to anticipate that customer satisfaction will have a stronger (i.e., more positive) influence on future intentions for the full-service as opposed to low-cost airlines. Hence,

H5c. Airline type moderates the relationship between customer satisfaction and intention to repurchase, such that the positive relationship between satisfaction and intention to repurchase is stronger for full-service as compared to low-cost airlines.

H5d. Airline type moderates the relationship between customer satisfaction and intention to recommend, such that the positive relationship between satisfaction and intention to recommend is stronger for full-service as compared to low-cost airlines.

4. Methodology

4.1. Sample and procedure

An online survey of adult residents of a European Union country was conducted to test the proposed conceptual model. For the purpose of the study, non-probability sampling was employed. The researchers initially identified a number of qualified respondents, i.e., respondents, who met the criterion of having had a recent air travel experience. These respondents were then asked to share the survey with their acquaintances who also met this criterion, resulting in a snowball sample. Since data about population characteristics of passengers in the selected country are unavailable, a profile of global airline passengers was used to evaluate the extent to which the recruited sample was representative in terms of gender and age. According to IATA (2015), global airline passengers include 66% males, 32% of passengers are below 35 years, 46% are between 35 and 54 years, and 22% are above 55 years.

While the final number of respondents was 699, only people reporting a specific airline carrier for their most recent travel within the past twelve months were included in the study. This information was required in order to classify the airlines into low-cost versus full-service carriers. Those respondents who travelled more than once reported only on the most recent flight experience. In total, data included 382 usable responses.

The average respondent's age was 31.5 years (std. deviation 9.5), with 70.9% of respondents up to 34 years old, 26% between 35 and 54 years old, and 2.9% above 55 years. The sample comprised of 77.5% women. Slightly above half of the respondents (53.1%) completed tertiary education, while 32.6% completed secondary and 2.1% completed primary level. Majority of the sample was employed (57.1%), 36.5% were students, and the rest of the sample was either unemployed, retired, or housekeeper. The largest segment (35.4%) reported average monthly household income between 1001 and 2000 EUR,

27.1% received between 2001 and 3000 EUR, 19.2% received 1000 EUR or below, and 18.2% received above 3000 EUR. Well above two thirds of the respondents stated that the purpose of their travel was vacation (76.4%), while 14.4% travelled for business and 13.9% visited their friends and family. Approximately one third had flown only once during the preceding 12 months (30.4%), 27.7% travelled by plane twice within this time period, and 23.6% flew three to five times. The remainder (18.3%) travelled by plane more than five times within the past 12 months.

Comparing the sample characteristics to the global airline passenger profile (as indicated by IATA, 2015), the sample is somewhat younger and to a greater extent female. These differences are likely due to a heavy representation of personal (vacation, family visit) rather than business travel. As such, the findings apply mostly to personal travel.

4.2. Measures

The construct measures were derived from the AIRQUAL model, as suggested by Bari et al. (2001) and empirically validated by Nadiri et al. (2008). A five-point Likert scale was used to collect data on respondents' level of agreement with the measurement items (1 – Strongly disagree, 2 – Disagree, 3 - Neither agree or disagree, 4 – Agree, 5 – Strongly agree). Airline tangibles, quality of personnel and customer satisfaction were each measured with three items, while both types of intention were measured with a single item. We operationalize airline tangibles in line with Leong et al. (2015), by referring to the physical condition of the carrier as well as entertainment materials provided on the flight. Quality of personnel (as per Nadiri et al., 2008) refers to the respondents' perception regarding how qualified, aware of their tasks, and willing to help the passengers the personnel was. Measurement items for customer satisfaction covered general satisfaction as well as satisfaction with price, and were adapted from Nadiri et al. (2008) and Saha and Theingi (2009). The intention to purchase from (travel with) the same airline and to recommend it to others were likewise borrowed from the existing instrument by Nadiri et al. (2008). The airline type variable was created based on the respondents' answers to the question about which airline they were travelling with most recently. More specifically, the respondents were given a list of airline companies chosen based on their relative popularity among the residents of the studied EU country. They could select one of the listed low-cost (e.g., Ryanair) or full-service carriers (e.g., SwissAir) or provide their own answer. The measurement items are listed in Appendix.

5. Analysis and results

5.1. Measurement model evaluation

The first step in the analysis was establishing validity of the measurement model. The constructs measured with multiple-items were subjected to confirmatory factor analysis (CFA) in AMOS, first as combined (i.e., in a single group). A single-group measurement model fit the data well (X^2 = 51.47, d.f. = 24, p = 0.001, CFI = 0.98, RMSEA = 0.055). All standardized loadings were significant and above the recommended 0.50 (Hair, Black, Babin, & Anderson, 2010), except for one item measuring airline tangibles, which was 0.46, providing evidence of convergent validity. Given that this value is very close to the recommended value and the model fit was good, the authors decided to keep the item in further analysis. Construct reliabilities, as indicated by Cronbach alpha, were all above 0.70 ($\alpha_{\text{Airline tangibles}}$ = 0.76; $\alpha_{\text{Satisfaction}}$ = 0.76; $\alpha_{\text{Quality\_personnel}}$ = 0.82). Average variances extracted (AVE) exceeded 0.50 for each construct ($\text{AVE}_{\text{Airline tangibles}}$ = 0.58; $\text{AVE}_{\text{Satisfaction}}$ = 0.57; $\text{AVE}_{\text{Quality\_personnel}}$ = 0.61), providing additional evidence of convergent validity.

CFA analysis by each group (low cost and full service airlines) offered the same conclusions, with Cronbach alpha values ranging from 0.70 and higher and AVE at 0.50 or above (Table 1). While all AVE were

Table 1
Construct reliabilities, average variance extracted and inter-construct correlations.

	Airline tangibles	Quality of personnel	Satisfaction with airline	Intention to repurchase	Intention to recommend
Airline tangibles	0.77(0.58) 0.72(0.55)	0.34	0.44	0.24	0.36
Quality of personnel	0.31	0.83(0.64) 0.80(0.57)	0.44	0.38	0.45
Satisfaction with airline	0.35	0.41	0.70(0.51) 0.84(0.66)	0.48	0.87
Intention to repurchase	0.24	0.31	0.58	N/A N/A	0.48
Intention to recommend	0.23	0.32	0.85	0.53	N/A N/A

Notes: 1) Numbers below (above) the diagonal represent construct correlations in the low cost (full service) airline groups. On the diagonal, the first row in the cell represents Cronbach alpha (AVE) for the low-cost airline group, while the second row in the cell represents Cronbach alpha (AVE) for the full-service group.
2) N/A – not available for single-item measures.

above the recommend value, the squared correlation between satisfaction with the airline and intention to recommend was greater than AVE of the corresponding constructs, possibly indicating a lack of discriminant validity (Fornell & Larcker, 1981). However, the correlation was significantly lower than one, and in addition, the model fit of the model in which all satisfaction and intention to recommend items loaded onto a single construct was significantly worse than a model with two constructs. As such, we concluded that satisfaction and intention to recommend constructs were sufficiently different from each other.

5.2. Evaluation of configural and metric invariance

In order to establish a meaningful comparison of the conceptual model across the low-cost and full-service airlines, the authors next assessed the extent to which the measures remained invariant across the two groups. The first step was to assess *configural invariance* of measures, or the requirement that the same pattern of zero and non-zero factor loadings exists in different groups (Horn, McArdle, & Mason, 1983). Using CFA, data showed that the specified unconstrained two-group model with zero loadings on non-target constructs fit the data well in both groups ($X^2 = 93.68$, d.f. = 48, $p < 0.01$, CFI = 0.966, RMSEA = 0.050), with all salient factor loadings being substantially and significantly different from zero, and the factor inter-correlations significantly below unity. Thus, the measures achieved the configural invariance.

The next step was to assess *metric invariance* or the requirement of equal metrics or scales (Rock, Werts, & Flaughter, 1978). In order to meaningfully test the equivalence of theoretical relationships across the two groups, at a minimum, partial metric invariance, which requires that at least two loadings per construct remain invariant, has to be achieved (Hair et al., 2010). To test for full metric invariance, the authors constrained all factor loadings to be the same across the two airline types. The full metric invariance model did not fit the data as well as the configural (i.e., unconstrained) model ($X^2 = 131.63$, d.f. = 54, $p < 0.01$; $\Delta X^2(\Delta d.f.) = 37.95(6)$, $p < 0.01$; CFI = 0.94, RMSEA = 0.050). The chi-square difference test showed that the constrained model led to a significantly worse model fit, indicating that full metric invariance was not achieved. Based upon the modification indices, the equality constraint on one of the satisfaction items ("The ticket price is reasonable compared to the service offered") was released next, while the two remaining satisfaction items remained constrained to be equal across the two groups. The resulting model fit was satisfactory and did not significantly differ from the configural model fit ($X^2 = 101.70$, d.f. = 53, $p < 0.01$; $\Delta X^2(\Delta d.f.) = 8.02(5)$, $p = 0.16$; CFI = 0.96, RMSEA = 0.049), confirming that partial metric invariance was achieved. Table 2 summarizes the information on invariance testing. The goal of the research was to test for the equivalence of the proposed relationships across groups, which - beyond configural invariance - only requires partial metric invariance

(Hair et al., 2010). Since partial metric invariance was achieved, the structural model was tested next.

5.3. Structural model and multi-group analysis results

To test the conceptual model, structural equation modelling in AMOS was employed. The structural relationships were evaluated first in the combined sample. The model fit (Table 2) exhibited a good fit with the data ($X^2 = 115.31$, d.f. = 41, $p < 0.01$; CFI = 0.96, RMSEA = 0.069). As shown in Table 3, the parameter estimates provided strong support for the proposed relationships. All four structural paths were significant and in the expected direction. Specifically, the evaluation of airline tangibles was positively associated with customer satisfaction with the airline (b = 0.26, $t = 3.20$, $p < 0.01$), in support of H1. Similarly, perceptions of quality of airline personnel were positively associated with satisfaction (b = 0.40, $t = 5.43$, $p < 0.01$), supporting H2. Satisfaction with the airline in turn positively influenced consumer intention to repurchase from the airline (b = 0.71, $t = 11.41$, $p < 0.01$) and the intention to recommend the airline (b = 1.09, $t = 19.77$, $p < 0.01$), providing support for H3 and H4.

To test the proposed moderating role of airline type, the authors next conducted multi-group analysis, with all measurement weights (factor loadings) restricted to be equal across the two airline types (low-cost and full-service), except for the afore mentioned item measuring satisfaction with the airline. The two-group structural model provided an excellent fit with the data ($X^2 = 168.97$, d.f. = 87, $p < 0.01$; CFI = 0.96, RMSEA = 0.050). Table 3 displays individual hypotheses test statistics and results separated by each airline type. As was the case for the combined sample, all hypotheses were supported within each airline type, showing that the existence and direction of the proposed relationships does not vary with the airline type. Further, the model explained 21% (vs. 31%) of variance in customer satisfaction, 37% (vs. 27%) of variance in intention to repurchase, and 73% (vs. 77%) of variance in intention to recommend for the low cost (vs. full service) airline, respectively.

To evaluate whether the *strength of the relationships* varies across the airline types, the four structural paths were next constrained to be equal across the low-cost and full-service airlines. The fit of the resulting constrained model ($X^2 = 179.60$, d.f. = 91, $p < 0.01$; CFI = 0.95, RMSEA = 0.051) was compared to the fit of the model in which the structural parameter estimates were allowed to vary freely. The chi-square difference test indicated that the model fit had significantly worsened ($\Delta X^2(\Delta d.f.) = 10.63(4)$, $p < 0.05$) and that there had been a slight drop in CFI ($- 0.01$) and an increase in RMSEA ($+ 0.01$), indicating that the unconstrained model provides a superior fit, and providing evidence for the moderating role of airline type.

To determine which paths varied across the two airline types, individual path parameters were compared across the constrained and

Table 2
Measurement and structural model comparisons.

	$\chi^2(df)$	RMSEA	CFI	$\Delta\chi^2(\Delta df)$	*p*-value	Invariance supported
MEASUREMENT MODEL Assessment of invariance:						
Configural invariance	93.68(48)	0.050	0.966	–	–	Yes
Full metric invariance	131.63(54)	0.062	0.940	39.75(6)	< 0.01	No
Partial metric invariance	101.70(53)	0.049	0.963	8.02(5)	0.16	Yes
STRUCTURAL MODEL:						
Combined (single-group) model	115.31(41)	0.069	0.96			
Two-group model with measurement weights constrained (except for one satisfaction item)	168.97(87)	0.050	0.96			
Two-group model with all structural weights constrained	179.60(91)	0.051	0.95	10.63(4)	< 0.05	No

unconstrained model one at a time (i.e., an individual path constraint was present versus absent). The fit of the two models was compared each time. The chi-square difference test indicated that two of the four structural model paths were significantly different across the two airline types. Specifically, the quality of airline personnel more strongly influenced customer satisfaction for full-service airlines (b = 0.53) than for low-cost airlines (b = 0.36; $\Delta\chi^2$(1 d.f.) = 2.71, *p* < 0.10; H5b). While the direction of the moderating effect of the airline type on the effect of airline tangibles on consumer satisfaction with the airline was consistent with that of the effect of quality of airline personnel; i.e., a stronger effect of the airline tangibles on satisfaction with the airline for the full service (b = 0.47) vs. low cost airline (b = 0.30), the effect did not quite reach the multi-group significance ($\Delta\chi^2$(1 d.f.) = 2.41, *p* = 0.12). H5a is thus only directionally supported.

Moreover, the effect of satisfaction with the airline more positively influenced intention to repurchase for the low-cost airlines (b = 0.84) than full-service airlines (b = 0.55; $\Delta\chi^2$(1 d.f.) = 6.51, *p* < 0.05). While this finding is significant and provides support for the moderating role of airline type, the effect is directionally opposite to that predicted in H5c. Lastly, the effect of satisfaction with the airline on the intention to recommend the airline did not vary with the airline type ($\Delta\chi^2$(1 d.f.) = 1.62, *p* = 0.20). H5d is thus not supported.

5.4. Additional analysis

While the focus of this research is on the moderating role of airline type (i.e., how the strength of the relationships between variables varies depending on the airline type), we also evaluated the direct effect of the airline type on costumer perceptions and behavioral intentions to shed additional light on the investigated relationships. A statistical comparison of means across the low-cost and full-service carriers shows that the means of *all* dependent variables are significantly different across the two airline types (t-values of 2.91 and higher, all *p*-values < 0.01; Table 4). Thus, consumers appear to perceive low-cost carriers as offering lower quality airline tangibles and personnel than full-service carriers. However, consumers are still more satisfied with low-cost carriers, are more likely to purchase from them in the future and are more likely to recommend them than they are for full-service carriers.

Table 4
Means and standard deviation of dependent variables across the airline types.

Airline type	Low cost (N = 193)		Full service (N = 189)		Total (N = 382)	
Dependent var.	Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
Airline tangibles	3.00	0.99	3.52	0.90	3.26	0.99
Quality of personnel	4.11	0.68	4.30	0.59	4.20	0.64
Satisfaction with airline	3.82	0.62	3.45	0.84	3.64	0.76
Intention to purchase	3.49	0.93	3.18	0.78	3.34	0.87
Intention to recommend	3.93	0.83	3.67	0.89	3.80	0.87

6. Discussion and implications

This research investigates how determinants of service quality in the airline industry (specifically, airline tangibles and quality of personnel) influence passengers' satisfaction and, in turn, their behavioral intentions. Consistent with Leong et al. (2015), we confirm that both airline tangibles and personnel quality are important drivers of satisfaction and behavioral intentions for both low-cost and full-service airlines. Moreover, a significant contribution of the study lies in its rigorous testing of the moderating role of the airline type, thus extending previous findings on the complicated role of this variable. In so doing, the study responds to calls for a more thorough investigation of the key service quality dimensions (Leong et al., 2015) and behavioral intentions (Curras-Perez & Sanchez-Garcia, 2016) with respect to customer satisfaction in the low-cost and full-service airline contexts.

Overall, the conceptual model receives strong support for both the low-cost and full-service airlines. The key proposed relationships (i.e., structural paths) were significant for both airline types, showing that, in order to drive satisfaction, both low-cost and full-service aircraft

Table 3
Testing the conceptual model.

H	Structural Path	TOTAL Unstd. coeff.	*t* value	LOW COST Unstd. coeff.	*t* value	FULL SERV. Unstd. coeff.	*t* value
H1:+	Airline tangibles ➜ Customer satisfaction	0.26	3.20	0.30	2.61	0.47	3.36
H2:+	Quality of personnel ➜ Customer satisfaction	0.40	5.43	0.36	4.08	0.53	4.46
H3:+	Customer satisfaction ➜ Intention to repurchase	0.71	11.41	0.84	9.10	0.55	7.33
H4: +	Customer satisfaction ➜ Intention to recommend	1.09	19.77	1.05	14.74	1.08	15.36
	Individual moderating effects of airline type on:						
		$\Delta\chi^2$ (Δdf)	*p*-value				
H5a	Airline tangibles ➜ Customer satisfaction	2.41 (1)	0.12				
H5b	Quality of personnel ➜ Customer satisfaction	2.71 (1)	< 0.10				
H5c	Customer satisfaction ➜ Intention to repurchase	6.51 (1)	< 0.05				
H5d	Customer satisfaction ➜ Intention to recommend	1.62 (1)	0.20				

carriers should consider offering quality airline tangibles as well as high service quality provided by airline personnel. This lends support to the notion that airline companies that aim for quality service and invest in education of their employees have more satisfied customers (Bari et al., 2001; Leong et al., 2015). Although not the primary objective of this study, a compelling finding pertains to the identified relative strength of antecedents of customer satisfaction, with quality of personnel emerging as its strongest driver. This finding aligns well with Loureiro and Fialho's (2016) cognizance of personnel as the strongest determinant of customer satisfaction.

The results also suggest that satisfaction with the airline in turn drives consumer intentions to purchase from the airline in the future as well as their recommendations of the airline to others. These findings corroborate prior research with respect to customer satisfaction being an indicator of repeated purchases and word of mouth recommendations (e.g., Curras-Perez & Sanchez-Garcia, 2016; Nadiri et al., 2008; Walsh & Bartikowski, 2013). In view of the path coefficients obtained through the analysis, customer satisfaction appears to more strongly determine an individual's intention to recommend than to travel with the same airline in the future. Presumably, this distinction emanates from a greater risk and required effort of deciding to repurchase vs. recommend (Rychalski & Hudson, 2016). An individual's decision to recommend requires little effort and is considered a low-risk, no-cost strategy. In contrast, a decision to repurchase requires more effort and involves a higher risk pertaining to the purchase process and its outcome. Tourist satisfaction research provides similar findings, showing that satisfied tourists are more likely to recommend holidays in a chosen destination than repeat their visits (Hutchinson, Lai, & Wang, 2009; Kozak & Rimmington, 2000). Nevertheless, this finding draws managerial attention to careful management of customer satisfaction as a pivotal determinant of customers' behavioral intentions.

The most intriguing and novel findings pertain to the moderating role of the airline type. Importantly, the positive effects of quality of personnel and airline tangibles on satisfaction with the airline were either significantly (for quality of personnel) or directionally (for airline tangibles) weaker (i.e., less positive) for the low-cost airlines than for the full-service airlines. This finding is consistent with Rajaguru (2016) and indicates that the extent of customer satisfaction with a low-cost airline is determined to a lesser extent by consumer perceptions of quality of the airline personnel and possibly also to a lesser extent by their perceptions of airline tangibles. Further support for this finding is provided by the fact that airline tangibles and quality of personnel explain 21% of the variance in satisfaction for the low-cost airline, while the corresponding number for the full-service airline is 31%. A weaker role of airline tangibles across both airline types suggests that passenger satisfaction is driven more by personnel quality than airline tangibles, consistent with Loureiro and Fialho's (2016) finding that the airline crew is a key driver of customers' responses. Furthermore, a possible explanation of the less significant moderating effect of the airline type on the tangibles–satisfaction relationship is that the distinction between low-cost and full-service carriers is becoming increasingly blurred. Namely, full-service airlines have abandoned several product offering differentiators, leading to the narrowing of the gap between the two types of airlines (Macário & Van de Voorde, 2011; Ramsay, Stamp, Regueiro, Richards, & McGilvery, 2013). Thus, it is crucial that full-service airlines pay particular attention to providing high quality airline tangibles and personnel services, as not to disappoint the customers. Low-cost airline customers may not have as high expectations of these service quality characteristics (Curras-Perez & Sanchez-Garcia, 2016), and as such, they are weaker drivers of their satisfaction with the airline.

The finding that the link between satisfaction and repurchase intent was stronger for the low-cost than the full-service airlines is intriguing and non-intuitive as it contrasts with existing research. We speculate that the reason for this finding is that the satisfaction measure is broader and not focused only on satisfaction with airline personnel and

airline tangibles, but also includes other aspects, such as consumer satisfaction with the ticket prices relative to the service offered. Price plays an important role in the customer choice of the type of airline (Anuwichanont, 2011; Dolnicar et al., 2011; Rajaguru, 2016), and as such, its inclusion in the satisfaction measure may have been partially responsible for the stronger effect of satisfaction on intention to buy for the low-cost (versus full-service) airline, where price should be a stronger driver of the airline choice. On the other hand, when selecting a full-service airline, consumers appear to maintain a stronger focus on the quality of service, as suggested by Rajaguru (2016). Seemingly, additional factors (above and beyond customer satisfaction), such as passenger commitment (Curras-Perez & Sanchez-Garcia, 2016), might have a stronger influence on the intention to repurchase for full-service (relative to low-cost) carriers.

To shed more light on the dynamic relationship between satisfaction and the two types of behavioral intention, we examined average values of these variables in case of low-cost vs. full-service carriers. Surprisingly, the overall satisfaction level was significantly lower for consumers who reported to have travelled with a full-service carrier than for consumers travelling with low-cost airlines. This finding is in stark contrast to Suhartanto and Noor's (2012) cognizance that satisfaction is higher for full-service carriers. Using the expectancy-disconfirmation model (Oliver, 1997), this could have resulted from consumers having very low expectations of airline tangibles and quality of personnel when travelling with low-cost carriers and having those expectations met satisfactorily. Curras-Perez and Sanchez-Garcia (2016) presume that passengers flying with low-cost carriers expect to receive a reasonable basic service for a good price and have those expectations fulfilled. Furthermore, the levels of expressing intent to travel again and to recommend were also higher for the low-cost airline passengers, suggesting that greater satisfaction translates into greater willingness to implement behaviors advantageous for the company.

In conclusion, this study offers useful insights into different factors influencing customer satisfaction and behavioral intentions in the context of low-cost and full-service airline carriers. The research findings suggest that airlines should take care of maintaining a high level of quality of airline tangibles, such as comfort of the plane seats, as well as invest in their employees, as they are the ones who provide customers with the most memorable aspects of the experience. The research shows that both factors (airline tangibles and quality of personnel) have a significant impact on customer satisfaction with an airline carrier. Ensuring a satisfying experience is of key importance given that only satisfied passengers will recommend the airline company to their acquaintances and will also be more likely to travel with the same airline in the future. Overall, it would be beneficial for companies to analyze how various financial inputs translate into improvements of the airline tangibles and personnel quality, and, in turn, generate customer satisfaction. Given that in our research personnel quality had a stronger effect on customer satisfaction than airline tangibles, airline companies should pay particular attention to ways of effectively improving the personnel quality. A similar proposition applies to full-service carriers where customer satisfaction is determined by quality of personnel to a greater degree than it is for low-cost carriers. It is also important for companies to understand and continuously monitor consumer expectations regarding the airline, as these expectations are fluid and subject to change as the competitive landscape changes and the airlines adjust their services accordingly. Understanding the level of customer expectations is the key in the airline companies being able to successfully fulfill those expectations, consequently satisfying the passengers.

7. Limitations and future research

Several limitations apply to this study and pave a way for future research. The research focuses on two specific service quality dimensions: airline tangibles and quality of personnel. Future work should

test other service quality dimensions as predictors of customer satisfaction, such as terminal tangibles or image (Mikulić & Prebežac, 2011). It would also be worthwhile to examine other potentially relevant antecedents, such as innovative brand experience (Lin, 2015), customer equity (Wang, Kim, Ko, & Liu, 2016), in-flight ambience (Loureiro & Fialho, 2016) or customer emotions (Rychalski & Hudson, 2016). Similarly, additional antecedents of behavioral intentions should be considered. Although customer satisfaction has surfaced as the strongest determinant in many studies, other factors, such as trust, may be relevant. Specifically, Forgas et al. (2010) argue that a greater degree of trust is required in case of low-cost carriers to offset their weaknesses resulting from lower price. One limitation that is also frequently identified in other airline customer satisfaction research (e.g., Lin, 2015; Mikulić & Prebežac, 2011) was the informal snowball sampling method, which could have led to a non-representative sample. The structure of the sample is also a limitation, as it does not fully represent the gender and age structure of global airline passengers, which tends to be somewhat older and more heavily weighted towards males (IATA, 2015). Furthermore, the respondents mostly reported on their experiences with the European airlines, which limits generalization of findings to non-European providers. Self-selection bias also potentially exists, as participants may have been more likely to respond if their travel experience was either extremely good or extremely poor (Prayag, 2007). Thus, it is possible that only low-cost carriers well exceeding or failing a certain quality level were reported on. There was a lack of information on whether the respondents were evaluating a short- or a long-haul flight. The importance of taking this aspect into consideration in the future studies is demonstrated by the finding that passengers perceive low-cost and full-service airlines passengers as more similar in case of short-haul flights (Ramsay et al., 2013). Hence, future research should replicate the results with other samples, including business travelers, also controlling for the flight length. Furthermore, this research measured behavioral intentions, which do not always predict actual behaviors (Ajzen, 2005). Hence, future researchers should attempt to work with a specific airline to obtain actual passenger behavioral/purchase data, if possible. Future research could also investigate the proposed relationships in an experimental setting, where only manipulated variables are varied, and all other aspects of the experimental design remain constant. The role of price, including whether it serves as a moderator, is also worthy of future investigation.

Appendix A. Measurement items (1 – Strongly disagree to 5 – Strongly agree)

Airline tangibles: Leong et al. (2015).
Comfort of the plane seats.
Enough space for legs.
Extra offers - magazines, movies, games, newspapers.
Quality of personnel: Nadiri et al. (2008).
Trained and qualified personnel
Personnel awareness of their tasks
Personnel's willingness to help passengers
Customer satisfaction: Nadiri et al. (2008), Saha and Theingi (2009).
My satisfaction with the airline has increased.
I now have a more positive attitude towards this airline.
The price ticket is reasonable compared to the service offered.
Intention to repurchase: Nadiri et al. (2008).
I will travel with this airline also next time.
Intention to recommend: Nadiri et al. (2008).
I would recommend this airline to my family and friends.

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