Article

Eco-Design of Airport Buildings and Customer Responses and Behaviors: Uncovering the Role of Biospheric Value, Reputation, and Subjective Well-Being

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Abstract: This research was an empirical effort to uncover the influence of eco-design of airport buildings on customer approach responses and behaviors. A survey methodology with empirical data analysis was used to attain the research purpose. Our findings revealed that eco-design contributes to enhancing airport reputation and airport customers’ subjective well-being. In addition, eco-design, reputation, and well-being directly/indirectly increase customer approach intentions. Our result also indicated that the association between eco-design and airport reputation is under the significant influence of biospheric value. Moreover, airport reputation and subjective well-being mediated the effect of eco-design on intentions. The comparative importance of airport reputation in determining approach intentions was identified. Overall, the proposed theoretical framework satisfactorily accounted for approach intentions. Given the lack of knowledge about eco-design in the airport literature, this research help boosts airport researchers’ and practitioners’ understanding of the role of eco-design and its criticality in explicating approach formation and behaviors.

Keywords: eco-design; airport buildings; airport reputation; subjective well-being; biospheric value; customer approach behavioral intentions

1. Introduction

Covid-19 has led to significant changes in the global aviation industry and the passenger experience at the world’s airports [1]. Moreover, statements about under-prepared and sometimes overcrowded long queues at airports around the world as a potential pathway for spreading the virus have proliferated on social media as well as in news reports [2]. With this in mind, the need to enhance the overall experience environment at local airports for travelers who still plan to travel will have a corresponding impact on the passenger experience [3]. Eco-design of buildings has long been an essential topic in a variety of business contexts, including tourism sectors such as airports and hotels [4,5]. The efficient use of eco-design is believed to bring positive outcomes (e.g., stress reduction, reduced emotional exhaustion, customer/employee retention, cost-saving) that are essential for a company’s success [6,7]. Over the past few decades, customers’ cognitive, affective, and behavioral responses to eco-friendly and healthy design/physical environment of buildings have also been largely researched by academics in the extant literature of environmental behavior and consumer behavior [8,9]. Indeed, there exists substantial evidence about the healing impact of eco-design/green physical environment on individuals’ negative feelings, psychological distress, depression, and anxiety [10,11].
Individuals having interactions with natural items and green atmospherics rather than artificial building environments tend to have a higher level of mental health and well-being [9,12,13]. In addition, they form a favorable attitude toward a building and have a favorable image of a place [5,7]. It is likely that when the percentage of the indoor and outdoor green spaces of a building/place is high, individuals suffer fewer mental disorders and depressive symptoms and form a good image of (or attitude toward) a building/place [14]. Likewise, patrons exposed to the eco-design setting within a store/place comprising plants and green items/ décor often feel healthy, calm/peaceful, and happy when purchasing and consuming a product/service [6,8,15,16]. These patrons also feel that the reputation/image of the store/place is positive [7,17].

Despite many of prior studies’ investigation on the importance of eco-design of buildings (e.g., green décor, living plants, eco spaces, green atmospherics) [4,9,11], research that centers on exploring the positive influence of such eco-design on airport customers’ approach responses and behaviors are not plentiful to date. In addition, our knowledge regarding the relations among eco-design of places, the reputation of the place, and subjective well-being in determining one’s approach decisions are still limited. Furthermore, with the increasing awareness of the global environmental crisis, the environmental/consumer behavior literature continually emphasized the criticality of biospheric value [18–20]. Some studies have indicated that biospheric value is a critical factor affecting a patron’s consumption-related decision-making processes and behaviors when products and services are consumed, including eco-friendly attributes or green design [21–24]. However, there is a gap in the existing studies that have explored biospheric value in relation to airport tourism and proposed a meaningful theoretical framework.

Given these research needs, in the present study, we aimed to assess the effect of eco-design of airport buildings on airport reputation and customer subjective well-being and reveal the relationship between this association and customer approach behavioral intentions when using the research context as an airport. In addition, we attempted to explore how biospheric value moderates the magnitude of the influence of eco-design of airport buildings on its subsequent variables. Moreover, we aimed to uncover the mediating effect of airport reputation and subjective well-being on the formation of customer approach behavioral intentions. The conceptual framework and research hypotheses development are presented in the following section. Then, the methodology and findings are introduced. Lastly, the discussions and implications of this study are presented.

2. Literature Review

2.1. Eco-Design of Airport Buildings

Building atmospheres, building design, and buildings’ physical environment are similar terms [4]. Thus, the terms are interchangeably used in the literature [25,26]. According to Kotler [27], design/atmospherics is related to making buying environments to generate particular emotional influences on the consumer that increase the probability of his/her purchase. Similarly, the term “eco-design” is about the effort of making eco-friendly consumption environments to create positive emotional impacts on the eco-conscious patrons that enhance the possibility of their purchase and increase their healthy green consumption experiences [28]. In the same manner, Kreidler and Joseph-Mathews [29] concisely described eco-design as the deliberate endeavor to design building environments by integrating green/sustainable dimensions. The use of building/store design/atmospherics has emerged from the retail setting and is now broadly applied in a variety of service and tourism contexts, including airport [5,30].

Airport buildings have many types (e.g., terminals for air travelers, hangars for airplanes, office buildings for administration) [31]. While the physical environment of all forms of buildings affects occupant behaviors [4], the design of passenger terminals where the highest number of people use/visit/work has the most considerable influence on human responses/activities [28]. Customers normally use airport terminals and evaluate their overall airport experiences.
Designing airport buildings, especially passenger terminals, to be customer friendly is, therefore, becoming increasingly crucial in the airport sector [6]. Airport design greatly varies, whereas a basic principle of the design in recent years is greening [29]. Indeed, eco-design, whose alternative term is green design, is the leading phenomenon in the entire airport industry [31]. Green ambiance (e.g., natural light, air freshness, natural scent), green décor (e.g., green walls, green items, plants), and green spaces can be vital constituents of eco-design [5].

Eco-design influences customer emotional responses and overall evaluation of buildings/places/stores [10]. The core of eco-design of a building in consumer behavior and tourism is a biophilic building design that utilizes natural atmospherics/items with the purpose of eliciting customer cognitive/emotional responses and approach decisions [5,8,32]. Since the eco-design of a store/building provides visitors a relaxing and well-being consumption environment, it enhances a company’s reputation/image and visitors’ positive behaviors for the company [6]. Ying et al. [28] asserted that green items and spaces at an airport help the occupants of airport buildings increase their mental health perception and overall image of the airport. Their indication is in line with Moon et al.’s [4] empirical finding that airport green physical environments are of importance in inducing the cognitive and affective appraisals of visitors’ overall airport experiences. Given the foregoing discussion, the hypotheses proposed in this study are as follows:

**Hypothesis (H1):** Eco-design of airport buildings has a positive effect on airport reputation.

**Hypothesis (H2):** Eco-design of airport buildings has a positive effect on customer subjective well-being.

### 2.2. Airport Reputation

Developing a positive reputation of a company/brand is one of the essential constituents for the firm’s success [33–35]. Every practitioner in the marketplace is, therefore, active in creating and building a favorable reputation for their company and its products [17]. When a company/brand has a positive reputation, customers are likely to respect the company/brand and be loyal to the company/brand [36]. While a company’s reputation and image are sometimes alternatively used, the term “reputation” differs from the image, which indicates a patron’s overall perception in his/her memory about the company [37]. Company reputation refers to a patron’s view/tendency toward a company derived from his/her cognitive appraisal of the company’s performance and its product/service quality [33]. According to Foroudi et al. [38], company reputation is about how a firm’s operators want customers to perceive the organization. The reputation can be either positive or negative and either high and low [33,39].

Many studies indicated the critical role of company/brand reputation in the customer purchase decision-making process [17]. In the context of hotels, Foroudi [34] demonstrated that a reputation of a brand induces approach behaviors for the hotel company such as brand loyalty, repurchase, and recommendation. In their research, brand reputation was formed based on brand awareness and brand attitude among hotel guests. In their empirical research about e-commerce, Agmeka et al. [33] uncovered that brand reputation is a vital driver of patrons’ purchase decisions and actual consumer behavior. When the reputation of a particular company is favorable, customers scarcely perceive a risk related to its product purchase and often feel happy/comfortable in the product consumption situation [36]. In addition, it is likely that customers develop approach behavioral intentions for the company after they experience/consume a product with a high reputation [35]. A positive reputation of the airport also provides a similar advantage [40]. Indeed, the passenger’s role in the airport is a role as an observer and participant of airport facilities and services, in addition to a person waiting for a flight [6]. Therefore, the environment and the variety of entertainment and other activities provided in the airport terminal are considered essential elements that will enhance the enjoyment, participation, destination sense and subjectivity of the passengers [41]. Moreover, well-designed interiors, a convenient overall internal environment and the provision of recreational and
sporting activities at an airport are designed to increase passenger satisfaction, influencing the intention to revisit and enhancing the reputation of the particular airport [3,42]. However, the passenger visiting the airport is a traveler, and the traveler’s experience is variable and accompanied by a high degree of subjectivity [43,44]. Thus, there will be symbolic aspects that will ultimately lead to overall satisfaction with the experience, both in terms of deficiencies in this aspect and also in terms of a destination losing its positive reputation [37,45].

However, many previous studies have shown that a positive destination reputation is associated with tourists’ perception and satisfaction with the destination [4,26,40]. The research of Wu et al. [43] also verified that a positive destination reputation will enhance the value of the destination and also increase the travelers’ revisit/repurchase/WOM intentions. When travelers have a high level of satisfaction, it not only increases destination identity but also enhances their sense of subjective well-being [3,42]. Not only that, but the findings of the study also revealed that destination identity and destination satisfaction are both significant mediators between destination reputation and subjective well-being [41]. Based on the above discussion, it is observed that most of the studies are limited to validating the relationship between destination reputation on satisfaction and perceptions, while this study further investigates the impact of airport reputation on subjective well-being and customer approach behavioral intentions of visiting travelers in the airports. Therefore, the following hypotheses were proposed:

**Hypothesis (H3):** Airport reputation has a positive effect on customer subjective well-being.

**Hypothesis (H4):** Airport reputation has a positive effect on customer approach behavioral intentions.

### 2.3. Subjective Well-Being

A customer’s subjective well-being is his/her self-rated measure of well-being [16]. The scope of this concept covers subjective mental health and low depression severity [13,46]. Thus, when patrons’ subjective well-being is high, their self-reported measure of mental health and depression severity is mostly high and low, respectively [15]. Kim et al. [6] conceptualized customer well-being as a patron’s beliefs of the extent to which a product/place favorably contributes to his/her life enrichment. Since a growing number of individuals recently put more weight on the quality of their life enhancement than ever [47], subjective well-being is increasingly becoming an essential concept in both consumer behavior and tourism [48]. Indeed, in the recent tourism marketplace, customers show a tendency to purchasing/consuming a product/service that fills their well-being needs [49]. Feelings of a healthy, stress-free, happy, relaxed, calm, and peaceful state are important aspects of subjective well-being [43,44]. In other words, when consumers perceive high subjective well-being, they are likely to feel healthy, stress-free, happy, relaxed, calm, and peaceful.

Diverse empirical endeavors have been made to uncover the role of subjective well-being in explicating customer behaviors [15,16,46,50]. In the retail context, Troebs et al. [51] unearthed customer post-purchase decision-making process. According to their empirical result, subjective well-being is a significant determinant of approach behaviors such as loyalty. In the spa hotel sector, Huang et al. [48] investigated customer well-being and approach behavioral intention association. Their findings showed that customer well-being experiences elicit customer revisit and recommendation decisions. More recently, in the tourism context, Dekhili and Hallem [50] explored the role of well-being. They provided empirical evidence that traveler subjective well-being is positively related to traveler approach behavioral intentions. In addition, some studies have demonstrated that positive sensations (subjective well-being, positive emotions, etc.) are capable of triggering and eliciting behavioral intentions that cause people to move toward that environment [52]. Moreover, people prefer to approach a pleasant environment than an unpleasant environment [53,54], and the results of Troebs et al. [51] also validate that subjective positive sensations have a direct impact on repurchase intentions. Furthermore, the subjective perceived positive sensations during a journey are also positively correlated with
behavioral intentions to visit [3,42]. Spontaneous approaching behavior is triggered when people explore more opportunities to experience pleasure and well-being [48]. In addition, Tang and Zhang [55] defined approach behavioral intentions as a tendency to stay in a particular environment, which is similar to people who voluntarily choose to stay when they see someone or something they particularly prefer [48]. Based on the foregoing discussion, the hypothesis was developed as follows:

**Hypothesis (H5):** Customer subjective well-being has a positive effect on customer approach behavioral intentions.

### 2.4. Biospheric Value

When a firm is eco-conscious and is aware of ecological problems, it institutes effective environmentally responsible programs and performs diverse practices for environmental protection (e.g., the use of renewable or reusable materials, the reuse of resources, the use of regional materials, energy and water conservation, waste reduction, gray water use, the reduced use of chemical or toxic materials) and the fulfillment of eco-friendly customers (e.g., eco-design of buildings) [56–58]. Similarly, when an individual is eco-conscious and is aware of environmental problems, he/she actively practices diverse eco-friendly actions for environmental preservation, such as recycling, reusing materials, water conservation, energy conservation, using public transportation instead of self-driving, reducing wastes, eating locally grown foods, and willingly purchasing a green eco-friendly product and paying for it [23,59]. These eco-friendly customers often have a strong level of biospheric value as a guiding principle in his/her life [60].

The biospheric value refers to individuals’ primary beliefs, reflecting the individual’s concerns/perception of the biosphere and stressing the quality of the natural environment distinctly from the benefits to humans [23,60]. One who has a sturdy adherence to biospheric value thus attributes fundamental significance to the value of the environment shaping to the personal norm to chooses-friendly products/services and prefer green purchase behaviors [18]. Existing studies have indicated that customers with a high level of biospheric value would be prone to opt for eco-design or a green physical environment in a consumption situation [59]. In addition, the importance of biospheric value in triggering customer positive decision-making process and behaviors for eco-friendly products/services has been emphasized in tourism and environmental behavior [22]. Stern [61] asserted that biospheric value builds the base for customer eco-friendly decision/behavior. According to Perlaviciute and Steg [19], patrons’ intention formation for renewable energy use is under the considerable impact of the biospheric value. Consistently, Nilashi et al. [59] uncovered the fundamental role of biospheric value in increasing travelers’ favorable attitude toward green design/facilities of a hotel and behavioral intentions that are positive for the hotel. Consistently, in the tourism industry, Han et al. [21] indicated that biospheric value affects the strength of the influence of a company’s environmental effort on its outcome variables in the formation of behavioral intentions. Given this evidence, the following hypotheses were generated:

**Hypothesis (H6a):** Biospheric has a significant moderating effect on the association between eco-design of airport buildings and airport reputation.

**Hypothesis (H6b):** Biospheric has a significant moderating effect on the association between eco-design of airport buildings and customer subjective well-being.

### 2.5. Proposed Model

The proposed model contained a total of five research constructs. Eco-design of airport buildings, airport reputation, and customer subjective well-being were integrated into the model as antecedents of customer approach behavioral intentions, the model is presented in Figure 1. We generated five research hypotheses about these variables (Hypotheses 1–5). The hypothesized theoretical framework
included biospheric value as a moderator. We proposed two research hypotheses pertinent to the moderating effect of biospheric value (Hypothesis 6a,b).

![Figure 1. The conceptual model.](image)

### 3. Methods

#### 3.1. Measures and Questionnaire

To evaluate research constructs, measures validated in the previous studies were employed [4,6,13,17,18,25,28,43,61,62]. Specifically, this study employed a total of seven items to assess the eco-design of airport buildings (i.e., eco spaces, green rest areas, plants, eco-friendly décor, natural light, air freshness, eco-friendly physical environment). The measurement of airport reputation was performed with two items (e.g., “In general, the reputation of this airport is good”). In addition, with four items, customer subjective well-being was estimated (e.g., “I feel healthy and happy when staying at this airport”). To measure customer approach behavioral intentions, four items in total were also used (e.g., “I would repeatedly visit this airport”). These multiple items were evaluated from “strongly disagree” (1) to “strongly agree” (7). Lastly, the present research utilized four items to assess biospheric value (e.g., preventing pollution, respecting the earth, unity with nature, protecting the environment) ranging from “not important” (1) to “very important” (7). A 7-point Likert scale was utilized for all items in the questionnaire, as indicated in the Appendix A. The survey questionnaire contained these measures, a description of this research, and an inquiry about the personal characteristics of the participants. The developed survey questionnaire was pretested with airport practitioners and tourism academics. Minor errors were corrected on the basis of their feedbacks. The questionnaire was finalized by academic experts after a further examination.

#### 3.2. Data Collection Procedure and Sample Characteristics

We collected data using an online questionnaire. A random sample was collected using an online market research company’s database. The survey was sent to users of the online market research company’s database by email. The user who received the email followed the link to the questionnaire, of which the first question was whether the user had made at least one stopover at an international airport in the past six months, targeting a specific audience of the survey. If the answer is yes, the user was able to continue to participate in the questionnaire. If the answer is no, the survey was closed. All users were asked to follow the instructions carefully before completing the questionnaire. Moreover, the participants were asked to fill in the name of the last airport they had visited on their own and to fill in the questionnaire according to the actual experience they had. The target sample for this study
was approximately 300 people, but only 273 valid questionnaires were obtained from the invitation emails, and each questionnaire was completed within about 10 min.

Among 273 respondents, about 42.1% were women, and 57.9% were men. The participants’ mean age was 42.35 years old. Their age ranged from 21 years old to 67 years old. Regarding the education level, about 60.4% reported that they have a university diploma, followed by 2-year college graduates (17.9%), graduate-degree holders (15.0%), and high-school graduates or less (6.6%). When their monthly income level was asked, about 44.7% indicated that their income is $4999 or less, followed by the income between $5000 and $7999 (35.9%) and the income of $8000 or more (19.5%). About 50.2% of customers reported that they had visited the airport 2–3 times within the past six months. In addition, about 31.5%, 12.1%, and 6.2% indicated once, 4–5 times, and 6 times or more, respectively. Every participant had the airport visit experience within the last six months. Most participants’ airport visit was related to international/domestic traveling (87.2%).

4. Results

4.1. Confirmatory Factor Analysis and Measurement Quality Evaluation

A confirmatory factor analysis was conducted to generate the measurement model. AMOS 22 was SPSS22 utilized as a tool. Table 1 contained the details to evaluate the results of the measurement model. The model had a satisfactory fit to the data ($\chi^2 = 416.236$, $df = 172$, $p < 0.001$, $\chi^2/df = 2.420$, RMSEA = 0.072, CFI = 0.960, IFI = 0.960, TLI = 0.951). A composite reliability was then assessed. The values (eco-design of airport buildings = 0.922, airport reputation = 0.893, customer subjective well-being = 0.928, biospheric value = 0.963, and customer approach behavioral intentions = 0.898) exceeded the minimum threshold of 0.70 [63]. Average variance extracted values was then calculated for the evaluation of composite reliability. The values (eco-design of airport buildings = 0.638, airport reputation = 0.807, customer subjective well-being = 0.763, biospheric value = 0.868, and customer approach behavioral intentions = 0.689) were all greater than the suggested cutoff of 0.50 [63]. In addition, the correlations (squared) between constructs were all smaller than the average variance extracted values. Thus, convergent and discriminant validity of the construct measures was evident in the present research.

<table>
<thead>
<tr>
<th>Table 1. The measurement model evaluation results ($n = 273$).</th>
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</thead>
<tbody>
<tr>
<td>(a) Eco-design of airport buildings</td>
</tr>
<tr>
<td>(b) Airport reputation</td>
</tr>
<tr>
<td>(c) Customer subjective well-being</td>
</tr>
<tr>
<td>(d) Biospheric value</td>
</tr>
<tr>
<td>(e) Customer approach behavioral intentions</td>
</tr>
</tbody>
</table>

Note: goodness-of-fit statistics for the measurement model: $\chi^2 = 416.236$, $df = 172$, $p < 0.001$, $\chi^2/df = 2.420$, RMSEA = 0.072, CFI = 0.960, IFI = 0.960, TLI = 0.951. † Correlation between constructs; †† squared correlation between constructs.

4.2. Structural Equation Modeling and Hypotheses Testing

A structural equation modeling was conducted with an aim to evaluate the effectiveness of the proposed theoretical framework for predicting customer approach behavioral intentions. An acceptable fit of the generated model to the data was observed (295.027, $df = 107$, $p < 0.001$, $\chi^2/df = 2.757$, RMSEA = 0.080, CFI = 0.960, IFI = 0.960, TLI = 0.949). Table 2 and Figure 2 contained a summary
of the structural equation modeling results. The model had a satisfactory level of prediction ability for intentions as it accounted for approximately 83.7% of the total variance in approach intentions. In addition, the model explained about 72.9% of the variance in customer subjective well-being. About 30.8% of the variance was accounted for by the eco-design of airport buildings.

The hypothesized relationships among research constructs were evaluated. First, the proposed impact of eco-design of airport buildings was assessed. As hypothesized, eco-design of airport buildings exerted a significant influence on airport reputation (H1: $\beta = 0.555, p < 0.01$) and customer subjective well-being (H2: $\beta = 0.397, p < 0.01$). This result supported Hypotheses 1 and 2. The proposed effect of airport reputation was evaluated. Our result showed that airport reputation is significantly associated with customer subjective well-being (H3: $\beta = 0.567, p < 0.01$) and approach behavioral intentions (H4: $\beta = 0.529, p < 0.01$). Therefore, Hypotheses 3 and 4 were supported. Lastly, the relationship between customer subjective well-being and intentions was tested. It was found that customer subjective well-being exerted a significant influence on customer approach behavioral intentions (H5: $\beta = 0.438, p < 0.01$). Thus, Hypothesis 5 was supported.

### Table 2. The structural model evaluation results.

<table>
<thead>
<tr>
<th>Hypothesized Linkages</th>
<th>$\beta$</th>
<th>t-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Eco-design of airport buildings $\rightarrow$ Airport reputation</td>
<td>0.555</td>
<td>9.171 **</td>
</tr>
<tr>
<td>H2: Eco-design of airport buildings $\rightarrow$ Customer subjective well-being</td>
<td>0.397</td>
<td>7.499 **</td>
</tr>
<tr>
<td>H3: Airport reputation $\rightarrow$ Customer subjective well-being</td>
<td>0.567</td>
<td>9.843 **</td>
</tr>
<tr>
<td>H4: Airport reputation $\rightarrow$ Customer approach behavioral intentions</td>
<td>0.529</td>
<td>6.536 **</td>
</tr>
<tr>
<td>H5: Customer subjective well-being $\rightarrow$ Customer approach behavioral intentions</td>
<td>0.438</td>
<td>5.384 **</td>
</tr>
</tbody>
</table>

Variance explained

- $R^2$ (customer approach behavioral intentions) = 0.837
- $R^2$ (customer subjective well-being) = 0.729
- $R^2$ (airport reputation) = 0.308

Goodness-of-fit statistics for the structural model: $\chi^2 = 295.027, df = 107, p < 0.001$, $\chi^2/df = 2.757$, RMSEA = 0.080, CFI = 0.960, IFI = 0.960, TLI = 0.949, *$p < 0.05$, **$p < 0.01$.  

![Figure 2. The structural equation modeling and baseline model evaluation.](image-url)
The indirect effect of research constructs was investigated. Table 3 included the details about the indirect associations and total impact. Our result showed that the eco-design of airport buildings included a significant impact on customer subjective well-being indirectly through airport reputation ($\beta = 0.315$, $p < 0.01$). It also had a significant indirect influence on customer approach behavioral intentions ($\beta = 0.606$, $p < 0.01$). In addition, airport reputation contained a significant indirect effect on intentions through subjective well-being ($\beta = 0.249$, $p < 0.01$). This result implies that both airport reputation and subjective well-being played a significant mediating role within the hypothesized theoretical framework. The total impact was assessed. As reported in Table 3, airport reputation has the greatest total influence on intentions ($\beta = 0.777$, $p < 0.01$), followed by eco-design of airport buildings ($\beta = 0.606$, $p < 0.01$) and customer subjective well-being ($\beta = 0.438$, $p < 0.01$).

Table 3. Indirect and total effect assessment results.

<table>
<thead>
<tr>
<th>on Indirect Effect of</th>
<th>Eco-Design of Airport Buildings</th>
<th>Airport Reputation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer subjective well-being</td>
<td>0.315 **</td>
<td>–</td>
</tr>
<tr>
<td>Customer approach behavioral intentions</td>
<td>0.606 **</td>
<td>0.249 **</td>
</tr>
</tbody>
</table>

Total impact on customer approach behavioral intentions:
$\beta$ customer subjective well-being = 0.438 **
$\beta$ airport reputation = 0.777 **
$\beta$ eco-design of airport buildings = 0.606 **

Goodness-of-fit statistics for the structural model: $\chi^2 = 295.027$, $df = 107$, $p < 0.001$, $\chi^2/df = 2.757$, RMSEA = 0.080, CFI = 0.960, IFI = 0.960, TLI = 0.949,* $p < 0.05$, ** $p < 0.01$.

4.3. Evaluation of the Baseline Model and Metric Invariance Test

A metric invariance test was performed to assess the hypothesized impact of the biospheric value. All responses of the survey participants were split into two groups (high and low) of biospheric value. We used a K-means cluster analysis during this grouping process. The high biospheric value group contained 168 cases, whereas the low group comprised of 105 cases. Next, we generated the baseline model, including these two groups. As shown in Table 4 and Figure 2, the model had an acceptable level of the goodness-of-fit statistics ($\chi^2 = 481.011$, $df = 227$, $p < 0.001$, $\chi^2/df = 2.119$, RMSEA = 0.064, CFI = 0.943, IFI = 0.944, TLI = 0.932). The baseline model generated was utilized for further invariance test by constraining all loadings to be equivalent across high and low biospheric value groups.

Table 4. Metric-invariance test results.

<table>
<thead>
<tr>
<th>Paths</th>
<th>High Biospheric Value Group (n = 168)</th>
<th>Low Biospheric Value Group (n = 105)</th>
<th>Baseline Model (Freely Estimated)</th>
<th>Nested Model (Constrained to be Equal)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$t$-Values</td>
<td>$\beta$</td>
<td>$t$-Values</td>
</tr>
<tr>
<td>Eco-design of airport buildings $\rightarrow$ Airport reputation</td>
<td>0.596</td>
<td>8.034 **</td>
<td>0.414</td>
<td>4.054 **</td>
</tr>
<tr>
<td>Eco-design of airport buildings $\rightarrow$ Customer subjective well-being</td>
<td>0.390</td>
<td>5.653 **</td>
<td>0.417</td>
<td>4.946 **</td>
</tr>
</tbody>
</table>

Goodness-of-fit statistics for the baseline model: $\chi^2 = 481.011$, $df = 227$, $p < 0.001$, $\chi^2/df = 2.119$, RMSEA = 0.064, CFI = 0.943, IFI = 0.944, TLI = 0.932,* $p < 0.05$, ** $p < 0.01$. Chi-squared difference test: $^a \Delta \chi^2 (1) = 4.135$, $p < 0.05$ (H0a: supported); $^b \Delta \chi^2 (1) = 0.829$, $p > 0.05$ (H0b: not supported).
The outcomes revealed that the path from eco-design of airport buildings to airport reputation differed significantly between high and low biospheric value groups ($\Delta \chi^2 [1] = 4.135, p < 0.05$). Hence, the proposed moderating influence of biospheric value on this link was supported (Hypothesis 6a). This means that the relationship between the eco-design of airport buildings and airport reputation was under the influence of biospheric value. Yet, our result revealed that the link from eco-design of airport buildings to customer subjective well-being was not significantly different across groups ($\Delta \chi^2 [1] = 0.829, p > 0.05$). Therefore, Hypothesis 6b was not supported. This finding implied that the level of customers’ biospheric value is not particularly important for the eco-design and well-being relationship.

5. Discussions and Limitations

5.1. Discussions

Eco-design, reputation, subjective well-being and biospheric value are irrefutably essential concepts of every company’s success in the increasingly environment and health-conscious tourism marketplace. In the present study, we unearthed the role of eco-design of airport buildings in improving airport reputation, customer well-being, and customer approach behavioral intentions by considering the moderating effect of biospheric value. Our findings, based on the quantitative analysis, demonstrated the significance of eco-design of buildings in the formation of approach intentions. It was also uncovered that airport reputation and subjective well-being maximized the impact of eco-design on intentions. The magnitude of the relationship strength between eco-design and reputation was dependent on the level of biospheric value that customers perceive. The hypothesized theoretical framework satisfactorily explained the customer approach intention generation process. Hence, the study objectives of the airport industry were successfully attained.

The importance of our findings can be appreciated in many ways as the research made a critical step through filling the gaps in the extant tourism literature. First, despite substantial interest in eco-design among consumer behavior and tourism academics, scant empirical research has wholly explored the possible effect of eco-design of buildings on airport visitors’ responses/behaviors. Our result provided an important foundation regarding the role of airport eco-design in the customer approach decision-making process. Second, enhancing a firm’s reputation and customer well-being perception is undoubtedly a key interest of every business. Nevertheless, little was understood about what elicits these crucial constructs. Our results offered fundamental information concerning how these critical factors can be triggered by utilizing eco-design. Third, understanding the theoretical foundations of the intricate concept of biospheric value in the airport sector remains in the infant stage. Taking that into consideration, the empirical result of our research can be useful for subsequent airport studies that deal with the topic of biospheric/environmental value, thus having a high theoretical and practical value in the airport industry.

The empirical evidence provided by this research demonstrated the significance of eco-design within the proposed theoretical framework. Specifically, the eco-design of airport buildings was revealed to be a crucial variable affecting its subsequent constructs in the customer approach decision generation process. This result implies that solely focusing on the functional facet of the airport for customers is not sufficient to fulfill their needs of cognitive and emotional needs when visiting an airport. Based on the evidence of the present research, eco-design of airport buildings can be fundamental to help patrons feel healthy, happy, and calm/relaxed when using an airport and to help them believe that the airport has a good reputation as compared to other airports. Airport practitioners, therefore, should center on the eco-design of airports by placing considerable efforts on increasing eco-spaces, green rest areas, living plants, green décor, natural light, air freshness, and green physical environment. This endeavor could be a critical tool for boosting airport reputation, eliciting customers’ subjective well-being, and eventually enhancing their approach behavioral intentions.
An empirical investigation of the present research demonstrated the prominent role of airport reputation in inducing customer approach decisions ($\beta = 0.777, p < 0.01$). Based on Fisher’s Z test result, it has a significantly stronger influence as compared to other research constructs ($p < 0.01$). The result is congruent with earlier tourism studies that highlighted the significance of place/brand/product reputation in explicating customer post-purchase decision-making process and behavior [17,33,34]. From the theoretical aspect, airport academics should actively involve the concept of reputation when developing the conceptual model of visitor behaviors in order to increase the model’s effectiveness and comprehensiveness. From the practical point of view, recognizing our finding pertinent to the salient impact of airport reputation, airport practitioners should make various efforts on enhancing airport reputation by allocating diverse monetary/non-monetary resources. Recent research indicated that a company’s corporate social responsibility endeavor is one of the efficient methods to boost its reputation/image [7,38]. Given this evidence, we are able to observe that a better reputation has a positive impact, and having a good reputation is an important factor in enhancing customer satisfaction after engaging in corporate social responsibility. Therefore, the internal facilities of airports should be improved by addressing issues of sustainability and a green environment. In fact, green environment issues have become one of the social responsibilities of airports [64]. Only by improving the airport’s social responsibility as much as possible and gaining an important competitive advantage of sustainability, the airport will be able to achieve its fundamental objectives and make a significant contribution to the implementation of social responsibility.

The criticality of biospheric value has been demonstrated in the present research. Our result supported our proposition that biospheric value significantly moderates the eco-design and airport reputation relationship. The path from eco-design of airport buildings to airport reputation to airport reputation in the high biospheric value group was significantly stronger than in the low group (high group: $\beta = 0.596, p < 0.01$ vs. low group: $\beta = 0.414, p < 0.01$). This finding implies that at a similar level of the perceived appraisals of airport eco-design, customers who hold strong beliefs of biospheric value are more inclined to believe that the airport has a high reputation than those with somewhat weak beliefs of biospheric value. Theoretically, our result emphasizes the necessity of incorporating the concept of biospheric value into the framework of research pertinent to the eco-design of buildings and customer responses. That is, to gain in-depth knowledge about the influence of eco-design on customer cognitive/affective responses, considering the possible effect of biospheric value can be of utmost importance. From the practical aspect, airport practitioners should make diverse endeavors to increase the customers’ beliefs of biospheric value as it significantly contributes to maximizing the influence of eco-design on airport reputation. Helping airport visitors comprehending the value of preserving the environment and biosphere and understanding the positive outcomes resulted from such protection efforts (e.g., air/water/soil quality improvement, increase in biodiversity, habitat protection, energy saving, decrease in natural disasters) through a variety of communication channels can be one of the effectual ways.

5.2. Limitations

Like many other studies, the present research contained few limitations that offer the chances of further research. First, this study centered on airport eco-design and airport customer behavior. Hence, generalizing the finding of this research to other tourism contexts (hotel, cruise, resort, casino, or restaurant) needs some caution. Future studies should assess the efficiency of the proposed model and its explanatory ability in other tourism sectors. Second, the present research utilized reputation as a key concept of cognitive process and well-being as the main concept of an effective process. Nonetheless, the cognitive process involves many other concepts (e.g., quality, performance, attributes, value) as its constituents [62,65,66]. Affective process also includes many other variables (e.g., emotions, moods, feelings, attachment) as its components [25,62,67,68]. Future research should accordingly broaden the proposed theoretical framework by involving other meaningful cognitive and effective concepts. In future research, the proposed theoretical framework should be expanded accordingly
to involve other meaningful cognitive and effective concepts. Additionally, a random sample was collected and analyzed using a database from an online market research company. However, the context of this study was not set in a particular setting, but rather the airports visited were manually filled in by the participants. Thus, the diversity of research contexts is pretty general in deriving a particular and creative implication. In addition, the data were diverse through participants filling in the names of airports autonomously, which regrettably prevented them from presenting practical implications for a particular airport environment and people. Therefore, in future research, further studies can be conducted with the setting of a particular environment and derive more specific, innovative, and theoretical/practical implications.

6. Conclusions

Ultimately, the results of this study have revealed key mediators of airport reputation and subjective customer well-being. This implies that in the hypothesized theoretical framework, these variables significantly mediate the influence of the eco-design of airport buildings on the approach behavioral intention of customers. From a theoretical point of view, the empirical evidence of this study provides the necessary information that the role of eco-design evoking airport customers’ approach behavior, and which is maximized when airport reputation and customer subjective well-being are present. Moreover, these mediating factors in our proposed model can also be applied as important ingredients in other research on airport customer behavior. In light of the current global pandemic of neo-coronaviruses and the increasing concern for the environment. Furthermore, this study provides airport managers with important implications of sustainability in a green environment. Namely, increasing the satisfaction of airport travelers through building an internal green ecosystem, which can effectively and positively influence customers’ approach behavioral intentions.

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Appendix A

Eco spaces are readily available at this airport (eco spaces).
Rest areas at this airport are designed in a green way (green rest areas).
Diverse flowers/trees and potted plants are located in many places (e.g., cafés, restaurants, shopping places) at this airport (plants).
A variety of green interior decorations are easily observable at this airport (eco-friendly décor).
Natural light through glass windows, walls, and roofs are easily observable at this airport. (natural light).
Air quality at this airport (e.g., temperature, circulation, humidity, natural scent, and ventilation) is fresh and comfortable (air freshness).
Overall physical environment of this airport is designed in an eco-friendly way (eco-friendly physical environment).

Airport Reputation—(Lee et al. 2010)
Compared to other airports, this airport has a good reputation.
In general, the reputation of this airport is good.

I feel healthy and happy when staying at this airport.
I feel emotional well-being while staying at this airport.
This airport plays an important role in making me feel relaxed. Thinking about this airport makes me feel calm and peaceful.

**Biospheric Value**—(De Groot and Steg, 2007; Stern, 2000)

[Please indicate to what extent the followings are important as a guiding principle in your life.]

- Preventing pollution
- Respecting the earth
- Unity with nature
- Protecting the environment

**Customer Approach Behavioral Intentions**—(Wu et al. 2018; Oliver, 2010)

The next time I visit this airport, I am willing to spend more time shopping, dining, or relaxing. I would repeatedly visit this airport. I will say positive things about this airport. I will engage in positive word-of-mouth activities about this airport.

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