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Factors Triggering Customer Willingness to Travel on Environmentally Responsible Electric Airplanes

Heesup Han [1], Linda Heejung Lho [1], Amr Al-Ansi [1], Hyungseo Bobby Ryu [2], Jinah Park [3] and Wansoo Kim [4,*]

1 College of Hospitality and Tourism Management, Sejong University, 98 Gunja-Dong, Gwanjin-Gu, Seoul 143-747, Korea; heesup.han@gmail.com (H.H.); heeelho@gmail.com (L.H.L.); amralansi1@gmail.com (A.A.-A.)
2 School of Hospitality and Tourism Management, Kyungsung University, 309 Suyoungro, Nam-Gu, Busan 48434, Korea; bobbyryu414@hanmail.net
3 School of Hotel and Tourism Management, Hong Kong Polytechnic University, 17 Science Museum Road, TSE East, Kowloon, Hong Kong, China; jinah.park@polyu.edu.hk
4 Department of Tourism Management, Dong-A University, 1 Bumin-dong (2 Ga), Seo-gu, Busan 49236, Korea
* Correspondence: warooo@dau.ac.kr; Tel.: +82-10-2409-3583

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Abstract: Utilizing a quantitative methodological approach, the present study presented and investigated an integrated model embracing environmental corporate social responsibility, image, emotional attachment, attitude, and moral norms in order to explicate airline patrons' intention formation for adopting eco-friendly electric airplanes. Our findings revealed that the proposed associations among research constructs were all significant, and that image, emotional attachment, attitude, and moral norms significantly mediated the effect of environmental corporate social responsibility on intention. In addition, the salient role of image of electric airplanes in building intention was uncovered. Despite the importance of greening airline products in the aviation industry, electric airplanes are a topic that has barely been explored. The results of this study can help airline practitioners and researchers to understand consumer readiness and willingness to adopt such eco-friendly alternatives to conventional air-flights. Implications are discussed.

Keywords: environmentally responsible electric airplanes; environmental corporate social responsibility; moral norm; image; emotional attachment; attitude

1. Introduction

With growing concern for the environment and increasingly strict environmental regulations, the lessening of environmental harms related to airline operation remains a primary issue within the aviation industry [1,2]. Given the increasing need for sustainable business practices in the aviation industry [1,3,4], an environmentally responsible electric airplane is considered an emerging product [5]. An electric airplane refers to an eco-friendly aircraft, mostly powered by battery-based electric motors [6]. Because of its environmentally friendly nature (e.g., no greenhouse gas emissions, no jet fuel use) meeting the sustainable development need of the airline marketplace around the globe, flying on an electric airplane is broadly believed to be an eco-friendly alternative to conventional aircraft powered by aviation fuel [5,6].

In the increasingly eco-conscious tourism marketplace, providing environmentally responsible products to patrons can be a vital strategy to obtain a competitive advantage over other conventional forms of products [7,8]. Since patrons' behavioral intentions for eco-friendly products is often regarded as the most proximal and key determinant of actual buying behaviors [9–11], many studies in

the tourism industry with respect to the airline sector have been devoted to the investigation of patrons' environmentally responsible purchase intention formation [1,2,4]. These studies, particularly on airline products, have examined such variables as environmental corporate social responsibility, green image, emotion, attitude, and moral obligation, which elicit passengers' positive eco-friendly decisions for the airline and willingness to pay for its product/service. For instance, Han et al. [3] examined the influence of environmental corporate social responsibility on customer response. Their findings indicated that a firm's environmental corporate social responsibility activities, as perceived by patrons significantly, affect cognitive, affective, and normative evaluation of the firm's product performance and their purchase decision-making process. Researchers also agree that image, emotional attachment, attitude, and moral norm are crucial factors triggering patrons' positive intention for an eco-friendly airline product [2,7,8].

Although patrons' interest in environmental corporate social responsibility is obvious, little empirical research has clearly examined its role in airline patrons' intention formation for eco-friendly airline product choice. In addition, while the roles of cognitive, emotional, and normative processes are of importance in forming patrons' green intention, a possible interrelation between environmental corporate social responsibility and these processes has not been unearthed. Moreover, the possible influence of such relationships on patrons' decision-making processes for eco-friendly electric airline products has hardly been explored. Given this, the present research was designed to examine the intricate associations among environmental corporate social responsibility, the image of environmentally responsible electric airplanes, emotional attachment, attitude, and moral norms in the formation of behavioral intention for using environmentally responsible electric airplanes among airline patrons. Specifically, we aimed to assess the effect of environmental corporate social responsibility on its subsequent variables, to identify the comparative importance among study constructs in determining behavioral intention, and to uncover the mediating role of research variables within the hypothesized theoretical framework. This study will emphasize an insight into the theoretically important concept of a patron's preference for electric airplanes, and thus help airline companies to take practical actions accordingly. Thus, this research may bring extensive contributions to the existing hospitality literature field as it will identify the determinants of eco-conscious behavior of patrons, and help airline companies to strategize for the future eco-conscious era of the airline industry.

2. Literature Review

A rapidly growing number of customers are eco-conscious, and the greater society has become increasingly concerned about the environment [12,13]. Given these circumstances, many companies face increasing pressure to undertake environmental social responsibility activities along with a reduction of their environmental impact, the greening of their operations, and environmentally responsible management in the marketplace. Boosting a company's overall eco-friendly image and improving their reputation through its environmentally responsible management and environmental corporate social responsibility activities are thus becoming critical requirements for the success of many companies producing diverse products or services. The environmental responsibility activities can be seen as a tool for corporate wealth creation (for example, through productivity improvement, creation of a positive image and brand equity, and the creation and maintenance of a positive reputation). This can be explained by instrumental theory, according to which corporate social responsibility activities are a necessary strategic means to the economic objective of profit. Specifically, they can maximize shareholder value through company growth, and serve as a strategy to achieve competitive advantages [14].

The terms "environmental corporate social responsibility" and "corporate ecological responsiveness" can be used interchangeably. Bansal and Roth [15] indicated that corporate ecological responsiveness is the set of initiatives targeting the significant decrease of a company's harmful effect on the environment and the ecosystem. Such initiatives encompass the firm's eco-friendly policies/strategies/plans, products/services, processes, and missions (e.g., decreasing the consumption of energy and natural

resources, minimizing solid waste and water waste generation, utilizing green resources, and implementing an eco-friendly system) [15,16].

A firm's corporate social responsibility practice and its association with diverse cognitive/affective/moral factors have been dynamically examined by consumer behavior and tourism researchers [17–19]. In the consumer behavior sector, Rivera et al.'s [17] empirical findings revealed that the customers' perception of a firm's corporate social responsibility, encompassing the environmental facet, positively affects the customers' attitude towards the brand and their satisfaction. In their research, brand attitude was evaluated with cognitive and affective items. In the airline context, Wang and Han [18] examined the role of corporate social reasonability from the airline job seekers' perspectives. Their empirical findings revealed that corporate social responsibility, constituting environmental, economic, legal, ethical and the philanthropic activities, exert a positive impact on the corporate image and brand preference. Given this, the following hypothesis 1 (H1) was proposed:

Hypothesis 1 (H1). *The association between environmental corporate social responsibility and the image of environmentally responsible electric airplanes is significant.*

In the tourism sector, Han et al. [3] also found that environmental corporate social responsibility is a crucial determinant of internal normative factors in the customer decision-making process for an eco-friendly tourism product. Furthermore, green practices implementation was confirmed to be a significant predicter of the American customer perception and decision-process, in a restaurant context [19]. The study also found that customers are willing to pay more in such green restaurants to practice eco-friendly environment. Thus, the following hypothesis 2 (H2) was developed:

Hypothesis 2 (H2). *The association between environmental corporate social responsibility and moral norm is significant.*

2.1. Image of Environmentally Responsible Electric Airplanes and Its Impact

Despite the importance of marketing and consumer behavior, the term "image" has received relatively little attention compared to other marketing concepts, such as satisfaction and value [20]. The image, whose nature is cognitive, refers to the set of global cognitive beliefs and impressions that an individual has about a product, a company, a place, a service, or a brand [21,22]. Similarly, the image of environmentally responsible electric airplanes, in this study, indicates that the global belief/perception that an airline passenger develops will be based on various sources from attained/processed information regarding the use of an eco-friendly electric airplane and its attributes [21]. This image, whose nature is cognitive [11], is often formed both before and after product/service consumption activities [8,23].

Undoubtedly, a favorable image of a product encourages an individual to select the product over its competition. Evidence in the existing tourism and marketing literature indicate that the image of a product/service influences one's decision-making process [23–25]. In the hotel sector, Chen et al. [24] identified that favorable emotional experiences built, that are based on a firm's overall image, positively impacted service evaluations, while unfavorable emotional experiences also effected service evaluations independently. Chang and Fong [13] founded that green corporate image and product value have a significant association with customer emotions and attitude. Consequently, the following hypothesis was developed:

Hypothesis 3 (H3). *The association between the image of environmentally responsible electric airplanes and emotional attachment is significant.*

In addition, Wu et al. [25] indicated that one's image of a green product significantly reduces switching intention/behavior and that this image is interrelated with other important determinants

of intention/behavior. Han and Yoon [23] examined the role of image in a hospitality context. Their findings showed that the image of a green product has a positive influence on customers' attitude towards it and moral obligation, and such a relationship contributes to forming their positive behavioral intention for the green hospitality product. Moreover, their findings showed that both the image and the emotions are of the utmost importance in increasing the patrons' behavioral intentions. Given this, we posited the following:

Hypothesis 4 (H4). *The association between the image of environmentally responsible electric airplanes and attitude toward environmentally responsible electric airplanes is significant.*

Hypothesis 5 (H5). *The association between the image of environmentally responsible electric airplanes and moral norms is significant.*

2.2. Emotional Attachment and Its Impact

Patrons' emotional attachment to a product/service is widely believed as the key determinant of their consumption behaviors in a variety of contexts [26,27]. The concept of "emotional attachment" indicates one's long-term affective predisposition toward a certain product/service/brand/place [26,28]. Accordingly, emotional attachment is often described as emotional bonding, emotional connection, or a degree of affection [27,28]. In the luxury restaurant sector, Bahri-Ammari et al. [26] indicated that emotional attachment to a brand is a crucial determinant of customer post-purchase behavior. Similarly, Schubert et al. [19] illustrated how customer emotions positively enhance his/her moral norms in eco-friendly restaurants. Given this, we hypothesized the followings:

Hypothesis 6 (H6). *The association between emotional attachment to environmentally responsible electric airplanes and moral norm is significant.*

In the context of tourism, Han and Hyun [10] found that the emotional process is an essential aspect of the norm activation process and the pro-environmental decision-making process among travelers. Further investigation by Carrus et al. [29] indicated that emotions are a positive and significant predictor of customer desire and future intention. They also reported that ecological behaviors are influenced by the customer anticipated emotions. These studies emphasized the importance of emotional attachment in a consumption situation for hospitality/tourism products. Thus, the following hypothesis was suggested:

Hypothesis 7 (H7). *The association between emotional attachment to environmentally responsible electric airplanes and behavioral intention for environmentally responsible electric airplanes is significant.*

2.3. Attitude and Its Impact

The attitude towards a particular action is considered a crucial dimension of an individuals' intention formation [29–31]. According to Gremler and McCollough [32], attitude indicates an individual's positive or negative tendency towards a specific entity on the basis of their assessment of the entity's performance. Ajzen [9] described such an attitude as a volitional dimension of one's decision formation with self-interest motives. In the present research, attitude refers to airline patrons' global feeling toward environmentally responsible electric airplanes that is either positive or negative. Onwezen et al. [33] explained the important role of attitudes in developing a personal norm with respect to environmental issues (i.e., climate change, wasting energy). The study shows a positive association between personal responsibility, awareness, and personal anticipated norms. In environmental psychology, Carrus et al. [29] indicated that one's attitude is an essential trigger of his/her moral obligation and eco-friendly behaviors. In the business, Roos and Hahn [31] found

that patrons' attitudes are significantly related to personal norms. These empirical studies stressed the criticality of attitude in activating personal norm. Based on this, we posited the following:

Hypothesis 8 (H8). *The association between attitude toward environmentally responsible electric airplanes and moral norms is significant.*

A large number of previous scholars have discussed the critical interactions between personal attitudes and behavior intention. In the business field, Chang and Fang [13] reported how the personal attitude (i.e., satisfaction) highly and positively influence the behavior intention towards green products. Similarly, perceived higher personal norms positively affect customer behavior intention in the fashion and clothing market [34]. In addition, personal norms have been found to have both direct and indirect effects on the future intention towards buying a product [33]. Hence, the following was proposed:

Hypothesis 9 (H9). *The association between attitude toward environmentally responsible electric airplanes and behavioral intention for environmentally responsible electric airplanes is significant.*

2.4. Moral Norms and Their Impact

Moral norms are regarded as a vital dimension of patrons' pro-environmental intention formation and behavior [10,34,35]. According to Joanes [34], a moral norm is one's feeling/sense of a personal obligation to practice a particular pro-social action. This personal obligation often acts as an essential driving force of environmentally responsible intention/behavior [35]. Indeed, [36] and [35] described moral norms as an important dimension of one's decision formation with pro-social and pro-environmental motives. In most cases, human behaviors are consistent with moral norms [28,34]. Indeed, Joanes [34] empirically demonstrated that individuals' moral norms, which are formed based on various cognitive/affective processes, significantly influence their intentions for pro-social behaviors. This result was in line with Han and Hyun's [10] empirical finding that a personal norm, whose alternative term is a moral norm, significantly triggers an individual's behavioral intention for tourism products. Researchers in these studies agree that moral norms contribute to developing a useful framework for explicating patrons' pro-environmental intention/behavior. Given this, we posited the following:

Hypothesis 10 (H10). *The association between moral norm and behavioral intention for environmentally responsible electric airplanes is significant.*

2.5. Conceptual Model and Research Hypotheses

Our conceptual model is exhibited in Figure 1. The model contained a total of six research constructs (i.e., environmental corporate social responsibility, image of environmentally responsible electric airplanes, emotional attachment to environmentally responsible electric airplanes, attitude toward environmentally responsible electric airplanes, moral norms, and behavioral intention for using environmentally responsible electric airplanes). In addition, a total of ten research hypotheses (H1–H10) link the constructs.

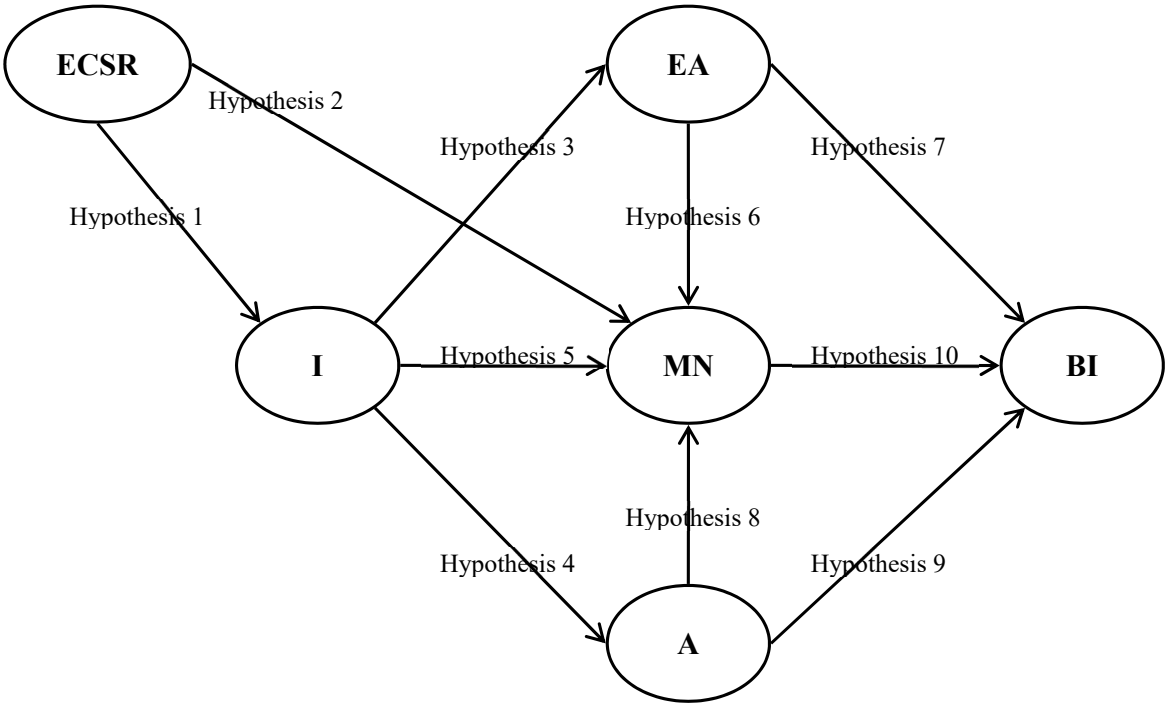

Figure 1. Conceptual model. Note. ECSR = environmental corporate social responsibility, I = Image of environmentally responsible electric airplanes, EA = emotional attachment to environmentally responsible electric airplanes, A = attitude toward environmentally responsible electric airplanes, MN = moral norm, BI = behavioral intention for environmentally responsible electric airplanes.

3. Research Methodology

3.1. Measurement Items and Survey Questionnaire

The measurements employed for the study constructs were taken from the existing tourism and marketing studies [3,4,8,11,18,33,37–42]. The questionnaire design was divided into three main sections. First, a brief description of the study purpose was offered. Second, the survey questionnaire items were proposed, which included the developed proposed model constructs. Third, participant demographic profile details were taken, including gender, age, educational, and income level. In particular, a total of five items were used for the evaluation of environmental corporate social responsibility. We used three items to measure image of environmentally responsible electric airplanes. A total of three items were also utilized to assess emotional attachment to environmentally responsible electric airplanes. In addition, we used five items for the assessment of attitudes towards environmentally responsible electric airplanes. A total of four items were utilized to measure moral norms. Lastly, we utilized three items for the evaluation of behavioral intention to use environmentally responsible electric airplanes. The questionnaire, including these measures along with the research description, was refined based on the result of the pre-test. Airline practitioners and tourism academics participated in the pre-test. Subsequently, airline academic experts further reviewed and finalized the questionnaire. The measurement items included in the survey questionnaire are shown in the table.

3.2. Data Collection Process and Demographic Information

To collect the data, we contacted one of the biggest marketing research companies in the USA, which has a large number of panel members and a large variety of panel partners. This allowed us to have an extensive reach to a variety of targets. A convenience sampling method was used to approach the respondents by email via the company's customer contacts profile. Only those who have previous airplane travel experience were invited to participate. Initially, an invitation link to

the survey questionnaire with a summary of the study purpose was provided to the participants. These participants were requested to thoroughly read the research description and the instructions of the survey, and then asked to fill out the questionnaire to ensure their validity. It took about 10 min on average for the completion of the survey. About 1900 individuals accessed the survey, and 310 respondents completed the questionnaire. Therefore, through this process, 310 complete responses were obtained. After the removal of unusable cases, the final sample size used for analyzing the data was 302. The data collection took about a week.

Of the 302 respondents, 49.67% were women (n = 150), and 50.33% were men (n = 152). The participants' ages fell between 18–75 years old. The mean age was about 37.7 years old. The participants' education level was examined. Approximately, 57.3% of the respondents indicated that they are either university graduates or two-year college graduates, followed by high school graduates (25.2%) and graduate degree holders (17.5%). Regarding the level of income, approximately 49.1% of the participants indicated the annual income between $40,000 and $99,999. In addition, about 37.1% and 13.9% indicated their income of $39,999 (or less) and $100,000 (or more), respectively. In terms of the frequency of airplane usage, approximately 61.6% of the participants indicated that they had used an airplane for traveling between two and five times within the last three years, followed by six times (or more) (30.5%) and only once (7.9%). Regarding the recency of the respondents' air travel, approximately 52.0% indicated their most recent experience was within the past three months, followed by within the past four to six months (24.8%), and within the past seven to twelve months (23.2%).

4. Data Analysis and Results

4.1. Confirmatory Factor Analysis

A confirmatory factor analysis was conducted to generate a measurement model. The confirmatory factor analysis results showed that the model contained acceptable goodness-of-fit statistics (χ^2 = 461.924, df = 211, $p < 0.001$, χ^2/df = 2.189, RMSEA = 0.063, CFI = 0.962, IFI = 0.962, TLI = 0.955). All items were significantly loaded to their associated latent variable ($p < 0.01$). The calculation of composite reliability showed that all values for research constructs (i.e., 0.888, 0.938, 0.895, 0.940, 0.937, and 0.929) exceeded the minimum cutoff of 0.700 [18]. This provided evidence of internal consistency among within-construct items. Average variance extracted values were then estimated. All average variance extracted values (i.e., 0.613, 0.834, 0.739, 0.760, 0.788 and 0.813) were found to exceed the minimum threshold of 0.500 [18] (see Table 1). Thus, convergent validity was evident [43]. The values were also greater than the correlations between research variables. This provided evidence of discriminant validity [43]. Table 2 contained the details of the measurement model evaluation.

Table 1. Confirmatory factor analysis CFA result.

	Loadings	CR	AVE
(1) Environmental corporate social responsibility		0.888	0.613
• Electric airplanes will perform in a manner consistent with protecting the environment.	0.695		
• Electric airplanes will comply with various international, governmental, and local environmental regulations.	0.764		
• Environmentally friendly services will be available in electric airplanes.	0.811		
• Electric airplanes will fulfill an environmentally related mission.	0.817		
• Electric airplanes will contribute to maintaining and preserving the environment.	0.821		
(2) Image of environmentally responsible electric airplanes		0.938	0.834
• My overall image of electric airplanes is positive.	0.894		
• The overall image I have of electric airplanes is favorable.	0.942		
• Overall, I have a good image of electric airplanes.	0.903		
(3) Emotional attachment to environmentally responsible electric airplanes		0.895	0.739
• I feel attached to eco-friendly electric airplanes that are less harmful to the environment than conventional airplanes.	0.881		
• I feel emotionally connected to eco-friendly electric airplanes that are less harmful to the environment than conventional airplanes.	0.879		
• I love eco-friendly electric airplanes that are less harmful to the environment than conventional airplanes.	0.818		
(4) Attitude toward environmentally responsible electric airplanes		0.94	0.76
• For me, using an electric airplane would be "Bad" *(1)—"Good" (7)*	0.888		
• For me, using an electric airplane would be *"Foolish" (1)—"Wise" (7)*	0.857		
• For me, using an electric airplane would be *"Unpleasant" (1)—"Pleasant" (7)*	0.839		
• For me, using an electric airplane would be *"Harmful" (1)—"Beneficial" (7)*	0.88		
• For me, using an electric airplane would be *"Unattractive" (1)—"Attractive" (7)*	0.893		
(5) Moral norm		0.937	0.788
• In the future, I will feel an obligation to choose an electric airplane because it will be less harmful to the environment than conventional airplanes.	0.827		
• Regardless of what other people do, because of my own values/principles, I feel that in the future I should use electric airplanes if they are less harmful to the environment than conventional airplanes.	0.881		
• I feel that in the future it will be important to use electric airplanes that are less harmful to the environment than conventional airplanes.	0.939		
• I feel that in the future it will be important that air travelers in general make the decision to use electric airplanes, which are less harmful to the environment than conventional airplanes.	0.901		
(6) Behavioral intention for using environmentally responsible electric airplanes		0.929	0.813
• I plan to use electric airplanes in the future.	0.917		
• I am willing to travel on electric airplanes in the future.	0.912		
• I will make an effort to fly on electric airplanes in the future.	0.872		

Note: CR stand for Composite Reliability; AVE = Average Variance Extracted.

Table 2. Measurement model assessment (n = 302).

Research Variables	(1)	(2)	(3)	(4)	(5)	(6)	Mean	SD
(1) Environmental corporate social responsibility	1.000	–	–	–	–		5.083	1.099
(2) Image of environmentally responsible electric airplanes	0.556 [a] (0.309) [b]	1.000	–	–	–		4.671	1.158
(3) Emotional attachment to environmentally responsible electric airplanes	0.585 (0.342)	0.560 (0.314)	1.000	–	–		4.499	1.489
(4) Attitude toward to environmentally responsible electric airplanes	0.452 (0.204)	0.643 (0.413)	0.448 (0.201)	1.000	–		4.811	1.611
(5) Moral norm	0.598 (0.358)	0.726 (0.527)	0.657 (0.432)	0.525 (0.276)	1.000		4.854	1.421
(6) Behavioral intention for environmentally responsible electric airplanes	0.516 (0.266)	0.835 (0.697)	0.558 (0.311)	0.666 (0.444)	0.652 (0.425)	1.000	4.580	1.548

Note. Goodness-of-fit statistics for the measurement model: $\chi^2 = 461.924$ $df = 211$, $p < 0.001$, $\chi^2/df = 2.189$, RMSEA = 0.063, CFI = 0.962, IFI = 0.962, TLI = 0.955. [a] Correlations between constructs. [b] Squared correlations.

4.2. Structural Equation Modeling and Hypotheses Testing

A structural equation modeling was conducted to evaluate the hypothesized research framework. The structural equation modeling results showed that the model included acceptable goodness-of-fit statistics (χ^2 = 611.481, df = 216, χ^2/df = 2.831, $p < 0.001$, RMSEA = 0.078, CFI = 0.940, IFI = 0.941, TLI = 0.930). Overall, the model sufficiently accounted for the total variance in behavioral intention for using environmentally responsible electric airplanes (R^2 = 0.667). In addition, it accounted for about 68.3% and 48.8% of the variance in moral norms, and in attitude towards environmentally responsible electric airplanes, respectively. Moreover, about 40.3% of the variance in emotional attachment, and about 38.4% of the variance in image were explained by our theoretical framework. Table 3 and Figure 2 contain the details about the structural equation modeling results.

Table 3. Structural model assessment (n = 302).

	Linkages			Coefficients	*t*-Values
H1	Environmental corporate social responsibility	→	Image of environmentally responsible electric airplanes	0.619 **	10.237
H2	Environmental corporate social responsibility	→	Moral norm	0.195 **	3.461
H3	Image of environmentally responsible electric airplanes	→	Emotional attachment to environmentally responsible electric airplanes	0.635 **	10.855
H4	Image of environmentally responsible electric airplanes	→	Attitude toward to environmentally responsible electric airplanes	0.698 **	13.057
H5	Image of environmentally responsible electric airplanes	→	Moral norm	0.501 **	6.921
H6	Emotional attachment to environmentally responsible electric airplanes	→	Moral norm	0.259 **	4.501
H7	Emotional attachment to environmentally responsible electric airplanes	→	Behavioral intention for environmentally responsible electric airplanes	0.178 **	2.895
H8	Attitude toward to environmentally responsible electric airplanes	→	Moral norm	0.001	0.006
H9	Attitude toward to environmentally responsible electric airplanes	→	Behavioral intention for environmentally responsible electric airplanes	0.458 **	8.932
H10	Moral norm	→	Behavioral intention for environmentally responsible electric airplanes	0.331 **	5.298
Goodness-of-fit statistics for the structural model: χ^2 = 611.481, df = 216, χ^2/df = 2.831, $p < 0.001$, RMSEA = 0.078, CFI = 0.940, IFI = 0.941, TLI = 0.930 * $p < 0.05$, ** $p < 0.01$				Variance explained: R^2 (behavioral intention) = 0.667 R^2 (moral norm) = 0.683 R^2 (attitude) = 0.488 R^2 (emotional attachment) = 0.403 R^2 (image) = 0.384	

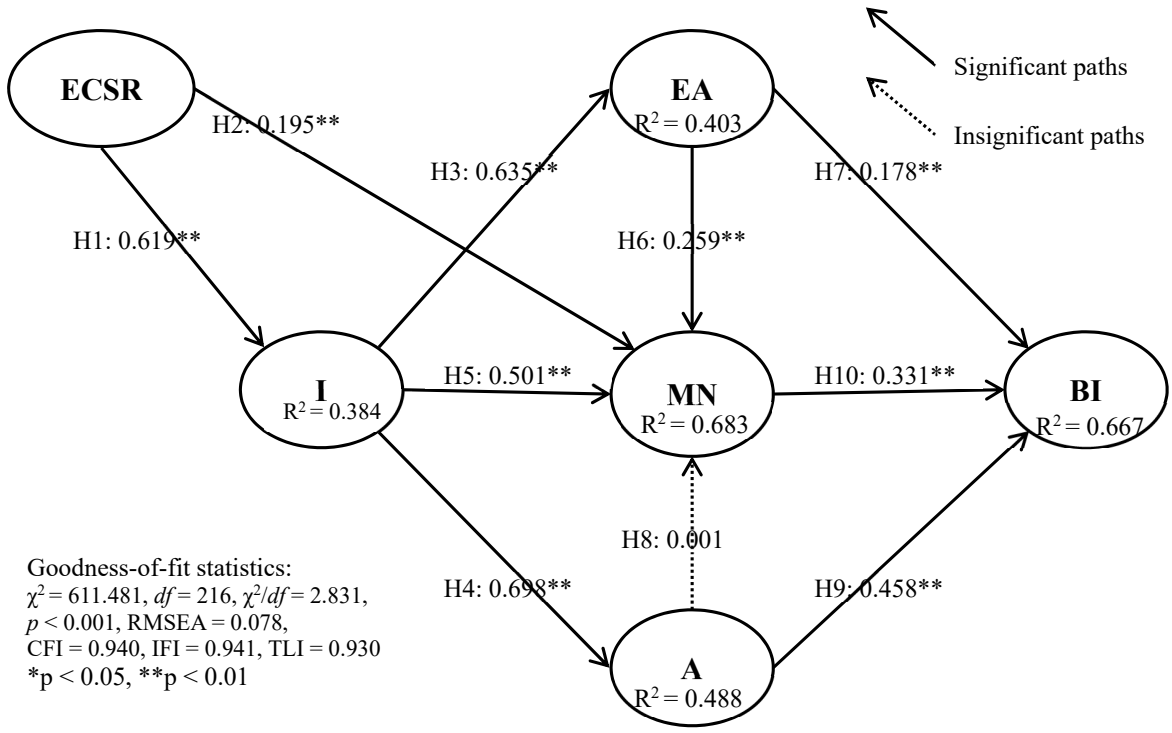

Figure 2. Results of the structural equation modeling. Note. ECSR = environmental corporate social responsibility, I = image of environmentally responsible electric airplanes, EA = emotional attachment to environmentally responsible electric airplanes, A = attitude toward environmentally responsible electric airplanes, MN = moral norm, BI = behavioral intention for environmentally responsible electric airplanes.

The hypothesized effect of environmental corporate social responsibility on image and moral norms was tested. Our results indicated that the environmental corporate social responsibility—image relationship ($\beta = 0.619$, $p < 0.01$), and the environmental corporate social responsibility—moral norm relationship ($\beta = 0.195$, $p < 0.01$) were positive and significant. Thus, Hypotheses 1 and 2 were supported. Regarding the effect of image of environmentally responsible electric airplanes, our result showed that image included a positive and significant influence on emotional attachment ($\beta = 0.635$, $p < 0.01$), attitude ($\beta = 0.698$, $p < 0.01$), and moral norm ($\beta = 0.501$, $p < 0.01$). Therefore, Hypotheses 3–5 were supported.

The role of emotional attachment was examined. As shown in Table 3 and Figure 2, emotional attachment exerted a significant impact on moral norm ($\beta = 0.259$, $p < 0.01$) and behavioral intention ($\beta = 0.178$, $p < 0.01$). Thus, Hypotheses 6 and 7 were supported. Regarding the effect of attitude toward environmentally responsible electric airplanes, it had a significant impact on behavioral intention ($\beta = 0.458$, $p < 0.01$). However, its impact on moral norms was not significant ($\beta = 0.001$, $p > 0.05$). Thus, Hypothesis 9 was supported whereas Hypothesis 8 was not supported. The proposed effect of moral norm on intention was tested. As expected, moral norm exerted a positive and significant influence on behavioral intention for using environmentally responsible electric airplanes ($\beta = 0.331$, $p < 0.01$). Accordingly, Hypothesis 10 was supported.

4.3. Indirect and Total Impact Assessment

The indirect effect of study variables was investigated. Our findings showed that environmental corporate responsibility had a significant indirect influence on emotional attachment ($\beta = 0.393$, $p < 0.01$), attitude ($\beta = 0.432$, $p < 0.01$), moral norm ($\beta = 0.412$, $p < 0.01$), and behavioral intention ($\beta = 0.469$, $p < 0.01$). Image also exerted a significant indirect impact on moral norm ($\beta = 0.165$, $p < 0.01$) and behavioral intention ($\beta = 0.653$, $p < 0.01$). In addition, emotional attachment included a significant indirect effect on intention ($\beta = 0.086$, $p < 0.05$). Subsequently, the total impact of study variables on

behavioral intention was examined. As reported in Table 4, image had the greatest total effect on behavioral intention (β = 0.653, $p < 0.01$), followed by environmental corporate social responsibility (β = 0.469, $p < 0.01$), attitude (β = 0.458, $p < 0.01$), moral norm (β = 0.331, $p < 0.01$), and emotional attachment (β = 0.264, $p < 0.01$). Table 4 included the results of the indirect and total impact assessment.

Table 4. Indirect and total impact assessment (n = 302).

Impact of the Variables Below	Image	Emotional Attachment	Attitude	Moral Norm	Behavioral Intention
Environmental corporate social responsibility	– (0.619 **)	0.393 ** (0.393 **)	0.432 ** (0.432 **)	0.412 ** (0.608 **)	0.469 ** (0.469 **)
Image of environmentally responsible electric airplanes	– (–)	– (0.635 **)	– (0.698 **)	0.165 ** (0.666 **)	0.653 ** (0.653 **)
Emotional attachment to environmentally responsible electric airplanes	– (–)	– (–)	– (–)	– (0.259 **)	0.086 * (0.264 **)
Attitude toward environmentally responsible electric airplanes	– (–)	– (–)	– (–)	– (–)	– (0.458 **)
Moral norm	– (–)	– (–)	– (–)	– (–)	– (0.331 **)
Behavioral intention for environmentally responsible electric airplanes	– (–)	– (–)	– (–)	– (–)	– (–)

Note1. The total impact of the study variables are in parentheses. Note2. Goodness-of-fit statistics: $\chi^2 = 611.481$, $df = 216$, $\chi^2/df = 2.831$, $p < 0.001$, RMSEA = 0.078, CFI = 0.940, IFI = 0.941, TLI = 0.930. * $p < 0.05$, ** $p < 0.01$.

5. Discussion and Implications

The present research provided an in-depth understanding of patrons' behavioral intention generation process for environmentally responsible electric airplanes. This research unearthed the essential role of environmental corporate social responsibility, image, emotional attachment, attitude, and moral norms in building airline patrons' behavioral intention. The hypothesized theoretical framework encompassing the convoluted relations among these constructs satisfactorily explained the total variance in intention for eco-friendly electric airplanes. The intrinsic mediating function of such constructs uncovered in this study further enhance our comprehension of the intricate process of intention generation. The findings of this study would help practitioners to invent efficient strategies that invite patrons to adopt environmentally responsible electric airplanes and eco-friendly choices when selecting a flight. In addition, it is also theoretically important that our findings help airline researchers efficiently deepen an existing conceptual framework about customers' eco-friendly decision formation for electric airplanes.

Our results provided evidence that patrons' perception of an airline company's environmental corporate social responsibility has a significant influence on the image of the airline, plays a critical role in activating their sense of moral obligation, and eventually builds a sturdy intention to use the airline. While some endeavors have been made to uncover airline patrons' environmentally responsible behaviors [2,44], the perception of an airline company's corporate social responsibility practices for the natural environment, and its effect on patrons' intention generation process have hardly been explored. The present study is accordingly evocative, theoretically and practically, since it offers a better comprehension regarding the vital role of environmental corporate social responsibility in illuminating patrons' intentions with respect to environmentally responsible airlines. To the best of our knowledge, the present study was the first empirical endeavor to conclude that energetically engaging in corporate social responsibility activities for the environment is of the utmost importance to airline companies, in order to increase their brand image, to elicit moral norms, and to build a behavioral intention for electric airplanes.

The concept of product image has been broadly adopted and utilized in the domain of tourism and consumer behavior in which possible beneficial/unbeneficial outcomes of an individual's behaviors are comparatively apparent [8,11,21,22]. The crucial question is then, if the image of

a product also has a critical role in environmentally responsible behaviors in the airline sector, why do patrons barely perceive much self-interest in the outcomes/benefits of their eco-friendly choices or behaviors? The results of this research explored that this cognitive construct had a salient role in determining airline patrons' behavioral intention for environmentally responsible electric airplanes. These results are coherent with Han and Yoon [18], as well as Lee et al.'s [8] assertions pertinent to the criticality of the image of a green tourism product in consumer behavior. This finding contained a critical theoretical meaning, since this study is the first research that demonstrated the relative importance of a green product image in forming intention in the airline context over emotional and moral factors. Practically, airline operators should accordingly make diverse efforts to boost patrons' image of environmentally responsible electric airplanes in order to help them actively adopt electric airplanes.

The findings of the present study verified the role of image, emotional attachment, attitude, and moral norms as mediators, within the hypothesized conceptual framework. Specifically, image, emotional attachment, attitude, and moral norms mediated the effect of their antecedent(s) on intention in a significant manner. This result implies that the influence of patrons' perception of environmental corporate social responsibility on behavioral intention for environmentally responsible electric airplanes are maximized when they have a positive image of an electric airplane, attitude towards it, and emotional attachment to it. This finding is theoretically meaningful in that our result offers an apparent view regarding the essential function of image, emotional attachment, attitude, and moral norms in explaining airline patrons' decision formation for electric airplanes, which has hardly been unearthed in the previous literature. Being aware of the mediating mechanism of these variables within our theoretical framework, practitioners should actively exploit image, emotional attachment, attitude, and moral norm to take full advantage of environmental corporate social responsibility in building green intentions for electric airplanes. In addition, this study finding have conceptualized the notion of eco-friendly environmental aspects in the airline industry context which provided a supplementary definition to the current literatures.

In the present study, there are several limitations that need to be addressed. First, while all correlations were found to be below the problematic level of 0.800 [18], our result was not totally free of the multi-collinearity issue. Indeed, some correlations were fairly high. Sturdier measurement design is thus recommended for future study. Second, previous studies indicated that individuals' level of concern and awareness for environmental deteriorations are vital factors in their eco-friendly purchase decision formation [10,45]. These important factors were not included in our conceptual model. Future research should integrate such variables into the proposed model to enhance its explanatory power for patrons' behavioral intention for environmentally responsible electric airplanes. Moreover, this study applied a quantitative method to investigate the proposed model associations, which suggests that further applicable research methods and techniques be performed in future studies to enhance the generalization of the study findings. This could encompass a qualitative approach (e.g., case study), or an advance analytical approach to such qualitative comparative analysis using fuzzy sets fsQCA to provide a deeper understanding of such phenomena [46].

6. Conclusions

A strong theoretical base for comprehending the intricate nature of airline customers' eco-friendly decision-making processes is fairly lacking. The present study successfully assessed and explored the distinct role of environmental corporate social responsibility, image, emotional attachment, attitude, and moral norms in the formation of patrons' behavioral intention for electric airplanes in a simultaneous manner in the airline industry, going beyond existing studies in the tourism/airline literature. The study results proposed several considerations in the airline industry, future business trends, and investigated the passengers anticipation towards an airline's impact on environmental issues, pollution, and climate change. The proposed conceptual framework contained a sufficient amount of total variance to explain what triggers airline patrons' intention to use environmentally

responsible electric airplanes, helping airline academics and practitioners to clearly comprehend the intricate formation of such eco-friendly decisions. Further, this study identified that environmental corporate social responsibility increases the airline passengers' awareness and knowledge by building their affective attitude towards traveling with electric airplanes. Less energy consumption, environmental preservations, and public health issues were highlighted as strategic topics that governments and airline industry stakeholders must realize in the advancement of tourism. The study findings are also meaningful with respect to their mediating role of studied variables. That is, the mediating impact of image, emotional attachment, attitude, and moral norms unearthed in this study provides valuable insights in order to more deeply comprehend patrons' intentions to adopt electric airplanes. In conclusion, given these factors, while the present research includes some limitations, this study comprises a high degree of originality and value, successfully filling a void in the existing literature.

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