Personal factors influencing the decision to choose eco-friendly airlines at Chiang Mai International Airport

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Abstract

As the environmental impact of the airline industry becomes a growing concern for both travelers and policymakers, demand for sustainable aviation continues to intensify. Despite the recent global growth in eco-friendly air travel options, research on Thai consumers' attitudes and behaviors toward green airlines, and eco-friendly flight options in Thailand, remains limited. To address this gap, this study investigates how "personal factors" would influence Thai consumers' decisions to choose environmentally friendly airline services. As an extension, this study provides research-based recommendations to support airlines design targeted marketing strategies for eco-friendly passengers, which are in accordance with the International Civil Aviation Organization's (ICAO) sustainability goals. For the purposes of this study, quantitative research was conducted on 420 passengers at Chiang Mai International Airport. Furthermore, this study employed a 'one-way ANOVA' method for the purposes of its statistical analysis. The results revealed that age, education, and income significantly influenced passengers' decisions to fly with eco-friendly airlines, while gender appeared to have had little to no impact regarding this selection. These findings highlight the importance of targeting well-educated, middle-aged, and higher-income travelers who are more likely to choose sustainable options. However, the scope of this study is limited to a single airport. Future research may conduct at various airports across Thailand and apply mixed-method research to gain deeper information about Thai consumer behavior related to sustainable aviation.

Keywords: Personal Factors, Eco-Friendly Airlines, Chiang Mai International Airport.

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Introduction

Environmental sustainability has become a global priority in recent years, which has led various industries, including aviation, to focus on more environmentally friendly operations (Kaur et al., 2025). In response, many airlines started pursuing “green services” as a strategy to attract environmentally conscious passengers (Koç, 2023). The aviation industry significantly contributes to environmental damage, mainly through carbon emissions (Rupcic et al., 2023). Therefore, eco-friendly actions are needed to enhance sustainability within the industry. Examples of sustainable action-oriented measures may include the implementation of sustainable aviation fuels (SAFs), an upgrade to more fuel-efficient aircraft, and improvement of waste management systems (Aksoy et al., 2022).

In response to the environmental challenges, many airlines have begun implementing sustainable practices across their operations. For instance, Turkish Airlines and Pegasus Airlines addressed sustainability in their business models over the period of four years (between 2014-2018). Both companies claimed that their strategic integration of sustainability aimed at reducing emissions and fuel consumption, which was made possible by investing in new fleet and advanced technologies, was indeed successful (Yilmaz & Kose, 2021). According to Repková-Štofková et al. (2023), Ryanair has set its strategy for sustainability based on three core pillars, namely: 1.) environmental, 2.) social, and 3.) customer-focused. The International Civil Aviation Organization (ICAO) created the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which aims to enhance sustainability and reduce the aviation industry's carbon footprint (Leenoi, 2024). In 2022, ICAO members established the “Fly Net Zero” program with the objective to achieve net-zero carbon emissions for international aviation by 2050. In 2023, Thailand joined CORSIA as a volunteer participant, establishing its commitment to lowering aviation's environmental impact and supporting global carbon reduction efforts (International Civil Aviation Organization, 2023). However, in Thailand, several airlines have begun to integrate environmentally friendly practices. For example, Thai Airways focuses on sustainable sourcing, waste reduction, and carbon offsetting, implementing programs such as "Save Food, Save the World" to minimize food waste, reduce plastic usage, and promote a circular economy (Thai Airways International Public Company Limited, 2020).

Furthermore, the aviation industry is becoming more aware of environmental issues by closely observing consumers’ decisions, demands, and preferences. A study by Hwang et al. (2018) identified socio-demographic factors such as age, income level, education, and awareness of environmentally friendly airlines as significant influences on the choice for eco-friendly airlines among passengers in Korea. Having said this, the specific factors influencing consumers to use

ecologically friendly airlines in Thailand have not been widely investigated, leaving a gap to be filled by this current study.

As a result, the primary objective of this research is to examine the influence of "personal factors" including gender, age, education, and income on Thai passengers' intentions to choose environmentally friendly airlines. Chiang Mai International Airport, a key airport hub in northern Thailand, was chosen as the study area due to its increasing passengers' traffic and the region's pressing environmental concerns, particularly severe PM2.5 air pollution (Santijitpakdee et al., 2024). This context reasonably makes Chiang Mai a suitable location for investigating the factors influencing travelers' decisions to choose eco-friendly airlines. The outcomes of this research are expected to provide useful and practical information to airlines and various stakeholders in the aviation industry. The findings aim to guide designing and developing marketing strategies, supporting the growth of eco-conscious travelers' segments, and helping to achieve sustainable aviation goals set by the International Civil Aviation Organization (ICAO), and also promote Chiang Mai's image as a sustainable tourism destination.

Research Objectives

1. To examine the influence of personal factors on consumers' decisions to choose environmentally friendly airline services.
2. To generate insights that support airlines in developing targeted marketing strategies, expanding environmentally conscious traveler segments, and aligning with the International Civil Aviation Organization's (ICAO) goals for sustainable aviation operations.

Hypothesis

This study considers personal factors, namely gender, age, education level, and income as potential influences on consumers' decisions to select environmentally friendly airline services. The following hypotheses are proposed accordingly.

H_0: Personal factors have no significant effect on the decision to choose environmentally friendly airline services.

H_1: Personal factors have a significant effect on the decision to choose environmentally friendly airline services.

Literature Review

Socio-Demographic Characteristics

Demographic factors such as gender, age, income, education, and occupation significantly influence consumers' behaviors, particularly those concerning sustainable consumption and eco-friendly choices (Yada & Kumar, 2021). Recent studies have provided data into how these variables

affect purchasing patterns. For instance, Schnurr and Halkias (2023) found that female consumers exhibit a stronger preference for products made by women, driven by the belief in individual action efficacy to perhaps restore social equality. Regarding age and education, Alam and Zakaria (2021) suggest that younger and more educated individuals in Sylhet City, Bangladesh, express higher environmental concerns and are more likely to engage in environmentally responsible behaviors. Furthermore, Özdemir Uçgun and Narcı (2022) found no significant relationship between income levels and consumers' willingness to pay for sustainable accommodations and that environmental purchasing behaviors may not be directly correlated with income levels. This suggests that income may not always affect their choice to buy environmentally friendly products. According to Cordes et al. (2024), personal factors such as age, income, and education significantly influence individuals' willingness to pay for sustainable air travel options, particularly voluntary carbon offsets. The study found that younger, highly educated, and high-income travelers demonstrated the greatest willingness to invest in environmentally conscious choices.

Overall, the relationship between demographic factors and eco-friendly travel behavior is complex, with inconsistent findings across different studies. These mixed results show the need for further exploration into how personal characteristics interact with attitudes and behaviors relating to sustainable travel. With this notion in mind, this study attempts to demonstrate how socio-demographic characteristics such as age, gender, income, and education influence decision-making, and how the examination of these critical factors could improve airlines' marketing strategies and their respective service offering.

Eco-friendly airlines

Eco-friendly airlines represent a developing trend within the aviation industry that aims to reduce the environmental impact of air travel, which accounts for around 2-3% of global greenhouse gas emissions (Peregrine, 2024). As concerns about climate change and consumers' demand for sustainable products increase, airlines are implementing a variety of programs to reduce their environmental impact (Hinnen et al., 2015). The pursuit of such sustainable strategies has led to transformational changes in the industry, for instance, an increased utilization of Sustainable Aviation Fuel (SAF) as well as fleet modernization to improve fuel efficiency (Cole, 2024). The key components to eco-friendly airlines include fleet modernity, sustainability in operations, waste management system, community engagement, and carbon offset programs. For example, Alaska Airlines, an airline based in the United States, has been recognized for its efforts in reducing CO_2 emissions and minimizing its environmental impacts. The airline has introduced various sustainable operations, including the elimination of plastic straws, the recycling of in-flight coffee grounds, and the implementation of advanced avionics technology to optimize fuel efficiency through its "Greener Skies" program. Furthermore, Alaska Airlines has partnered with

the Port of Seattle and Boeing to power all flights at Seattle-Tacoma International Airport with sustainable biofuel (Alaska Airlines, n.d.). In addition, sustainability has become an important issue in the aviation industry. According to Han and Rhee (2021), environmentally friendly operations have a significant impact on how passengers perceive and select airlines. For example, Han and Rhee discovered that 56.8% of passengers preferred domestic full-service carriers (FSCs), known for their environmentally friendly operations. This indicates that more passengers are looking for airlines that are concerned about the environment.

Consumer Decision-Making Process Model in the Context of Choosing Environmentally Friendly Airlines

As individuals become more conscious and proactive about climate change, more questions and criticism are being directed at the airline industry due to their negative environmental impact. As a result, many consumers are changing their travel behaviors and seek sustainable options. The Consumer Decision-Making Process Model offers a logical process to understanding how passengers choose environmentally friendly airlines. This process presents five stages 1.) problem recognition, 2.) information search, 3.) evaluation of alternatives, 4.) purchase decision, and 5.) post-purchase behavior. This model enables businesses to evaluate consumers' thinking and decision-making processes, and in turn allows them to design creative and more effective marketing strategies. (Hunt et al., 2018). Problem recognition is the initial stage where consumers become aware of an issue that demands action. In the case of the airline industry, as passengers become aware of environmentally friendly options, they also become more attentive about the environmental impacts of flying. Social norms and individual beliefs about sustainability and climate change are also what motivate this awareness (Koo & Kang, 2023). When a passenger recognizes the need for eco-friendly travel, they will seek information about eco-friendly airline options. Passengers may also actively look for information about the airline's sustainability policies. This relates to searching for environmentally friendly outcomes and corporate social responsibility programs, which have a significant impact on their decisions (Han et al., 2024). Notably, the level of engagement in this stage often depends on the traveler's environmental concern and perceived behavioral control (Ajzen, 2020). During the evaluation stage of the alternatives, consumers compare various products according to factors such as price, quality, or how the products will make them feel (Hunt et al., 2018). Eco-conscious consumers use both emotional and rational factors when evaluating green products (Joshi & Rahman, 2015). However, the purchase decision is rarely purely rational. External influences such as discounts, peer recommendations, or self-image can have power over the choices (Masterson et al., 2017). Post-purchase behavior occurs when consumers reflect about their feelings toward the products

or services they buy. According to Masterson et al. (2017), there are three common outcomes of this in the post purchasing phase: disappointment, satisfaction, and delight. The experience of the flight could have a positive or negative reinforcement on a future decision. Environmental responsibility, social and personal values, and the expected sense of pride, which can also result in a feeling of satisfaction, all have a positive influence on the choice of an airline that practices responsibility. (Han et al., 2024).

In conclusion, the Consumer Decision-Making Process Model offers a structured framework to understand how personal factors influence travelers' decisions to choose environmentally friendly airlines. This highlights the importance of further examination of these factors to better understand their connection and impact on sustainable travel behavior.

Conceptual Framework

Based on a review of relevant theories and concepts relating to personal factors, environmentally friendly airlines, and decision-making process, the conceptual framework is presented in Figure 1.

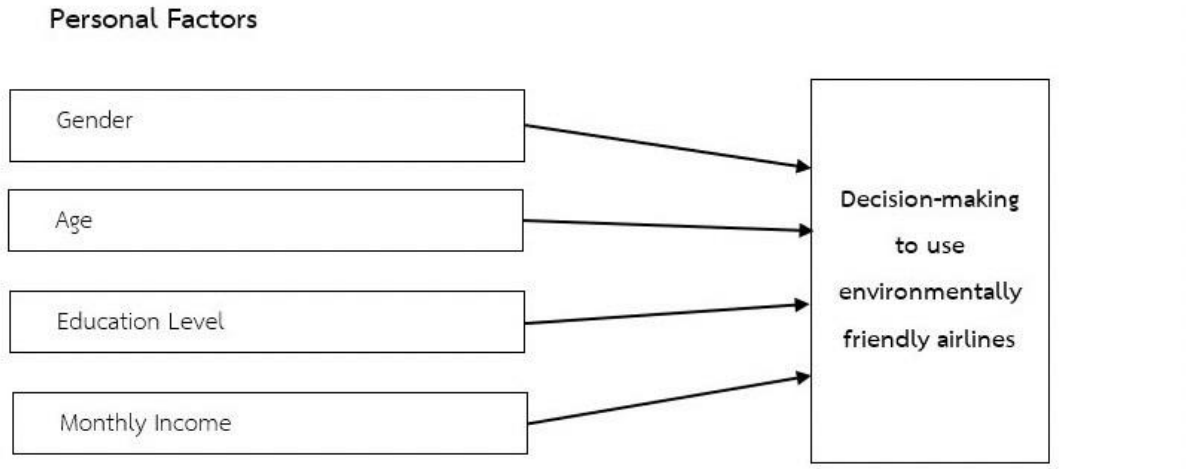

Figure 1: Conceptual framework

Methodology

Population and Sampling Technique

The sample size in this study was determined by using '2024 passenger traffic data' from Chiang Mai International Airport, as reported by the Air Transport Statistics of Airports of Thailand (N = 861,383). Based on this population, Yamane's (1973) formula with a 5% margin of error was applied, resulting in a minimum required sample size of approximately 400 respondents. This study employed a non-probability quota sampling method to select 420 participants, with 70 Thai passengers from each of six major Thai airlines: Thai Airways, Bangkok Airways, Nok Air, Thai AirAsia,

Thai VietJet, and Thai Lion Air. Sampling was conducted at Chiang Mai International Airport to ensure equal representation across carriers and reduce potential bias from the overrepresentation of dominant airlines.

Measurement and Data Collection Procedure

The questionnaire was used as the main instrument for this research. A close-ended questionnaire was administered to 420 Thai passengers to gather their opinions regarding the decision to choose an environmentally friendly airline.

The questionnaire contained three sections including 'prescreen questions'.

Prescreen: The pre-screening question was designed to ensure that only eligible participants (those who have traveled via Chiang Mai International Airport) complete the survey.

Part 1: Personal Factors

Part 1 focused on personal factors, including multiple-choice questions about gender, age, education level, occupation, and average monthly income.

Part 2: The Intention to choose eco-friendly airlines

Part 2 focused on consumer's behaviors regarding the intention to choose eco-friendly airlines. This section used a 5-point Likert scale, where respondents were asked to rate their level of agreement ranging from 'strongly agree' to 'strongly disagree'.

The rating scale will use a 5-point Likert Scale:

5 = Strongly agree

4 = Agree

3 = Neutral

2 = Disagree

1 = Strongly disagree

and be analyzed based on interval range calculation:

1.00-1.80 = Strongly disagree

1.81-2.60 = Disagree

2.61-3.40 = Neutral

3.41-4.20 = Agree

4.21-5.00 = Strongly agree

This questionnaire was validated for content quality by three experts: 1. A senior employee from the airline industry, 2. An Assistant Professor in Marketing, and 3. A second Assistant Professor in Marketing. The Index of Item-Objective Congruence (IOC) of the questionnaire ranged from 0.60 to 1.00 (exceeding 0.5), which indicates that it was appropriate for the purposes of this research (Rovinelli & Hambleton, 1976).

Moreover, the reliability of the questionnaire was tested and refined with a pre-survey sample of 30 individuals who were not part of the main sample. The reliability of the tool was confirmed with Cronbach's alpha coefficient of 0.985. A Cronbach's alpha coefficient greater than 0.7 suggests acceptable reliability (Cronbach, 1970).

The data collection procedure was conducted in two stages:

1. The pre-survey stage to test reliability.

The questionnaire's reliability was evaluated through a pretest with 30 respondents separate from the primary study sample. The result of reliability was confirmed with Cronbach's alpha coefficient of 0.985. A Cronbach's alpha coefficient greater than 0.7 suggests acceptable reliability (Cronbach, 1970).

2. The full-scale survey stage was conducted with 420 respondents.

Prior to data collection, the research proposal, including the questionnaire, was reviewed and approved by the Institutional Review Board (IRB) to ensure that ethical standards. The IRB approval number is IRBCMRU 2025/021.06.02.

Data was then collected using a structured questionnaire designed to assess personal factors influencing the intention to use environmentally friendly airlines. The questionnaire included sections on personal factors and decision-making processes, which the participants voluntarily contributed to using online and offline tools. The online survey was administered through Google Forms on half of the participants, and the other half responded to a paper-based questionnaire on location at Chiang Mai International Airport. This method of distribution among respondents was based on a quota sampling method conducted during February 2025.

Data Analysis

Descriptive Statistics

Descriptive Statistics were then used to analyze the personal factors of the respondents, such as frequency and percentage, mean, and standard deviation. This analysis covered data such as gender, age, education level, average monthly income, flight frequency, flight type preference, flight purpose and who is responsible for travel expenses.

Inferential Statistics

To test for statistically significant differences among groups within each demographic variable, a 'one-way analysis of variance' (or ANOVA) method was employed and statistical significance was determined at the 0.05 level. Each demographic factor was analyzed individually to assess its influence on consumers' decision-making. Assumptions of normality and homogeneity of variance were checked prior to conducting the ANOVA tests to ensure the validity of the results.

Results

Part 1: Personal factors

Table 1: Demographic characteristics

	Number (n=420)	Percentage (100.0%)
1. Gender		
Male	156	37.1
Female	249	59.3
Prefer not to say	15	3.6
2. Age		
21-30 years old	30	7.1
31-40 years old	231	55.0
41-50 years old	132	31.4
51-60 years old	25	6.0
Above 61 years old	2	0.5
3. Education Level		
Less than Bachelor's degree	10	2.4
Bachelor's degree	362	86.2
Higher than Bachelor's degree	48	13.2
4. Average Monthly Income		
below 20,000 Baht.	11	2.8
20,001 - 40,000 Baht.	58	13.8
40,001 - 60,000 Baht.	311	74.0
60,001 - 80,000 Baht	38	9.0
80,001 - 100,000 Baht.	1	0.2
100,000 Baht. and above	1	0.2
5. Flight Frequency		
Once a year	19	4.5
2 – 3 times per year	292	69.5
4 – 5 times per year	95	22.6
More than 5 times per year	14	3.4
6. Flight Type Preference		
Low-cost carriers (LCCs)	285	67.9
Full-service carriers (FSCs)	135	32.1

Table 1: Demographic characteristics (continued)

	Number (n=420)	Percentage (100.0%)
7. Flight Purpose		
Travel/Leisure	325	77.4
Business / Work	45	10.7
Visiting Family/Relatives/Friends	38	9.0
Education	5	1.2
Medical Treatment or Healthcare	7	1.7
8. Who is responsible for travel expenses		
Own expenses	359	85.5
Family	22	5.2
Company/Organization	39	9.3

From Table 1, the analysis of the demographic characteristics and general information of the 420 respondents revealed the following:

Gender: The majority of respondents were female, accounting for 249 individuals (59.3%), followed by male respondents at 156 individuals (37.1%), while 15 individuals (3.6%) did not specify their gender.

Age: Most respondents were aged between 31–40 years, totaling 231 individuals (55.0%). This was followed by those aged 41–50 years (132 individuals, 31.4%), 21–30 years (30 individuals, 7.1%), 51–60 years (25 individuals, 6.0%), and those aged 61 years and above (2 individuals, 0.5%).

Educational Level: The majority of respondents held a bachelor's degree (362 individuals, 86.2%), followed by those with education higher than a bachelor's degree (48 individuals, 13.2%), and those with lower than a bachelor's degree (10 individuals, 2.4%).

Average monthly income: Most respondents reported a monthly income in the range of 40,001–60,000 THB (311 individuals, 74.0%), followed by those earning 20,001–40,000 THB (58 individuals, 13.8%), 60,001–80,000 THB (38 individuals, 9.0%), less than 20,000 THB (11 individuals, 2.8%), and more than 80,000 THB (2 individuals, 0.4%).

Frequency of air travel: The majority of respondents traveled by air 2–3 times per year (292 individuals, 69.5%), followed by 4–5 times per year (95 individuals, 22.6%), once per year (19 individuals, 4.5%), and more than 5 times per year (14 individuals, 3.4%).

Preferred type of airline: Most respondents preferred low-cost airlines—such as Thai AirAsia, Thai Vietjet, Thai Lion Air, and Nok Air (285 individuals, 67.9%). Meanwhile, 135 respondents (32.1%) preferred full-service airlines such as Thai Airways and Bangkok Airways.

Primary purpose of travel: The predominant purpose of travel was for leisure or vacation (325 individuals, 77.4%), followed by business or work-related travel (45 individuals, 10.7%),

visiting family/relatives/friends (38 individuals, 9.0%), education (5 individuals, 1.2%), and medical or health-related reasons (7 individuals, 1.7%).

Who responsible for travel expenses: The majority of respondents were self-funded (359 individuals, 85.5%), followed by those whose expenses were covered by their company or organization (39 individuals, 9.3%), and those whose travel was funded by family (22 individuals, 5.2%).

Part 2: Analysis of personal factors and the decision to use environmentally friendly airlines at Chiang Mai International Airport.

2.1 Analysis of gender and the decision to use environmentally friendly airlines

Table 2: Results of One-Way ANOVA analysis for gender

Gender	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.062	2	0.031	0.389	0.678
Within Groups	33.057	417	0.079		
Total	33.118	419			

*p < .05

Table 2 presents the results of the one-way ANOVA analysis for gender. The Sig. value was 0.678, which exceeds the threshold of 0.05. This indicates that the null hypothesis (H_0) cannot be rejected. Therefore, gender does not have a statistically significant effect on the decision to use environmentally friendly airlines at the 0.05 significance level.

2.2 Analysis of Age and the decision to use environmentally friendly airlines

Table 3: Results of One-Way ANOVA Analysis for Age

Age	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.117	4	0.279	3.621	0.006*
Within Groups	32.001	415	0.077		
Total	33.118	419			

*p < .05

As shown in Table 3, the Sig. value obtained from the one-way ANOVA analysis for age was 0.006, which is less than 0.05. This leads to the rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_1). Thus, age has a statistically significant effect on the decision to use environmentally friendly airlines at the 0.05 significance level.

2.3 Educational level and the decision to use environmentally friendly airlines

Table 4: Results of One-Way ANOVA analysis for education level

Education level	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.550	2	0.275	3.521	0.030*
Within Groups	32.568	417	0.078		
Total	33.118	419			

*p < .05

According to Table 4, the Sig. value from the one-way ANOVA analysis for education level was 0.030, which is less than 0.05. Hence, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This suggests that educational level significantly influences the decision to use environmentally friendly airlines at the 0.05 significance level.

2.4 Monthly Income and the Decision to Use Environmentally Friendly Airlines

Table 5: Results of One-Way ANOVA analysis for income

Monthly income	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.014	5	0.203	2.616	0.024*
Within Groups	32.104	414	0.078		
Total	33.118	419			

* p < .05

Table 5 reports the results of the one-way ANOVA analysis for average monthly income. The Sig. value was 0.024, which is below 0.05. Consequently, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This implies that average monthly income has a statistically significant impact on the decision to use environmentally friendly airlines at the 0.05 significance level.

Discussion and Conclusion

The research findings revealed that personal factors such as age, education, and average monthly income have a positive influence on the decision to choose environmentally friendly airlines at 0.05 statistical significance. This is due to the fact that passengers with higher age, education, and income tend to be more environmentally conscious and are more willing to pay extra to support eco-friendly services. In particular, passengers with higher education generally have a better understanding of sustainability and environmental issues, while those with higher incomes can bear the additional costs associated with environmentally responsible services. As a result, these passengers are more likely to choose airlines that demonstrate environmental responsibility. This outcome is aligned with the study conducted by Rochanasena and Mekkaew (2024), who examined the factors influencing the decision to use full-service international airlines

among Generation Y and Generation Z. Their study found that personal factors significantly influenced these groups' selection of such airlines at 0.05 statistical significance.

Moreover, the results of this study also align well with prior literature on the influence of personal factors on eco-friendly travel behaviors. As Özdemir Uçgun and Narcı (2022) suggest, older individuals with higher education levels tend to demonstrate heightened environmental awareness, a trend also agreed with this research, where the majority of respondents were middle-aged (31–50 years) and held at least a bachelor's degree (86.2%). Moreover, the dominant income range of 40,001–60,000 THB suggests a consumer segment with moderate to high purchasing power. This finding supports previous research by Cordes et al. (2024) and Nowacki et al. (2021), which established a positive correlation between income and willingness to pay for sustainable options, such as carbon offsets and environmentally friendly travel services. Additionally, most respondents in this study claimed that they traveled for leisure and funded their own trips, further reinforcing the idea that purpose and financial independence can strengthen eco-conscious decision-making.

According to previous studies, gender plays a minimal role in willingness to pay for green travel (Cordes et al., 2024), which is consistent with the outcomes of the current study indicating that there are no significant gender-based differences in the intention to choose eco-friendly airlines, reaffirming the limited impact of gender on sustainability-oriented travel behavior. These connections highlight the importance of targeting well-educated, income-secure, and environmentally aware individuals in the development of marketing strategies for sustainable airline services.

Additionally, these findings support the broader objectives of ICAO's sustainability framework, which calls for reducing the aviation sector's environmental footprint, while promoting inclusive access to greener travel options. The segmentation of traveler groups, who are most concerned about environmental issues, helps airlines adjust and improve their environmentally friendly services. This information can also assist policymakers to provide support or design regulations to encourage the adoption of environmentally friendly practices throughout the aviation industry.

In conclusion, this study revealed that demographic factors including age, education, and monthly income significantly influence passengers' intentions to choose environmentally friendly airline services, while gender does not. These findings provide an important foundation for developing targeted marketing strategies and advancing sustainability initiatives in the aviation sector. In environmentally sensitive markets, such as Chiang Mai, Thailand, applying the demographic analysis from this research could offer an important foundation for creating targeted marketing strategies and promoting sustainability efforts in the aviation sector. As an example,

using the above demographic information, it can be observed that the middle-aged group (31–50 years old) with at least a bachelor's degree and an income range of 40,001–60,000 THB can be an effective market segmentation for eco-friendly airline.

Practical implications

Based on statistically significant personal factors, including age, education, and income, airlines are well-positioned to design targeted marketing strategies to offer eco-friendly flight services to passengers and initiate a credible starting point to support the sustainability scheme outlined by the International Civil Aviation Organization (ICAO). There are several practical implications for airlines to increase their eco-friendly operations while remaining competitive in the market. The following practical implications are proposed:

1) **Segmented Marketing Campaigns Based on Demographics**

   Airlines should implement marketing messaging to target well-educated, middle-aged, and higher-income travelers. These demographic groups have statistically proven to be target groups for eco-friendly airline choices. Marketing content should emphasize sustainability operations, innovative green technologies, and the broader social and environmental impacts of choosing green flights. For instance, frequent business travelers could get information about green options and earn extra mileage points through loyalty programs that emphasize the airline’s environmental credentials and commitment to carbon reduction.

2) **Educational Storytelling and Green Transparency**

   Airlines should adopt equation-based storytelling and green transparency strategies to build credibility and increase involvement. This can include publishing annual sustainability reports, behind-the-scenes videos of eco-friendly operation, or with environmental influencers and aviation experts to deliver educational campaigns in order to gain transparency trust, and positions the airline as a leader in sustainable aviation.

3) **Premium Eco-Friendly Offerings for High-Income, Middle-aged Travelers**

   Since higher-income passengers are more willing to invest in green options, airlines should consider introducing class of services such as “Green Class” options. These packages could include features like carbon offsetting, organic in-flight meals, and priority boarding via electric ground vehicles. Middle-aged consumers, who formed the majority in this study, tend to prioritize both responsibility and convenience. Airlines should move beyond traditional messaging focused on price or service to build a value-based brand identity. Campaigns such as “Fly with Purpose” or “Smart Choices for a Sustainable Tomorrow” can resonate more deeply. Incorporating real customer testimonials in

middle-aged group about their choice to support sustainable flying adds authenticity and emotional resonance.

4) **Integrated Loyalty Programs (Mileage card) with Green Rewards**

Loyalty programs (Mileage card) should also be designed to reward environmentally responsible behavior. Examples include offering bonus miles for choosing low-emission flights, using paperless check-in, low carbon meals, or purchasing carbon offsets. Status upgrades and exclusive green rewards for repeat sustainable choices.

5) **The Presentation of Thailand's Sustainable Aviation Image along with ICAO's Sustainability Roadmap**

The presentation of an eco-friendly image of Thailand's aviation industry, which is focused on sustainability and complies with international norms, would improve the industry's overall image and encourage more national airlines to adapt green and sustainable approaches, which in turn would attract more eco-conscious travelers.

Limitations

This study focused on Chiang Mai International Airport due to its unique challenges and its urgent need for sustainable operation because of severe air pollution. Hence, the sample size and demographic characteristics may not adequately reflect the broader Thai airline passenger population. Moreover, future research may apply mixed method approaches to complement and deepen the knowledge about customers' preferences and perceptions relating to eco-friendly services.

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