Author(s): Baumeister, Stefan; Nyrhinen, Jussi; Kemppainen, Tiina; Wilska, Terhi-Anna

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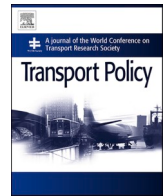
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Does airlines' eco-friendliness matter? Customer satisfaction towards an environmentally responsible airline

Stefan Baumeister [a,b,*], Jussi Nyrhinen [c], Tiina Kemppainen [a], Terhi-Anna Wilska [c]

[a] *University of Jyväskylä, School of Business and Economics, P.O. Box 35, 40014, University of Jyväskylä, Finland*
[b] *University of Jyväskylä, School of Resource Wisdom, P.O. Box 35, 40014, University of Jyväskylä, Finland*
[c] *University of Jyväskylä, Faculty of Humanities and Social Sciences, P.O. Box 35, 40014, University of Jyväskylä, Finland*

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ABSTRACT

The looming climate crisis requires an immediate response, also on an individual level. Consumers are being asked to reduce and replace their carbon-intensive consumption behaviors. One of the consumption behaviors with the largest impact is air travel. The growing awareness among consumers has led to the advent of flight shaming, which could seriously endanger airlines' existing business models. One way for airlines to respond to this threat is by becoming more eco-friendly. We therefore wanted to study whether the environmental responsibility of an airline could be positively associated with customer satisfaction and whether that could translate into more customer loyalty towards an eco-friendly airline. To study customer satisfaction with an environmentally responsible airline, we conducted a survey among 1170 customers of the Finnish flag-carrier Finnair. Finnair was chosen as a case because it is regarded as one of the leading airlines for eco-friendliness. The study found that being environmentally responsible can benefit airlines, because it can generate customer satisfaction alongside more established antecedents of customer loyalty such as brand image and value for money. Furthermore, the study found that satisfied customers were more likely to repurchase airlines' services and engage in positive word-of-mouth (WOM), resulting in customer loyalty. This finding links airline's perceived environmental responsibility to customer loyalty.

1. Introduction

According to Rosenthal (2013), air travel can be considered the biggest individual climate sin. However, with the increasing visibility of climate change, the awareness among consumers has grown and air travel has recently been more scrutinized. This has led to the advent of flight shaming, a movement which took its roots in Sweden in 2018 (Mkono, 2020). A recent study, conducted before the outbreak of the COVID-19 crisis, found that flight shaming could cut the growth in the demand for air travel in half in the future (BBC, 2019). This would have serious impacts on airlines and their established business models. In the past, airlines tried to address climate change by building a positive green image (Hagmann et al., 2015; Hwang and Lyu, 2020; Mayer et al., 2012). However, the latest developments require clear actions that go beyond a green image.

The largest climate impacts of airlines stem from burning fossil fuels in jet engines. Besides carbon dioxide, jet engines also produce other greenhouse gasses such as nitrogen oxides, water vapor, soot particles and sulfur oxides (Daley, 2010). Air transport is currently dependent on fossil fuels, with new solutions such as fully electric aircraft still decades away (Epstein & O'Flarity, 2019), but current aircraft and engine technology are constant developing to increase fuel-efficiency. For keeping the environmental impacts at the lowest possible level, it would therefore be essential for airlines to constantly update their aircraft fleet (Baumeister, 2017; Budd and Suan-Sanchez, 2016; Miyoshi and Ibanez, 2016; Wang et al., 2020). The latest long-haul aircraft currently available on the market is the Airbus A350. The A350 is mainly made of new lightweight materials, has improved aerodynamics and uses a new generation of engines. These advancements mean the aircraft is 25% more fuel efficient than its predecessors (Airbus, 2020). The A350 was announced by Airbus in 2004. In 2007, Finnish flag carrier Finnair became the first airline to order the new aircraft. The A350 started commercial operations in 2015, with Finnair becoming the first airline in Europe and the third worldwide to operate this new aircraft type

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(Finnair, 2022a).

When it comes to eco-friendliness, the Finish flag-carrier Finnair clearly stands out in the industry and was therefore considered as the most suitable case for the purpose of this study. Finnair's responsibility work started in the 1980s. In 1997, the airline was among the first to publish a CSR report, and it was also the first to make an emission calculator based on actual fuel data publicly available (Finnair, 2010). Finnair has been offering green connections by running a bus service between Helsinki Vantaa Airport and the cities of Tampere and Turku (Finnair, 2022b) in addition to collaborating with various railway companies through air–rail agreements (Finnair, 2022c; VR Group, 2014). Finnair was also the first airline to comply with IATA's Environmental Assessment (IEnVA) program stage 2 and among the first airlines worldwide to test biofuels (Finnair, 2018). In addition to the classic carbon offsetting, it also offered its passengers the chance to donate money to increase the share of biofuel used on their flights and just recently, Finnair committed to becoming carbon neutral by 2045 (Finnair, 2022a).

In response to the increased consumer awareness as well as the flight shaming movement, we wanted to examine whether the eco-friendliness of an airline like Finnair shows a positive link with customer loyalty. We will answer this question by investigating whether Finnair's environmental responsibility could lead to more customer satisfaction and whether increased customer satisfaction could translate into customers returning to Finnair in the form of repurchase intention as well as customer intention to recommend Finnair (positive WOM).

Previous research on air passengers' attitudes towards an airline's environmental responsibility efforts has mainly studied its outcomes on customer loyalty (Chen et al., 2012; Han et al., 2019), an airline's image (Hagmann et al., 2015; Hwang and Lyu, 2020; Mayer et al., 2012), air passengers' behavioral intentions (Baumeister et al., 2020; Cho et al., 2017; Wu et al., 2018) and an airline's competitive advantage (Baumeister and Onkila, 2016; Baumeister, 2015; Lynes and Dredge, 2006). Some studies have also looked at the impacts of environmental responsibility on customer satisfaction (Park, 2019; Park et al., 2015). Park (2019), for example, showed that the environmental responsibility of airlines has a notable effect on customer satisfaction. However, to our knowledge there is no research on the connection between green consumer values (consumers concerned about the environment trying to decrease their environmental footprint to a minimum) and customer satisfaction as well as loyalty towards an environmentally responsible airline.

The first objective of this study is to investigate whether an airline's environmental responsibility activities, expressed in green flight attributes, would have any links to customer satisfaction, repurchase intention and positive WOM such as those of more established antecedents of customer satisfaction such as brand image and value for money. The second objective of this study is to take a closer look at whether the perceived eco-friendliness of an airline is linked to customer loyalty outcomes, such as repurchase intention and positive WOM, which, in contrast to other sectors, has yet to receive more attention in the literature (e.g., Philips et al., 2019; Saeidi et al., 2015).

The next section outlines the conceptual framework and the hypotheses. Section 3 will explain the research method and measurements. In section 4 we will present our analysis and results. Finally, in section 5 we will provide our discussion and in section 6 our conclusions.

2. Conceptual framework and hypotheses

The airline industry is regarded as a highly competitive market where the provision of high-quality service is at the core of competitive advantage. In the quest for high-quality service to attract as well as retain customers, it is vital to understand the determinants that positively affect customers' perceptions of the airline and which will lead to desirable customer behaviors from the company's perspective. When modeling customers' preferences and decision-making processes

regarding airline services, the key variables typically include concepts related to satisfaction, perceived value, and behavioral intentions (Park et al., 2004). The relationships between these variables are investigated in various studies (Chow, 2014; Forgas et al., 2010; Park et al., 2004; Sultan and Simpson, 2000). It is commonly found that positive perceptions lead to higher satisfaction and subsequently to positive behavior and behavioral intentions from a company's perspective.

In order to study whether the eco-friendliness of an airline could lead to customer satisfaction and whether that could translate into customer loyalty, we propose the conceptual framework presented in Fig. 1. Using this framework, we try to investigate whether an airline's environmental responsibility activities, as expressed in green flight attributes, would have any links to customer satisfaction, repurchase intention and positive WOM such as those of more established antecedents of customer satisfaction such as brand image and value for money. In addition to examining those aspects, we also take the effect of green consumer values into account.

This study utilizes several concepts which we will introduce before discussing our hypotheses in more detail below. These include brand image, perceived value for money, customer satisfaction, WOM, repurchase intention, green consumer values and green flight attributes. Brand image is used to depict a customer's subjective and personal interpretation about an airline (Dobni and Zinkhan, 1990). Value for money stands for the customer's assessment of the monetary costs of the airline service against the quality and/or benefits of the service. Customer satisfaction can be defined as a customer's pleasure fulfillment: A satisfied airline customer feels that the airline service fulfills some need, desire, or goal, and the realization is pleasurable (Oliver, 1999). The concept of WOM is used to depict the unpaid spread of information from one customer to another regarding the airline. Repurchase intention describes whether customers are willing to continue their relationship with the airline. Green consumer values are based on a concern about the environment which consumers try to reflect in their purchase behavior (Alagarsamy et al., 2021; Varshneya et al., 2017), such as which airline to select when booking a flight. Finally, green flight attributes can be understood as certain behaviors airlines perform that lead to a reduction of the environmental impacts of their operations (Hagmann et al., 2015).

2.1. Brand image and value for money

Brand image and perceived value are among the concepts that have been utilized to better understand customers' perceptions of companies. Brand image is based on a customer's direct and indirect experiences: one's interaction with the company (e.g., visiting the company), and communications (e.g., advertisements) that provide information about the company and its actions to the customer (Kapferer, 2008; Keller, 1993). Brand image includes characteristics that are associated with a brand that distinguish it from competitors (Webster and Keller, 2004).

Perceived value describes a customer's overall assessment of the utility of a service or product, and is based on perceptions of what is given and received by the customer (Zeithaml, 1988). The evaluation can be understood as a process where the net worth of the offering is evaluated by comparing the product's or service's "gets" and "gives", that is, what the customers get from the price they pay. According to Bolton and Drew (1991), customer tastes, customer characteristics, monetary costs, and nonmonetary costs influence customers' perception of value. Value is commonly defined as the ratio or trade-off between price and quality (i.e., value-for-money conceptualization) (Cravens et al., 1988). Previous literature notes that brand image is a key driver when customers elicit the benefits of the brand (Keller, 1993), and a customer's perception of the brand image positively influences the perception of value (Brodie et al., 2009). We therefore hypothesize the following:

H1. Perceived *brand image* is positively associated with *value for money*
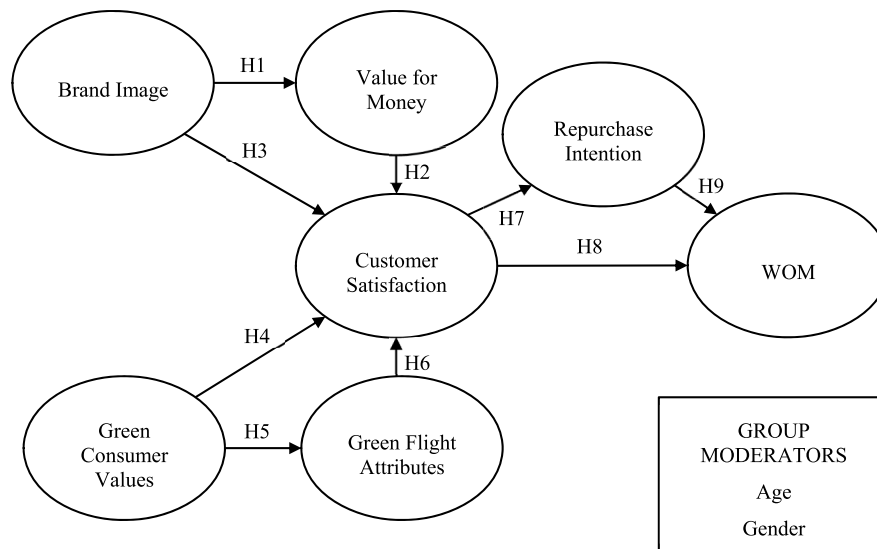
Fig. 1. Conceptual framework and hypotheses.

of the airline

2.2. Value for money and customer satisfaction

Value for money is an indicator for predicting customer satisfaction, loyalty, post-purchase behaviors, and company profitability (Rajaguru, 2016). Previous research has suggested that if a customer perceives getting value for money, he/she is more likely satisfied than a customer who does not (Zeithaml, 1988). Therefore, customer satisfaction can be predicted with customer value (Andreassen and Lindestad, 1998; Cronin Jr. et al., 2000; Ryu et al., 2012; Woodruff, 1997). Rajaguru (2016) argues that satisfaction with both low-cost and full-service airlines is significantly shaped by value for money-perception. In line with these notions, we suggest that:

H2. Perceived *value for money* is positively associated with the *satisfaction* towards the airline.

2.3. Brand image and customer satisfaction

It has been suggested that customer satisfaction is formed through expectations and realizations and whether expectations are met/not met or even exceeded. Chow (2015) indicates that customers are typically satisfied with an airline if their expectations are met or surpassed regarding the service attributes that are deemed most important. Brand literature argues that favorable brand image positively impacts customers' evaluations of a company, such as satisfaction (Martenson, 2007). Perceptual beliefs about a brand image are the basis of brand evaluation (Faircloth et al., 2001). Especially with services that are difficult to evaluate or separate from competitors' offerings, such as airline services, an airline's brand image can be an essential factor influencing customers' evaluation of satisfaction. Thus, we hypothesize the following:

H3. *Brand image* of the airline is positively associated with the *satisfaction* towards the airline

2.4. Green consumer values and customer satisfaction

Earlier studies showed that air passengers have a fairly good understanding of an airline's environmental responsibility efforts (Davison et al., 2014; Mayer et al., 2012). Further, it was found that these efforts can have a positive association with a passenger's airline choice

(Hagmann et al., 2015), customer loyalty (Han et al., 2019; Wu et al., 2018) and consumer attitude towards the airline (Hwang and Lyu, 2020). In addition to these associations, Van Birgelen et al. (2011) confirmed that those consumers showing more green consumer values in general are more likely to transfer these values to air travel. Green consumer values are based on a concern about the environment and occur when consumers' purchase and consumption behavior reflect the desire to avoid harming the environment (Alagarsamy et al., 2021; Varshneya et al., 2017). Green consumers usually try to decrease their environmental footprint through their lifestyles and their way of consumption (Delmas and Lessem, 2017). We expect that green consumers are more satisfied with an eco-friendly airline like Finnair than the remaining air passengers are. We therefore predict the following:

H4. *Green consumer values* are positively associated with the *satisfaction* towards an eco-friendly airline

2.5. Green consumer values and green flight attributes

As we discussed earlier, constantly renewing and updating the existing aircraft fleet is the most effective way for an airline to reduce its climate impacts (Baumeister, 2017; Budd and Suan-Sanchez, 2016; Miyoshi and Ibanez, 2016; Wang et al., 2020). Nevertheless, besides operating the most up-to-date fleet there are also other activities in which airlines can engage to reduce their environmental burdens. Cowper-Smith and de Grosbois (2011) found seven areas in which airlines can engage with pro-environmental initiatives: reduce emissions (e.g., by updating the fleet), reduce waste (e.g., during in-flight service), reduce energy consumption (e.g., in ground support, offices), reduce water use (e.g., in aircraft cleaning), reduce biodiversity loss, reduce noise (e.g., using newer and quieter aircraft) and other activities such as obtaining ISO 14001 certification or sponsorship. Several studies have hereby investigated the effects of such activities on air passengers' attitudes towards airlines performing these (e.g., Hagmann et al., 2015; Mayer et al., 2012; Wittmer and Wegelin, 2012). Hagmann et al. (2015) tested several green flight attributes among its participants, such as promoting public transport to reach the airport, offering "carbon offsetting" and testing biofuels. Based on the green flight attributes listed in Hagmann et al. (2015), we wanted to test whether those attributes would also be appealing to green consumers. We assume that green consumers value an airline's environmental responsibility activities as they are expressed in green flight attributes more than the remaining air passengers do and therefore expect the following:

H5. *Green consumer values* are positively associated with the appreciation of *green flight attributes.*

2.6. Green flight attributes and customer satisfaction

In addition to studying whether green flight attributes appeal to green consumers, we also wanted to find out whether green flight attributes would lead to customer satisfaction. Earlier studies have found that an airline's environmental responsibility efforts also have a positive link to customer satisfaction (Park, 2019; Park et al., 2015). Park (2019), for example, found that the environmental responsibility efforts of airlines can influence customer satisfaction notably. We hereby wanted to find out whether those particular green flight attributes presented by Hagmann et al. (2015) would lead to customer satisfaction. As Finnair stands out in terms of the green flight attributes discussed by Hagmann et al. (2015), we wanted to find out whether those attributes lead as well to customer satisfaction. We predict that air passengers who value more an airline's environmental responsibility activities expressed by green flight attributes show a higher customer satisfaction towards that airline than do the remaining air passengers. Hence, we assume the following:

H6. *Green flight attributes* are positively associated with the *satisfaction* towards the airline.

2.7. Customer satisfaction and repurchase intention

Previous research implies that satisfaction has an essential impact on customers' purchase and loyalty behaviors and intentions (Mattila, 2004; Morgan and Hunt, 1994). Satisfaction likely increases the probability that a company is retained in a customer's consideration and enhances a customer's preference for the company (Hellier et al., 2003). Plethora of studies have provided evidence that higher satisfaction levels result in a greater intention to visit again and repurchase from a company in the future (e.g., Bearden and Teel, 1983; Cronin and Taylor, 1992; Seth et al., 2005). In line with these findings, it can be expected that satisfied customers are willing to repurchase flights from the same airline. Thus, we propose the following hypotheses:

H7. *Customer Satisfaction* towards the airline is positively associated with the *repurchase intention* with the airline.

2.8. Customer satisfaction and positive WOM

WOM refers to customers' comments about service and product quality and trustworthiness, which are passed from one customer to another (Charlett et al., 1995). The communicated information can be negative, positive, or a mixture of both (Charlett et al., 1995). Consumer research has acknowledged the vital influence of WOM on customers' purchase decisions with regards to both services and products (e.g., Brown and Reingen, 1987; East et al., 2008). This can be explained by customers' trust in reviews that lack commercial interest over advertisements, for instance (East et al., 2007). WOM is often considered a trustworthy external source of information through which offerings can be evaluated. It is widely agreed that satisfied customers will engage in WOM favorable to the company (e.g., Bitner, 1990; Anderson, 1998; Söderlund, 1998). Furthermore, customers are more likely to recommend a service or product if they have direct positive experience with the service (Ranaweeraa and Jayawardhena, 2014). Therefore, we suggest the following:

H8. *Customer satisfaction* is positively associated with *positive WOM* about the airline.

2.9. Repurchase intention and positive WOM

The intention to repurchase means concrete plans for future behavior (Cole and Scott, 2004). It indicates that a customer is positively engaged

with the company and has an intention to maintain a relationship with the firm. Previous research has demonstrated that if customers engage in loyalty behaviors, such as repurchases, they are more likely to engage in positive WOM (de Matos and Rossi, 2008). Furthermore, customers are motivated to recommend brands when they have strong feelings towards them (Reichheld 2003). It can be suggested that customers with repurchase intentions are also likely to spread positive WOM regarding the airline. We posit the following:

H9. *Repurchase intention* is positively associated with *positive WOM* about the airline.

2.10. Moderator hypotheses

Based on previous literature we have included gender and age as moderators in our model. Previous studies have shown that green consumer values differ between gender, with women more concerned about the environment than men (Dietz et al., 2002; Fisher and Arnold, 1994). This results in women more likely consuming green products (Mainieri et al., 2010; Urena et al., 2008). In terms of age, the previous literature shows no clear consensus if age correlates positively, negatively, or not at all with green consumer values (Do Do Paco et al., 2009). Concerning customer loyalty behavior, the previous literature has suggested that this can differ based on customer characteristics such as gender and age. Yang et al. (2012), for example, noted that younger consumers are more active in WOM than older consumers are. In addition, they suggest that men create and consume more WOM than women do. By contrast, previous studies have also shown that female consumers generally give and receive social support through the Internet more than males do (Fan and Miao, 2012; Gefen and Ridings, 2005). Therefore, we propose that the associations in our model differ regarding age and gender.

3. Research method and measurements

3.1. Sample and measures

A total of 1170 valid responses were recorded from 5000 randomly chosen Finnair customers age 18 or above who had flown with Finnair's new Airbus A350. Finnair's Airbus A350 operates on flights from Finland to the United States, China, Hong Kong, Singapore, and Thailand. After their flights these randomly chosen customers received an e-mail from Finnair with an invitation to participate in an online survey. The survey was made available in Finnish, English, Chinese and Thai. The translation and testing of the survey were conducted in collaboration with native speakers. The sample characteristics are presented in Table 1 showing the gender distribution, the language in which participants completed the survey as well as the age group to which the participants belong. We also checked if the respondents actually perceived Finnair to be an eco-friendly company. The respondents were asked to assess the following statement "When thinking about the following airlines, how environmentally friendly would you rate them?

Table 1
Sample characteristics.

Variable		n	%
Gender	Male	700	59.8
	Female	470	40.2
Language	English	237	20.3
	Finnish	905	77.4
	Chinese	25	2.1
	Thai	3	0.3
Age Group	18–24	45	3.8
	25–34	170	14.5
	35–44	282	24.1
	45–54	352	30.1
	55–64	214	18.3
	65 or older	107	9.1

-Finnair" from 1 = very poor to 7 = very good. The mean for this statement was 4.70, which indicated that the respondents generally perceived Finnair to be an eco-friendly airline.

Respondents evaluated 25 statements on attitudes towards Finnair (brand image, value for money, customer satisfaction, repurchase intention and WOM) and ecological consumption (green consumer values and green flight attributes) with a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The survey questions and scales for each statement can be found in the Appendix. We used established scales to measure the constructs that were described earlier in the conceptual framework. The measurement for brand image was adapted from Chitty et al. (2007). The scales for value for money were adopted from Forgas et al. (2010) in Rajaguru (2016), and items measuring satisfaction were derived from Cronin et al. (2000) and Žabkar et al. (2010) in Rajaguru (2016). The scale for green consumer values was adopted from Haws et al. (2010). Items measuring green flight attributes were derived from Attributes for Flight Choice and made to fit the research context (Hagmann et al., 2015). The measurement for behavioral intention for repurchase was from Žabkar et al. (2010) in Rajaguru (2016). The scale for WOM was derived from Reichheld (2003) and Zeithaml et al. (1996).

3.2. Nonresponse bias and common method bias

Nonresponse bias was assessed by comparing the early respondents with the late respondents. No significant differences (at $p < 0.05$) in the item responses were found between the two groups. Thus, non-response bias likely did not impact our results. The likelihood of common method bias (CMB) influencing the results was mitigated through the following procedures. The items were mixed in the questionnaire; item ambiguity was minimized; and the respondents were informed about their anonymity. A full collinearity assessment approach was then performed to test for CMB in which variance inflation factors (VIFs) are generated for all latent variables in a model (Kock, 2015). The occurrence of a VIF larger than 3.3 is suggested as an indication of pathological collinearity, and as an indication that a model may not be free from common method bias (Kock, 2015). In our model, all VIFs resulting from a full collinearity test are equal to or lower than 2.59, and therefore common method bias should not be a concern in our model.

4. Analyses and results

The hypotheses were tested using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 3.2.7 (Ringle et al., 2015) for the following reasons: according to Hair et al. (2017) the factor indeterminacy makes covariance-based SEM adequate for prediction purposes. Our study was exploratory in a broad sense because it tested several new relationships between constructs in a complex model, and many of the variables were not normally distributed. In such cases, PLS-SEM is the recommended testing approach (Hair et al., 2017).

4.1. Measurement model

In general, based on confirmatory factor analysis with SmartPLS 3.2.7, construct measures showed high internal reliabilities. The evaluation of the constructs showed acceptable reliability and validity as the factor weights were all either equal to or larger than 0.71 (see Appendix). Composite reliabilities were all above 0.88, and Cronbach's alphas were above the cut-off value of 0.70. The age and gender of a respondent were set as control variables. Discriminant validity was achieved by using the Fornell–Larcker criterion and testing the heterotrait-monotrait (HTMT) ratio. The square root of the average variance extracted (AVE) of each latent variable exceeded the correlations with all the other latent variables (excluding dimensions within second-order factors), and HTMT ratios were smaller than the cut-off value of 0.90. In addition, the standardized root mean square residual (SRMR) value of 0.04 was well

below the threshold, which indicated a good model fit (Henseler, 2014). To summarize, the assessment of the reflective constructs met the criteria set in the literature; the model's predictive relevance was high in terms of outcomes; and all R^2 values were well above cut-off values. The measurement model is presented in Table 2.

4.2. Structural model

With respect to H1 and H2, positive associations between *value for money* and *brand image* ($\beta = 0.57$; $p < 0.001$) and *satisfaction* ($\beta = 0.28$; $p < 0.001$) were supported by the data. The data mutually supports H3 by indicating positive associations between *brand image* and *satisfaction* ($\beta = 0.45$; $p < 0.001$). The data did not support H4 by disclosing the hypothesized direct positive association between *green consumer values* and *satisfaction* ($\beta = -0.03$; ns/$p > 0.05$.). Instead, H5 was confirmed by the data that supported a positive association between *green consumer values* and *green flight attributes* ($\beta = 0.62$; $p < 0.001$). In addition, with respect to H6, a positive association between *green flight attributes* and *satisfaction* was supported by the data ($\beta = 0.08$; $p < 0.01$). The model confirms the path between *green consumer values* and *satisfaction* via *green flight attributes*, but the association is indirect rather than direct. The specific indirect effect from *green consumer values* on *satisfaction* via *green flight attributes* was positive and significant (0.07, $p < 0.01$) while the direct effect was insignificant, which supports the full mediation effect. Moreover, data supported H7 by confirming positive association between *satisfaction* and *repurchase intention* ($\beta = 0.46$; $p < 0.001$). *Satisfaction* was also positively associated with *WOM* ($\beta = 0.40$; $p < 0.001$), which supported H8. Further, with respect to H9, *repurchase intention* had a positive association with *WOM* ($\beta = 0.48$; $p < 0.001$). The results are presented in Table 3.

We also tested multigroup moderator effects for gender and age. There were no significant differences in the model between men and women. However, multigroup analysis revealed some significant differences between respondents aged 18–44 years and those 45 years or older. The association between *green consumer values* and *satisfaction* (H4) was insignificant for respondents aged 18–44 years, but in contrast to H4, this association was negative for the respondents aged 45 years or older (-0.10**). In addition, there was no significant association between *green flight attributes* and *satisfaction* (H6) for the respondents aged 18–44 years. However, for the respondents aged 45 years or older, the link between these constructs was positive (0.15***), which supported H6.

5. Discussion

The results show that the value-for-money perception affects the customer's brand image judgment of an airline. If the trade-off between quality and price is perceived positively, it is expected that the customer's overall evaluation of a company is more positive, and the airline is considered to be more attractive. In line with previous studies, the results indicate that influencing the brand image perception is essential from an airline's perspective (Loureiro and Kastenholz, 2011; Raithel et al., 2010). Furthermore, the perception of value for money has a direct and indirect link to customer satisfaction. The results here are in line with multiple previous research studies indicating that perceived value is an antecedent of customer satisfaction (e.g., Andreassen and Lindestad, 1998; Cronin Jr. et al., 2000; Singh and Sirdeshmukh, 2000; Woodruff, 1997). Although it has been suggested that value for money is an essential element especially when competing in the low-cost segment (Forgas et al., 2010), the results of this study highlight its importance for full-service airlines as well.

To our surprise, the results indicated that being an eco-friendly airline does not automatically lead to customer satisfaction among green consumers. While green consumers, who prefer airlines that feature green flight attributes, showed more satisfaction towards an eco-friendly airline, the green consumer values were not directly associated

Table 2
Cronbach's Alphas (CA), Composite Reliabilities (CR), Average Variance Extracted (AVE), Construct Correlations, Square Root of AVE (on the diagonal), Means and Standard Deviations.

	CA	CR	AVE	1	2	3	4	5	6	7
(1) Green Flight Attributes	.83	.90	.74	.86						
(2) Green Consumer Values	.94	.95	.77	.62	.88					
(3) Brand Image	.86	.94	.88	.22	.26	.94				
(4) Repurchase Intention	.83	.89	.67	.19	.20	.55	0.82			
(5) Satisfaction	.94	.96	.85	.24	.20	.63	0.48	.92		
(6) Value for Money	.91	.94	.80	.29	.25	.56	0.54	.55	.90	
(7) WOM	.95	.97	.91	.28	.24	.65	0.67	.63	.65	.95
Mean				4.00	4.90	5.75	5.71	5.31	4.52	5.54
Standard Deviation				1.37	1.43	1.2	1.4	1.06	1.37	1.37

Table 3
Results of the structure equation model.

IV	DV	Hyp.	β	R^2
Value for Money	Brand Image	H1	.57***	.31
	Satisfaction	H2	.28***	.45
Brand Image	Satisfaction	H3	.45***	.45
Green Consumer Values	Satisfaction	H4	−.03ns	.45
	Green Flight Attributes	H5	.62***	.38
Green Flight Attributes	Customer Satisfaction	H6	.08**	.45
Customer Satisfaction	Repurchase Intention	H7	.46***	.23
Customer Satisfaction	WOM	H8	.40***	.47
Repurchase Intention	WOM	H9	.48***	.47

Notes: ns/not significant at $p > 0.05$; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

with satisfaction towards an eco-friendly airline. However, the positive association between green consumer values and satisfaction towards an eco-friendly airline was mediated by green consumers' preference for green flight attributes. Therefore, these findings clearly showed that it is not enough for an airline to appear eco-friendly in order to satisfy green consumers but instead an airline needs to show concrete actions (green flight attributes) to achieve customer satisfaction. Our findings are hereby in line with Park (2019) and Park et al. (2015), which both found positive links between customer satisfaction and airlines' environmental responsibility efforts. Our results also support earlier findings by Van Birgelen et al. (2011) that those consumers showing more green consumer values in general, are more likely transferring these behaviors also to air travel.

The results indicate that a satisfied customer is more likely to repurchase an airline's services. Our results are hereby in line with previous research demonstrating the positive relationship between satisfaction and repurchase intentions (Cronin and Taylor, 1992; Jones and Suh, 2000). The results also indicated that satisfied customers will more likely engage in positive WOM in favor of an airline, confirming earlier findings by Bitner (1990), Anderson (1998) and Söderlund (1998). Finally, the findings also showed that customers with repurchase intentions are more likely to engage in positive WOM about an airline. As airlines operate in a highly competitive market, the results suggest that, in accordance with previous studies, obtaining and keeping up a high level of customer satisfaction is a critical competitive asset for an airline (Chen, 2008; Li et al., 2017).

In terms of multigroup moderator effects, our results failed to confirm previous studies regarding differences in gender when it comes to green consumer behavior (Mainieri et al., 2010; Urena et al., 2008) or customer loyalty behavior (Fan and Miao, 2012; Gefen and Ridings, 2005). However, concerning age, our results showed significant differences between respondents aged 18–44 years and those 45 years or older, which did support the findings of previous literature (Witek and Kuzniar, 2021).

6. Conclusion

This paper set out to study whether the environmental responsibility of an airline could be positively associated with customer satisfaction and whether that could translate into more customer loyalty towards an eco-friendly airline. The study found that being environmentally responsible can benefit airlines, because it can generate customer satisfaction alongside more established antecedents of customer loyalty such as brand image and value for money. Furthermore, the study found that satisfied customers were more likely to repurchase airlines' services and engage in positive WOM, resulting in customer loyalty.

Regarding managerial implications, the results indicated that being an eco-friendly airline does not automatically lead to customer satisfaction among green consumers. While green consumers, who prefer airlines that feature green flight attributes, showed more satisfaction towards eco-friendly airlines, the green consumer values were not directly associated with satisfaction towards an eco-friendly airline. It can therefore be concluded that it is worth it for airlines to adopt green flight attributes, because this effort can generate customer satisfaction among green consumers that can translate into customer loyalty in the form of repurchase intention and positive WOM. While this study linked eco-friendly behavior in the airline industry with customer loyalty, it is likely that these findings can also be applied to other sectors of the transport industry.

This study shows certain limitations which naturally present possibilities for further research. First, the surveyed sample does not represent all customers of Finnair but only those that have flown on one of the long-haul routes operated by the Airbus A350. Second, the current study examined the associations between the constructs because the use of cross-sectional survey data limits causal interpretations to be drawn. In future studies, longitudinal and comparative surveys could produce interesting results, particularly in the post–COVID-19 era. In the future, it is likely that environmental and health-related issues will be intertwined in the preferences of airline customers.

CRediT authorship contribution statement

Stefan Baumeister: as the first author was responsible for the, Conceptualization, Data curation, Investigation, Methodology, Supervision, Validation, Writing – original draft. **Jussi Nyrhinen:** Formal analysis, as the second author was performing the formal analysis and involved in the conceptualization, Conceptualization, Methodology, Writing – original draft. **Tiina Kemppainen:** Writing – original draft, Conceptualization. **Terhi-Anna Wilska:** Resources, Validation, Writing – original draft, and involved in writing the original draft, All authors contributed equally to the reviewing and editing of the manuscript.

Data availability

The authors do not have permission to share data.

Appendix

Measurement and scales

Construct/Items	FL
Green Consumer Values (Haws et al., 2010)	
It is important to me that the products I use do not harm the environment	.858
I consider the potential environmental impact of my actions when making many of my decisions	.904
My purchase habits are affected by my concern of climate change	.900
I am concerned about wasting the resources of our planet	.836
I would describe myself as environmentally responsible	.848
I am willing to be inconvenienced in order to take actions that are more environmentally friendly	.901
Green Flight Attributes (Hagmann et al., 2015)	
I prefer to fly with airlines that are promoting public transport to reach the airport	.785
I prefer to fly with airlines that offer "carbon offsetting"	.896
I prefer to fly with airlines that are testing biofuels	.897
Brand Image (Chitty et al., 2007)	
Finnair is a company that I trust.	.933
Finnair has a good overall reputation.	.942
Value for Money (Forgas et al., 2010)	
Finnair's flights are reasonable priced.	.893
Finnair offers value for money.	.923
Finnair provides good flights for the price.	.927
Flying with Finnair would be economical.	.839
Customer Satisfaction (Please indicate how well these adjectives describe your overall experience with Finnair) (Cronin et al., 2000; Žabkar et al., 2010)	
1 = Poor, 7 = Excellent	.931
1 = Inferior, 7 = Superior	.925
1 = Poor Quality, 7 = High Quality	.925
1 = One of the Worst – 7 = One of the Best	.904
Repurchase Intention (Žabkar et al., 2010)	
Please state how likely are you to fly more often with Finnair in the future?	.813
Please state how likely are you to fly less often with Finnair in the future? (reverse, recoded)	.711
Please state how likely are you to continue flying with Finnair in the future?	.873
Please state how likely are you to consider Finnair to be your first choice for future air travels?	.854
Positive WOM (Reichheld, 2003; Zeithaml et al., 1996)	
Please state how likely are you to say positive things about Finnair to other people?	.957
Please state how likely are you to recommend Finnair to someone who seeks your advice?	.972
Please state how likely are you to encourage friends and relatives to fly with Finnair?	.972
Group Moderators	
Age (in years)	
Gender (Male/Female)	
Note: anchored by 1 = strongly disagree to 7 = strongly agree, unless stated otherwise. FL = factor loading	

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