A Study on Environmental Awareness Influencing Passengers' Selection of Eco-Friendly Flights at Chiang Mai International Airport

Phichaya Maneerat *

Aviation Business Management, International College, Chiang Mai Rajabhat University, Chiang Mai, Thailand
Email: phichaya_man@g.cmru.ac.th
*Corresponding author

***Abstract*—In severe air pollution areas like Chiang Mai, consumer demand for ecologically friendly choices is increasing significantly. This study examined how passengers' environmental awareness influences their intention to choose eco-friendly flights at Chiang Mai International Airport, offering a foundation for developing sustainable airline operations. This quantitative research used questionnaires with 420 passengers at the airport, employing quota sampling with 70 respondents from each of six Thai airlines: Thai Airways, Bangkok Airways, Nok Air, Thai AirAsia, Thai VietJet, and Thai Lion Air. Descriptive statistics and regression analysis were used to analyze the data. Results showed that most respondents were female, aged 31–40, held a bachelor's degree, and had a monthly income of 40,001–60,000 THB. The findings indicated that passengers' environmental awareness influenced their intention to choose eco-friendly flights. The cognitive (knowledge) and behavioral (action) components were key factors in decisions, while the affective (feeling) component had no significant effect. To promote eco-friendly services, airlines should emphasize clear information, such as the benefits of eco-friendly flight, and offer easy options to choosing eco-friendly flights. Additionally, collaboration among airlines, airports, and government agencies is crucial to supporting sustainable aviation and enhancing Chiang Mai's image as a sustainable destination.**

***Keywords*—environmental awareness, passenger selection, eco-friendly flight, Chiang Mai internal airport**

I. Introduction

As climate change becomes an increasingly urgent global issue, the aviation industry has increasingly prioritized environmentally friendly actions in their operations. The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), developed by the International Civil Aviation Organization (ICAO), aims to enhance sustainability and reduce the aviation industry's environmental footprint. In 2022, ICAO members set a target of achieving net-zero carbon emissions in international aviation by 2050, known as Fly Net Zero. Thailand has participated in CORSIA since 2023 as one of the volunteer countries. demonstrates Thailand's commitment to addressing the environmental impact of aviation and contributing to global efforts to reduce carbon emissions (Leenoi, 2024).

Chiang Mai faces significant environmental challenges, particularly severe air pollution caused by particulate matter (PM2.5). During the haze season, which often occurs from December to April, air quality often deteriorates to hazardous levels, with PM2.5 concentration exceeding both national and World Health Organization standards (Ruttanawongchai *et al.,* 2018). Chiang Mai International Airport, a major transportation hub in the northern part of Thailand, offers a valuable case study for exploring the relationship between environmental awareness and passenger behavior. As a key gateway to Northern Thailand's most popular tourist destinations, the airport handles millions of passengers each year and plans to expand its capacity to accommodate 30 million passengers by 2033. However, this growth occurs alongside significant environmental concerns, particularly severe air pollution during the haze season. The haze-related tourism and aviation losses in Chiang Mai necessitate the urgent need for environmentally friendly operations. Therefore, effective sustainable development requires collaboration among various stakeholders within a city to achieve sustainability goals (Thiengburanathum, 2021).

Presently, the aviation sector in Thailand has lagged behind other industries, such as the hotel business, in recognizing and addressing environmental concerns. This research addressed a significant gap, as previous studies showed that consumers were increasingly aware of sustainability issues and the environmental impact of their travel decisions, with ticket prices being a key factor in airline selection. However, Thailand currently has limited eco-friendly flight options compared to the other countries. This study aimed to provide as a basis information to

Manuscript received November 12, 2025; accepted December 2, 2025; published January 12, 2026.

assess customer awareness and consumer attitudes to adopt appropriate eco-friendly flight options.

Therefore, this study on environmental awareness influencing passengers' selection of eco-friendly flights at Chiang Mai International Airport is crucial for supporting the region's efforts to combat air pollution and promote long-term sustainable aviation. By examining passengers' awareness and decision-making factors, the research provides a foundation to help airlines develop more effective green marketing strategies, offer eco-friendly flight options, and encourage sustainable travel behavior. The results contribute to improved Chiang Mai's image as a sustainable tourism destination, and guide airline operations in line with the United Nations Sustainable Development Goals (SDGs), particularly SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) (Koo & Kang, 2023).

II. Literature Review

Customers' intention to use green products is significantly influenced by various factors, including environmental knowledge, awareness, corporate image, and the psychological benefits associated with sustainability (Bakır, 2024). According to a study on consumer awareness towards green food products in Chennai, India found that consumer behaviour is increasingly influenced by environmental awareness, resulting in enhanced preferences for environmentally sustainable products. As sustainability becomes an increasingly important factor in consumers' decision-making processes, the connection between environmental consciousness and consumer behaviour in the context of environmentally responsible airlines has gained significant attention (Aldahmashi *et al.,* 2023). According to previous research, indicated that increased environmental knowledge positively influences green attitudes, which in turn significantly affects green purchase intention in the air travel industry. A Deloitte study found that 67% of consumers are willing to pay up to 41% more for sustainable products, particularly among younger demographics (Iannuzzi, 2024). In Chiang Mai, the aviation sector, particularly airlines and airports, has shown little action on environmental matters. Therefore, this research focuses on consumer awareness of eco-friendly flights, starting with an assessment of awareness levels. According to past research, environmental awareness has an important influence on customer behaviour toward green products. Customers are increasingly prioritizing sustainability, causing a change in their purchasing decisions toward environmentally friendly products. This transformation is driven by a combination of awareness, marketing methods, and personal beliefs (Chethan *et al.,* 2024). Awareness encompasses cognitive, affective, and behavioral components that influence how individuals perceive and respond to their environment. Cognitive attitudes refer to the beliefs and knowledge that influence how consumers evaluate products or services. Affective attitudes involve emotional responses affecting preferences, and behavioral intentions result from both cognitive and affective attitudes and are regarded as predictors of purchasing behavior (Pratkanis *et al.,* 2014). Therefore, this study applied the awareness concept to assess its influence on selecting eco-friendly flights. This is emphasized by a previous study that referred to the need to add these elements into green marketing to educate consumers about environmental benefits and increase customer engagement (Koç, 2023). Since there are no eco-friendly flights in Chiang Mai yet, this research is designed to assess customers' intention to use green airlines. The customer intention to use green airlines can be effectively analyzed through Kotler's five-stage model of consumer decision-making, which includes problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behaviour (Kotler *et al.,* 2021). Customers' intention to use eco-friendly flights is significantly influenced by environmental awareness throughout the decision-making process. The environmental awareness is critical in forming ways of thinking and acting toward green services, emphasizing the importance of designed green marketing strategies to encourage sustainable operations in the aviation industry. Previous research also indicated that higher environmental awareness correlated with a greater willingness to pay more for eco-friendly flight options (Hui *et al.,* 2024).

III. Methods

The study employed quantitative research methodology to examine the variables through a questionnaire of Thai air passengers at Chiang Mai International Airport.

A. Data Description

The survey method, one of the quantitative methodologies, was employed in the study. In this study, the researcher used Air Transport Statistics provided by Airports of Thailand to determine the sample size. The total passenger movements at Chiang Mai International Airport in 2024 were recorded at 861,383. Based on this population, the researcher applied Yamane's (1973) formula with a 5% margin of error to calculate the sample size. The data are presented in Table I.

TABLE I. Sampling

Formula	Calculation	Sample size
$n = \frac{N}{1 + N(e)^2}$	$n = \frac{861{,}383}{1 + 861{,}383(0.05)^2}$	$n \approx 399.81$

From the calculation, the calculation determined that the study required a minimum sample size of 399.81 ≈ 400 samples. The researcher applied quota sampling (non-probability sampling) to ensure that specific subgroups of samples from each airline were represented according to pre-determined quotas. The sampling focused on passengers from six Thai airlines including Thai Airways, Bangkok Airways, Nok Air, Thai AirAsia, Thai VietJet, and Thai Lion air. These airlines were selected to represent a broad range of airline types, including both

Full-Service Carriers (FSCs) and Low-Cost Carriers (LCCs), reflecting the variety of passenger experiences and preferences in the Thai aviation industry. For the quo-ta sampling methodology, the researcher decided to collect 70 samples from each of the six airlines, resulting in a total of 420 samples. This approach ensures equal representation across all six airlines and strengthens the study's ability to collect attitudes across airlines. The online questionnaires were collected, with half distributed via Google Forms and the other half distributed face-to-face to respondents at Chiang Mai International Airport in February 2025.

B. Questionnaire

The structure of the questionnaires consisted of closed-end questions and collecting the information for the analysis by Descriptive and Inferential Statistics. Questionnaires were applied, including a 5-point Likert scale, ranging from strongly agree (=5) to strongly disagree (=1). The surveys used in the study were divided into 2sets; 30 Pre-Survey questionnaires and 420 Final-survey questionnaires, which contain 4 parts in total.

Part 1: Questions about the general information of the respondents; gender, age, education background, air travel behavior, purpose of travel, and average monthly revenue.

Part 2: Questions about the environmental awareness of the respondents. The questionnaire questions utilized in this study were developed to assess awareness using the framework presented by (Pratkanis *et al.,* 2014).

Part 3: Questions about their intention to use eco-friendly flights using the framework presented by Kotler (2021).

Part 4: Suggestion questions.

The questionnaire used in the quantitative research passed a quality assessment. It was validated for content validity by three experts: (1) a representative from the airline industry, (2) an Assistant Professor in Marketing, and (3). another Assistant Professor in Marketing. The questionnaire's Index of Item-Objective Congruence (IOC) ranged from 0.60 to 1.00, exceeding the 0.5 criterion considered appropriate for research use (Rovinelli & Hambleton, 1976).

C. Data Analysis

The analysis involved both descriptive and inferential statistics. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to present general respondent information. Inferential statistics using regression analysis were performed to explain the relationship between the independent variable (awareness) and the dependent variable (intention to use eco-friendly flight). 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 tools was confirmed with a Cronbach's coefficient alpha of 0.96. A Cronbach's alpha coefficient greater than 0.7 indicates acceptable reliability (Cronbach, 1970). From this perspective, the questionnaires demonstrated consistent reliability.

IV. Result and Discussion

A. General Information

The demographic characteristics of the respondents consisted of 420 participants, with a quota of 70 respondents set from each of six Thai airlines: (1) Thai Airways, (2) Bangkok Airways, (3) Thai AirAsia, (4) Thai VietJet, (5) Thai Lion Air, and (6) Nok Air. The majority were female (59.3%). Most respondents were aged between 31 and 40 years (55.0%) and held a bachelor's degree (86.2%). Additionally, the majority had a monthly income between 40,001 and 60,000 THB (74.0%). Regarding air service usage behaviour, most respondents travel by air 2–3 times per year (69.5%). The majority prefer low-cost airlines (67.9%). The primary purpose of travel is tourism or leisure (77.4%). Furthermore, most travelers cover their own expenses (85.5%).

B. Passenger's Environmental Awareness

Passengers at Chiang Mai International Airport demonstrated a high level of environmental awareness (mean = 3.78). All three components Cognitive (mean = 3.85), Affective (mean = 3.76), and Behavioral (mean = 3.73) showed high levels, as indicated in Table II.

TABLE II. Environmental Awareness

Environmental Awareness	Mean	S.D.	Interpret
Cognitive Component	3.85	0.234	High
Affective Component	3.76	0.320	High
Behavioral Component	3.73	0.312	High
Total	3.78	0.212	High

TABLE III. Intention to Use Eco-Friendly Flights

Intention to use	Mean	S.D.
1. Recognize the importance of choosing environmentally friendly airlines to help reduce environmental impacts in Chiang Mai province.	4.19	0.619
2. Will study information about environmental policies and practices of different airlines before making a decision to use their services.	3.68	0.784
3. Will compare the environmental policies and pricing packages of each airline before making a decision.	3.63	0.683
4. Willing to pay a higher fare to use an eco-friendly flight.	3.83	0.630
5. Satisfied to participate in environmental preservation by choosing to use eco-friendly airline services.	3.78	0.691
6. Will recommend others to use the services and return to using airlines that provide eco-friendly services.	3.79	0.693
Total	3.82	0.281

C. Intention to use Eco-Friendly Flight at Chiang Mai International Airport

Passengers demonstrated a high level of intention to use eco-friendly flight at Chiang Mai International Airport (mean = 3.82). Among the key factors, passengers were

most aware of the necessity of selecting environmentally friendly flight to help reduce environmental impacts in Chiang Mai (mean = 4.19). The second most important factor was their willingness to pay higher fares for eco-friendly airline services (mean = 3.83), The data also indicated an intention to recommend eco-friendly airlines to others and continue using their services (mean = 3.79). Fourth, passengers expressed satisfaction with participating in environmental preservation through their airline choices (mean = 3.78). Passengers showed intentions to study airlines' environmental policies and practices (mean = 3.68) and to compare environmental policies and pricing packages between different airlines (mean = 3.63), as indicated in Table III.

D. *Environmental Awareness Impacts on the Intention to Use Eco-Friendly Flight*

The results in this part revealed the environmental awareness in the Cognitive Component (B = 0.487) and Behavioural Component (B = 0.116), have a positive and significant impact on the intention to use eco-friendly flight, with significance values of $p < 0.05$. However, the Affective Component (B = 0.034) did not show a significant effect on purchasing decisions or the intention to use eco-friendly flight, as the significance value is greater than 0.05 ($p = 0.439$), as detailed below. From the table below, it can be seen that the Adjusted R Square value used to measure how far the model's ability to explain the variation in the dependent variable is 0.211. This shows that 21.1% of consumer purchasing decisions for eco-friendly flights are influenced by variations of the three independent variables, namely Cognitive Component, Affective Component Behavioural Component, while the rest is 78.9% is influenced by other variables not examined in this study, as indicated in Table IV.

TABLE IV. RESULTS OF THE LINEAR REGRESSION ANALYSIS SHOWED ENVIRONMENTAL AWARENESS INFLUENCED THE INTENTION TO USE ECO-FRIENDLY AIRLINES

Environmental Awareness	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.378	0.240		5.739	0.000*
Cognitive Component	0.487	0.053	0.406	9.152	0.000*
Affective Component	0.034	0.044	0.039	0.775	0.439
Behavioral Component	0.116	0.045	0.129	2.557	0.011*
R Square = 0.211					
F = 37.176		Sig. of F = 0.000*			

* $p < 0.05$.

The study's findings revealed that environmental awareness significantly influences passengers' intentions to choose eco-friendly airlines, aligning with prior research (Aldahmashi *et al.,* 2023). However, this study addressed some key differences: the cognitive component and the behavioral component had a statistically significant positive impact, while the affective component showed no significant effect in the context of Chiang Mai. This means that when passengers are educated about environmental impacts and the benefits of sustainable travel, they are more likely to make eco-friendly decisions. However, the Affective Component (positive feelings or attitudes toward environmental protection) had no significant effect on these decisions. This suggests that having only a positive attitude is not enough; passengers need both knowledge and actionable behaviour changes to drive their decisions.

The study found that the majority of respondents were female. This finding was consistent with a previous study, which reported higher environmental awareness and consciousness among female consumers. (Tikka *et al.,* 2000) A large portion of respondents in this study were between the ages of 31 and 40 years (55.0%), indicating that this age group is more engaged in air travel, likely due to their established careers and financial independence. The study also found that the majority of respondents were female (59.3%), reflecting a higher representation of women among the passengers. In this context, to increase the environmental consciousness of male passengers, airline companies could benefit from using celebrities, such as famous sportsmen or male famous stars or influencers, whom they consider role models to promote eco-friendly flight in advertisements on online and offline platform (Havayollarına, Tutumları, & Çabuk, 2019).

In terms of educational background, 86.2% of respondents held a bachelor's degree, suggesting that more educated passengers may have greater awareness of environmental issues and eco-friendly operations. This result supported the idea that environmental knowledge increases awareness, leading individuals to choose eco-friendly airlines (Koç, 2023). In order to effectively engage educated consumers, airlines should create clear informative campaigns that emphasize specific impacts on the environment and sustainability activities. Airlines can show facts such as "This flight reduces CO_2 emissions by 30% compared to the industry average" on websites or boarding passes to attract eco-friendly passengers. This approach helps passengers easily understand the environmental benefits of choosing a sustainable flight option.

Most respondents had a monthly income between 40,001 and 60,000 THB (74.0%), indicating a high-income group (SCB Economic Intelligence Center, 2020). This showed a greater ability to afford environmentally friendly services, as seen by the study results about willingness to pay a higher fare for an eco-friendly airline presented at the high rank

(mean = 3.82). However, this income group may also have more price sensitivity, making the cost of eco-friendly services a crucial factor in their decision-making. Price is an important indicator of the attitudes and preferences of passengers towards the airline (Borin *et al.,* 2013). In this context, eco-friendly airlines should provide their services at fair prices in order to make people feel value for money to select eco-friendly flights.

The findings also revealed a link between passengers' environmental awareness and their intention to choose eco-friendly airlines. Similar to previous studies, it is indicated that factors such as perceived effectiveness and environmental concern transfer awareness into decision-making (Joo, 2024).

The study recommended that a crucial first step for Thai airlines in developing eco-friendly flights is to create clearly communicate environmental benefits to enhance passengers' cognitive awareness. Airlines need to clearly explain the environmental benefits of their services, so that consumers react positively, which can lead to a preference eco-friendly flight, even at a higher cost (Carroll *et al.*, 2022). To influence behavior (behavioral component), airlines should provide clear and accessible options for selecting eco-friendly flights. Since affective components have proven ineffective, factual information and practical choices are essential. Additionally, collaboration among airlines, airports, and government agencies is important to develop awareness campaigns and green marketing strategies promoting eco-friendly services and help enhance Chiang Mai's image as a sustainable tourism destination (Lu & Wang, 2018). For future research, the non-signifiant effect of the affective (feeling) component on passengers' intentions in this study suggests that qualitative research methods (e.g., in-depth interviews) are recommended to examine the factors influencing eco-friendly flight decisions.

V. Conclusion

Passengers' environmental awareness influenced their intention to choose eco-friendly flights, with cognitive and behavioral factors showing significant effects, while the affective factor showed no significant influence. This indicates that factual understanding and actionable behaviors were more influential than emotions and feelings.

Conflict of Interest

The authors declare no conflict of interest.

Acknowledgment

The author would like to express sincere gratitude to Chiang Mai Rajabhat University for the research funding.

References

Aldahmashi, F. A., Hassan, T. H., Abdou, A. H., Saleh, M. I., Helal, M. Y., Gebreslassie, D. A., Salem, A. E., & Radwan, S. H. 2023. Managing airline emissions, noise, and bird strikes: passengers' perspectives on airlines' extrinsic and intrinsic environmental practices. ***Sustainability***, 15(17): 12734. https://doi.org/10.3390/su151712734

Bakır, M. 2024. Green purchase intention in the air travel industry: Influence of environmental knowledge and attitude. ***Proceedings of Green Approaches in Sustainable Aviation***: 47–54. Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-33118-3_7

Borin, N., Joan Lindsey-Mullikin, & R. Krishnan. 2013. An analysis of consumer reactions to green strategies. ***Journal Of Product & Brand Management***, 22(2): 118–128.

Carroll, J., Brazil, W., Howard, M., & Denny, E. 2022. Imperfect emissions information during flight choices and the role of CO2 labelling. ***Renewable and Sustainable Energy Reviews,*** 165: 112508. https://doi.org/10.1016/j.rser.2022.112508

Cronbach, L. J. 1970. ***Essentials of psychological testing***. Harper & Row.

Havayollarına, Y. Y., Tutumları, Y., & Çabuk, S. 2019. Attitudes of passengers towards green airlines. ***Journal of Yasar University,*** 237–250.

Hui, T., Itani, N., & O'Connell, J. F. 2024. Examining air travellers' willingness to pay for non-voluntary environment-related fees: The case of SAF surcharge and carbon taxes. ***Highlights of Sustainability,*** *3*(1): 61–75. https://doi.org/10.54175/hsustain3010005

Iannuzzi, A. 2024. Green Marketing. In A. Iannuzzi, 3rd ed., ***Greener Products:*** 201–221. CRC Press. https://doi.org/10.1201/9781003441939-10

Joo, S. O. 2024. The effect of airlines' eco-friendly management activities on reuse intention by applying VBN theory. ***Journal & Article Management System***, 20(2): 151–172. https://doi.org/10.31927/asec.20.2.8

Koç, E. 2023. Green marketing strategies and climate change awareness in sustainable transportation: The case of airline companies. ***Marine Science and Technology Bulletin***, 12(4): 459–472. https://doi.org/10.33714/masteb.1375842

Koo, S.-W., & Kang, M.-S. 2023. Understanding sustainable air travel consumption behavior applying extended planned behavior theory. ***Journal of Tourism and Leisure Research***, 35: 241–254. https://doi.org/10.31336/JTLR.2023.4.35.sp2.241

Kotler, P., Keller, K. L., Chernev, A., Matsuoka, K., Sato, H., & Maehara, T. 2021. ***Marketing Management***. Pearson.

Leenoi, P. 2024. CORSIA paving the way for flying net zero (Research Intelligence Report). ***Krungsri Research***. Available: https://www.krungsri.com/en/research/research-intelligence/corsia-2024.

Lu, J.-L., & Wang, C.-Y. 2018. Investigating the impacts of air travellers' environmental knowledge on attitudes toward carbon offsetting and willingness to mitigate the environmental impacts of aviation. ***Transportation Research Part D: Transport and Environment***, 59: 96–107. https://doi.org/10.1016/j.trd.2017.12.024

Pratkanis, A. R., Breckler, S. J., & Greenwald, A. G. 2014. ***Attitude Structure and Function***. Psychology Press. https://doi.org/10.4324/9781315801780

R., Chethan., Jamal, Z., & Singh, A. 2024. Consumer awareness about green marketing. ***Journal of Geography, Environment and Earth Science International***, 28(9): 11–18. https://doi.org/10.9734/jgeesi/2024/v28i9807

Rovinelli, R. J., & Hambleton, R. K. 1976. ***On the use of content specialists in the assessment of criterion-referenced test item validity***. Report no. ED121845. ERIC. https://eric.ed.gov/?id=ED121845

Ruttanawongchai, S., Raktham, C., & Khumsaeng, T. 2018. The influence of meteorology on ambient PM2. 5 and PM10 concentration in Chiang Mai. **In** ***Journal of Physics: Conference Series,*** 1144: 012088. https://doi.org/10.1088/1742-6596/1144/1/012088

SCB Economic Intelligence Center. 2020. Outlook Q1 2020. Available:

https://www.scbeic.com/en/detail/file/product/6606/fkepv9078z/ENG_Outlook_Q1_2020.pdf

Thiengburanathum, P. 2021. Collaboration mapping in sustainable development: A case study from haze in Chiang Mai. In H.-Y. Jeon (Ed.), ***Proceedings of Sustainable Development of Water and Environment:*** 145–155. https://doi.org/10.1007/978-3-030-75278-1_14

Tikka, P. M., Kuitunen, M. T., & Tynys, S. M. 2000. Effects of educational background on students' attitudes, activity levels, and knowledge concerning the environment. ***The Journal of Environmental Education***, 31(3): 12–19. https://doi.org/10.1080/00958960009598640

Yamane, T. 1973. Statistics: An introductory analysis. John Weather Hill, Inc.

Copyright © 2026 by the authors. This is an open access article distributed under the Creative Commons Attribution License (CC-BY-4.0), which permits use, distribution and reproduction in any medium, provided that the article is properly cited, the use is non-commercial and no modifications or adaptations are made.