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Passenger Repurchase Behaviours in the Green Cruise Line Context: Exploring the Role of Quality, Image, and Physical Environment

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Abstract: Little is known about cruise passengers' post-purchase behaviours and what makes them repurchase eco-friendly cruise trips. This research is an empirical attempt to explore the role of cruise line quality, image, physical environment excellence, satisfaction, and awareness of consequences in determining passenger repurchase intentions in the green cruise line sector. A quantitative method that comprised a structural equation model and an invariance test was used. Our findings revealed that quality, image, and physical environment excellence acted as significant drivers of satisfaction and intention, and cruise line quality had the greatest influence on intention. In addition, satisfaction, which was the most proximal determinant of intention, had a mediating effect. The physical environment excellence and intention relationship was moderated by awareness of consequences. The proposed conceptual framework in general had a sufficient level of prediction power for passenger repurchase intention. Findings of this study can be efficiently used for passenger retention among green cruise line practitioners.

Keywords: green cruise line; physical environment excellence; cruise line quality; image; awareness of consequences

1. Introduction

For the last few decades, hospitality and tourism businesses around the globe have faced issues related to environmental deterioration [1–3]. In particular, the impact of the cruise industry on the oceans, rivers, and the wider environment has enhanced concern among increasingly eco-conscious customers in the tourism marketplace because cruise tourism is considered to be one of the largest contributors of the greenhouse effect [3,4]. A green cruise line indicates an environmentally responsible cruise company that is active in adopting diverse eco-friendly technology and green management, as well as making positive contributions to the protection of the natural world, while minimizing hazardous environmental impacts [5]. In the competitive cruise tourism market, the green cruise line engages in green business and is eager to use environmentally responsible management as strategies for the retention of passengers who are becoming increasingly eco-conscious [5].

The phenomenon of repurchasing or revisiting has received substantial attention and interest from both academics and industry practitioners because repeat business brings diverse benefits to the firm, such as a stable source of income, reduced marketing costs, long-term valued relationships,

or product/brand loyalty [6–9]. In the same regard, retaining existing patrons is one of the main priorities for every cruise line operator [10]. Recognizing the diverse benefits of repeat business and fierce competition, cruise line practitioners are eager to retain their patrons by developing and seeking diverse and useful environmentally responsible tactics for their business success [3–5].

Numerous studies in various fields, such as hospitality, tourism, retailing, and marketing have made efforts to unearth the factors that are important to the customers' repurchase decision-making process and behaviours [1,11,12]. Specifically, tourism and marketing studies have shown that product quality, image, and physical environment excellence are important for encouraging repeat patronage intention and behaviors [1,13]. Moreover, customer satisfaction is regarded as an important variable in the customer repurchase intention generation process [12,14]. Accordingly, many hospitality and tourism operators put a great emphasis on concepts, such as product quality, image, physical environment excellence, and satisfaction as tools for increasing repurchase intention [11,12]. Nevertheless, some researchers asserted that the relationships among these variables are not as simple as it may seem, particularly in the eco-friendly product consumption situation [15,16]. They asserted that such relationships can be under the influence of the customers' awareness level of environmentally harmful consequences derived from non-green consumption activities. Indeed, considering the awareness of consequences is important in order to better comprehend customers' eco-friendly post-purchase decision-making process [5,17].

Despite the criticality of product quality, image, physical environment excellence, and satisfaction, the effect of these constructs on green cruise purchase behaviours has not been well studied. In addition, no existing research to date has investigated the impact of these variables in a single conceptual framework in the green cruise context. Particularly, the direct impact of the physical environment quality with regard to customer's satisfaction has been rarely shown to be positive to date. Moreover, few studies have explored the moderating role of the awareness of consequences in cruise passengers' eco-purchasing intention formation. To fill this void, we made an empirical endeavour to uncover passengers' repurchase intention generation process in the green cruise line context in this research. Specifically, we aimed to unearth the convoluted interrelationships among cruise line quality, cruise line image, physical environment excellence, and satisfaction with the cruise line in the form of passenger repurchase intention, to test the moderating role of awareness of consequences, and to examine the mediating role of satisfaction within the proposed theoretical framework.

2. Literature Review

The main purpose of this section is to provide a core concept of each construct, to explicate existing study results on the topic, and to identify relationships with relevant constructs. As a consequence, this section presents topics of cruise line quality and its role in satisfaction and behavioural intention, cruise line image and its part in satisfaction and behavioural intention, physical environment excellence and its association with satisfaction and behavioural intention, satisfaction with a cruise line and its relationships with behavioural intention, repurchase intention, awareness of consequences, and research model and hypotheses.

2.1. Cruise Line Quality and its Role in Satisfaction and Behavioural Intention

Product/service quality has long been regarded as a strategic construct to obtain efficacy in tourism business operations [11] because customers' post-consumption behaviours are heavily influenced by product/service quality [18,19]. According to Chua et al. [11], cruise line quality indicates the perceived outcomes that customers achieve while consuming the cruise company's products/services. For many firms, boosting the quality of their products, services, and their attributes is one of the top priorities due to its substantial contribution to the enduring valued relationship between the company and its existing customers, which is essential for their business success [18–21].

The role of quality in customer decision formation has been extensively studied in the existing literature [20–22]. For instance, Chiou and Chen [22] examined the factors that affect airline customer

behavioural intention. The results showed that the service and product quality perceived by the customer played a decisive role in increasing satisfaction and creating the customer's behavioural intention. In the tourism context, Rohm [20] claimed that product and service attribute performances, as perceived by patrons, have a considerable influence on their evaluation process and post-purchase decision-making process. Results of these studies imply that the customers' behavioural intention and satisfaction are based on the quality and performance of a company's services and products, and its attributes. In the cruise context, Petrick [23] proved that the quality of a cruise had a significant impact on both satisfaction and intention to repurchase. Later, the quality of the cruise line was examined in three different attributes that included interactional quality, physical environment quality, and outcome quality [11]. Among all attributes, the interactional quality and outcome quality significantly influenced novelty and perceived value, which, in turn, had a positive impact on customer satisfaction and customer loyalty. Recently, Wu et al. [12] expanded the experiential quality to access quality, revealing that the experiential quality, consisting of four attributes positively influenced experiential satisfaction, which, in turn, affected repurchase intentions.

2.2. Cruise Line Image and its Part in Satisfaction and Behavioural Intention

Since the 1950s, company image has been considered an important concept in consumer behaviour research [24], and it continues to remain an important factor today, as well as receive attention in the marketing field [25]. According to Keller [26], the company image is a customer's cognitive perception of a particular firm reflected by the relationships of that firm stored in the customer's memory. Customers form either a favourable or an unfavourable image about a company through their direct or indirect consumption experiences with the company's products [1]. Undoubtedly, customers who have a positive image of a certain firm often have a favourable attitude toward the firm and its products and services and generally evaluate the firm's product and service performances favourably, and they frequently engage in post-purchase behaviours that are eventually beneficial to the firm [25,26].

A company image that includes certain features differentiates the specific company from its rival companies in the marketplace [13,27]. Thus, it is often believed that the company image has certain common features of functionality and symbolism [5,27]. The competition in the cruise travel industry is becoming increasingly severe [5,11]. In recent years, improving the cruise line image in such a competitive market environment has been receiving a considerable amount of attention from cruise line operators around the globe. According to Lee et al. [1], the company image contributes towards inducing a positive evaluation of the company's products and services from the patron and triggering positive post-purchase behaviours for the company. A trusted and favourable company image has been undeniably correlated with satisfactory experiences with the firm and favourable behavioural intentions for the firm among customers [24,26]. In regards to the cruise industry, Han and Hyun [28] revealed that overall company image was positively associated with desire toward cruise travel and repeat cruising intention. Also, Han et al. [29] attempted to discover a more divided version of image congruence into social image congruence and ideal social image congruence. In their study, the image congruence showed a positive relation with affect and customer satisfaction. Ultimately, the customer satisfaction had significant impact on switching cost and trust, which, in turn, influenced the repurchase intention for the cruise line. In association with direct intention behavior, Park [30] revealed that an image of a cruise vacation had a significant effect on intentions to have a cruise vacation.

2.3. Physical Environment Excellence and its Association with Satisfaction and Behavioural Intention

Bitner [31] described physical environment excellence as the quality of the human-made atmosphere where a certain product or service is provided. According to Bitner [31], patrons' purchase behaviours and employees' work behaviours are under the considerable influence of such an in-store atmosphere. In addition, their internal responses, such as cognitive, emotional, satisfactory, and physiological responses, and subsequent behaviours, are affected by the physical environment. In a

similar manner, how effectively the physical environment of a school designed influences students' cognitive, affective, and satisfaction experiences, as well as their health condition in the school [32,33]. The key aspect of the physical surroundings in hospitality an tourism business operations includes ambient atmospherics, which includes air freshness, temperature, noise level, odor, and lighting, and interior/exterior design and décor [10,34–36].

Individuals often seek tangible and intangible evidence when consuming service-related products through visual, sensory, auditory, or olfactory cues, such as odor/scent, air freshness, noise/sound, humidity/dryness, temperature, light and brightness and other apparent atmospherics of the space, such as the layout, basic amenities, equipment/furniture, electronic or computer-related devices [31,35,37]. The role of these physical environment attributes becomes particularly important when cognition, such as quality and attitude/affect are involved in the theoretical framework for the clarification of customers' satisfaction/decision formation and behaviours [31,35]. The excellence of physical environments undoubtedly contributes to inducing satisfactory consumption experiences and positive post-purchase behaviours for a company's products [36,37].

Various endeavors have been made to discover the roles of the physical environment in the cruise context. Specifically, a role of physical environment performance was revealed in cleanliness, room temperature, lighting, music, and so on [38]. Also, a role of physical appearance in the luxury cruise area has been presented [39]. In addition, the quality of the physical environment has been examined as a sub-concept of an experiential or service quality [11,12]. However, no particular studies have discovered a positive role of the physical environment in direct relation to satisfaction in the cruise field. Recently, Chua et al. [11] failed to prove a positive relation between a physical environment quality and novelty and perceived value. Nevertheless, based on the results in other fields [36,37], the physical environment quality has considerable potential in impacting the level of cruise passengers' satisfaction in a positive way.

2.4. Satisfaction with a Cruise Line and its Relationships with Behavioural Intention

Customer satisfaction has often been believed to be a key factor to improve loyalty, strengthening the relationship between the company and its customers, and enhancing retention rate [12,40,41]. Boosting the level of customer satisfaction is thus of utmost importance to stay competitive in the maturity stage of the tourism marketplace around the globe [12]. Customer satisfaction is often described as "the result of a comparison between a consumer's expectations of the service or product and the actual experience" [42] (p. 412). The concept of comparison in this definition encompasses his/her evaluation process [43]. Indeed, Oliver [44] asserted that the major aspect of satisfaction is individuals' evaluation procedure. Coherently, satisfaction in this research refers to the cruise passengers' evaluation if their overall experiences with a certain cruise line meets or exceeds their expectation of its performance.

Recent studies in many sectors indicated that satisfying customers is an essential requisite for customer retention and business success [12,41,42]. In the marketing context, White and Yu [41] verified the significant association between customer satisfaction and positive post purchase behaviours. In addition, Park [45] demonstrated that satisfaction exerted a significant influence on customer reuse intention for services in the tourism context. Wu et al. [12] examined cruise tourists' behaviours. Their empirical research finding revealed that passengers' experiential satisfaction formed based on cruise line reputation significantly increased their trust and behavioural intention. The likely outcomes of customer satisfaction are increased repeat business and loyalty enhancement [40,41]. These findings all insist that there is a significant link between customer satisfaction and behavioural intention across tourism and consumer behaviour contexts. In the sphere of the cruise line industry, attempts have also been made to explore the role of satisfaction [11,12,23,29]. Specifically, the level of satisfaction was found to be a meaningful predictor of repurchase intentions [12,23]. Also, customer satisfaction of the cruise service had a positive impact on customer loyalty [11]. In addition, customer

satisfaction significantly influenced repurchase intention through the positive impact of switching cost and trust [29].

2.5. Repurchase Intention

Repeated purchasing refers to a customer's repetitive buying behaviours for a specific company's products based on his/her past experiences [43]. Ajzen and Fishbein [46] described behavioural intention as individuals' subjective likelihood that they will practice a certain behaviour. Repurchase intention in this study consistently indicated that the cruise passengers would subjectively engage in a repetitive buying behaviour for a particular cruise line's product. According to Ajzen [47], intention is a direct and most proximal determinant of actual behaviour. He also stressed that one's intention is critical, because it mostly results in his/her actual relevant behaviour. Many studies showed that there are some critical requirements, such as employee kindness, quality of products/services, physical environment, and brand trust/attitude/image that are compulsory for such repeated purchasing intentions [1,11,19,48]. Numerous researchers and practitioners have focused on heightening repurchase intention/behaviour, because of its close relationship with a company's profits [19,43]. Also, a variety of studies attempted to discover the repurchase intention of a cruise trip [12,23,29,49], repeat cruising intention [28], and loyalty [38].

2.6. Awareness of Adverse Consequences

Environmental problems derived from non-green human behaviours have recently become more visible than ever [50,51]. Awareness of consequences is thus often regarded as a vital concept, because it comprises individuals' apprehension about such environmental deteriorations. Awareness of consequences indicates one's conscious level of hazardous consequences for a particular object valued by him/her when conducting ecologically harmful behaviours or when improperly practicing conservation behaviours [5,17]. On consumer behaviour and tourism, customers' concern for the seriousness of ecological problems is broadly believed to be an essential factor that affects their purchase/choice behaviours for products/services/brands [5]. Indeed, customers' awareness level of environmentally harmful consequences is often conceptualized as an important constituent in explicating the formation of their environmental purchase intentions [52].

For instance, in the tourism sector, Han and Yoon [16] demonstrated that patrons who are strongly aware of the ecological deterioration are likely to generate a positive attitude toward eco-friendly consumption activities and strong intentions to practice such eco-friendly behaviours. Their empirical finding is coherent with Meng and Choi's [2] indication that considering travellers' level of awareness for the environmental issues is of importance when using a socio-psychological model/theory for the explication of their pro-environmental behaviours. In the airline context, Han et al. [15] attempted to identify the role of corporate social responsibility in the passengers' loyalty generation process by considering the moderating influence of problem awareness. Their empirical findings demonstrated that passengers' concern for the environmental problems strengthens the effect of cognitive and affective factors on passenger loyalty. In their research, repurchase and recommendation intentions were used to assess loyalty. These researchers agreed that customers' intention formation for eco-friendly products/services is often under the influence of their environmental awareness.

2.7. Research Model and Hypotheses

A theoretical model for the present study was developed based on the conceptual background discussed above, and is shown in Figure 1. The model depicts the hypothesized relationships among cruise line quality, cruise line image, physical environment excellence, satisfaction with the cruise line, and repurchase intention. In addition, awareness of consequences was integrated into the model as a moderator. The model contained a total of 8 research hypotheses.

Hypothesis 1: *Cruise line quality positively influences satisfaction with the cruise line.*

Hypothesis 2: *Cruise line quality positively influences repurchase intention.*

Hypothesis 3: *Cruise line image positively influences satisfaction with the cruise line.*

Hypothesis 4: *Cruise line image positively influences repurchase intention.*

Hypothesis 5: *Physical environment excellence positively influences satisfaction with the cruise line.*

Hypothesis 6: *Physical environment excellence positively influences repurchase intention.*

Hypothesis 7: *Satisfaction with the cruise line positively influences repurchase intention.*

Hypothesis 8a: *Awareness of consequences has a significant influence on the relationship between cruise line quality and repurchase intention.*

Hypothesis 8b: *Awareness of consequences has a significant influence on the relationship between cruise line image and repurchase intention.*

Hypothesis 8c: *Awareness of consequences has a significant influence on the relationship between physical environment excellence and repurchase intention.*

Hypothesis 8d: *Awareness of consequences has a significant influence on the relationship between satisfaction with the cruise line and repurchase intention.*
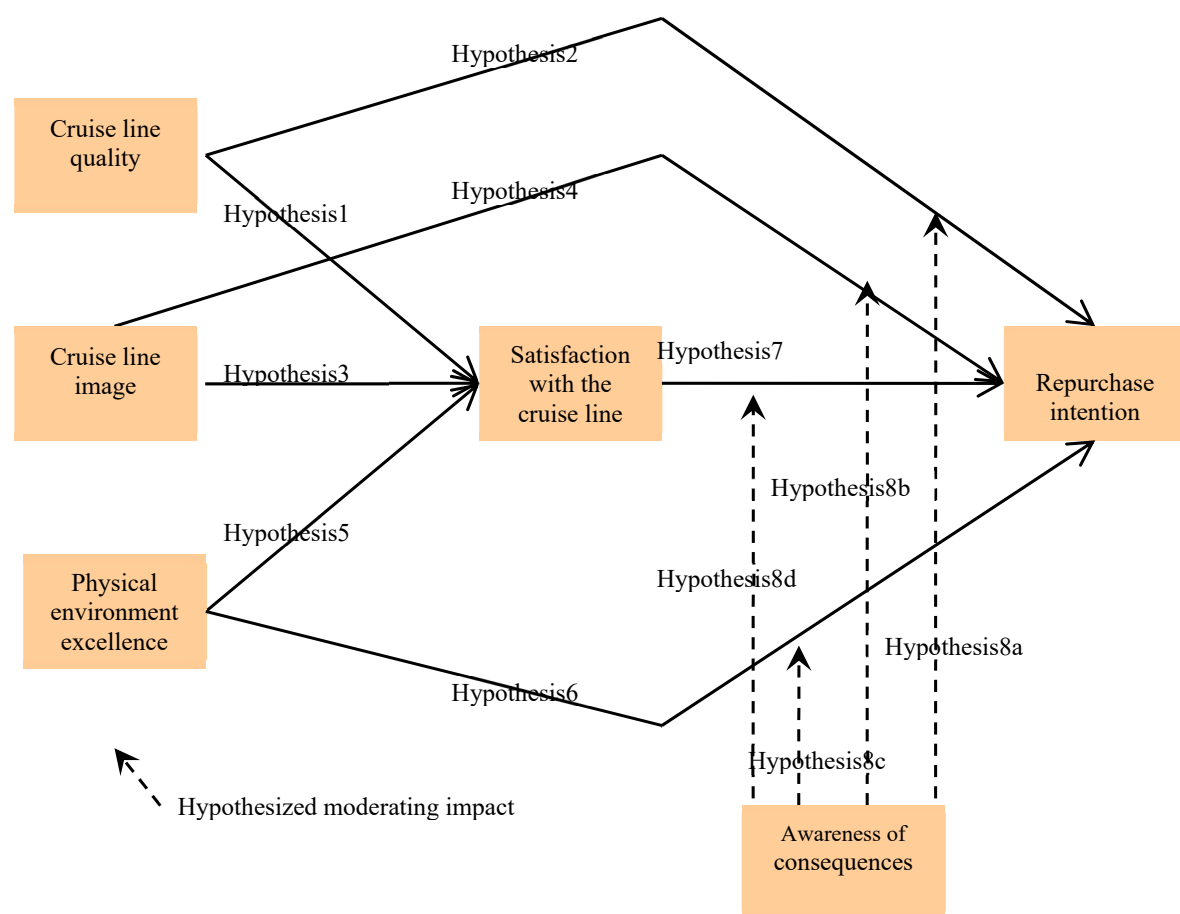

Figure 1. The proposed model.

3. Methods

3.1. Measures

The validated measurement items were adopted from the existing studies [1,17,19,31,43,47,53]. Multiple items were utilized using a seven-point scale. For cruise line quality, we employed three items from Taylor and Baker [19], such as "overall, I consider quality of this green cruise line to be excellent". To measure cruise line image, two items were adopted from Lee et al. [1], which include "the overall image I have about this green cruise line is favorable". A total of three items adopted from Bitner [31] were used for the assessment of physical environment excellence, which include "overall, the ambient conditions, such as air quality, temperature, odor, and noise of the cruise ships of this green cruise line are comfortable". To evaluate satisfaction with the cruise line, three items were employed from Oliver [43], which include "overall, I am satisfied with this green cruise line". Awareness of consequences was measured with three items adopted from Bamberg and Schmidt [53] and Schwarz [17], which include "the cruise industry can cause environmental deteriorations, such as waste from rooms, dining, and other ship facilities, and the excessive use of energy/water/fuel". Lastly, two items adopted from Ajzen [47] and Oliver [43] were used to measure repurchase intention, which include "I will expend effort on repurchasing the product of this green cruise line when deciding on cruise travel in the future". The measurement items used in this study are presented in the Appendix A.

3.2. Survey Questionnaire and Data Collection

The survey questionnaire was comprised of these measurement items, a research description, and questions for personal characteristics. The questionnaire was pre-tested with faculty members and graduate students whose major is hospitality and tourism, and it was modified accordingly based on their feedback. Then, the finalization of the questionnaire was made through academic experts' reviews and their feedback. Next, an online survey was conducted for the collection of the data using a convenience sampling method. The market research company's system was used for the distribution of the questionnaire in the USA. The potential participants were chosen in a random manner from the database of the company. Specifically, the developed questionnaire was sent to general cruise travellers who had purchased a green cruise line product. In the invitation e-mail, a detailed description of a green cruise line was provided. The potential participants could access the questionnaire by clicking the URL included in the survey invitation e-mail. All participants were requested to read and answer the questions in a careful manner. The data collection, which was conducted in the first week of July 2017, took about four days. Through this process, we obtained a total of 250 responses that were usable for data analysis. The average time required for the completion of the survey was about 10.5 min.

3.3. Sample Characteristics

Among the participants, 63.6% were female cruise travellers, and 36.4% were male cruise travellers. In terms of age, about 38.8% indicated that their age is between 25–44 years old, 34.8% reported that their age is between 45–64 years old, about 16.8% indicated that their age is 65 years old or more, and about 9.6% reported that their age is 24 years old or less. All participants were more than 18 years old. Regarding the participants' household income, about 19.2% reported that their income is over $100,000, 18.0% reported $55,000–$69,999, 17.6% indicated $25,000–$39,999, 16.0% designated between $40,000–$54,999, 11.2% reported $70,000–$84,999, 10.4% specified $85,000–$99,999, and 7.6% reported under $24,999. In regards to education level, about 40.0% reported that they are college graduates, followed by 28.8% who indicated they were college/2-year college graduates, high school graduates or less were 17.6%, and graduate degree holders were 13.6%. In terms of ethnic background, a majority of the participants were Caucasians/Whites (79.6%), followed by Asians (6.8%), Hispanics (6.0%), Blacks (6.0%), and other (1.6%). The participants' frequency of cruise vacations within the last five years was 2.84 times. About 28.4% indicated one time within the past five years, 29.6% reported two times, 18.8% reported three times, 9.6% reported four times, and 13.6% indicated five times or more.

4. Results

4.1. Measurement Model

The measurement model was generated by using a confirmatory factor analysis (CFA). The model contained an appropriate fit to the data (χ^2 = 224.038, df = 104, p < 0.001, χ^2/df = 2.154, RMSEA = 0.068, CFI = 0.972, IFI = 0.972, and TLI = 0.963). All loading values were significant (p < 0.01). The result of the composite reliability assessment showed that the values were all above the cut-off of 0.700 (cruise line quality = 0.939; cruise line image = 0.916, physical environment excellence = 0.854, satisfaction with the cruise line = 0.953, awareness of consequences = 0.910, and repurchase intention = 0.920), which demonstrated the internal consistency of the within-construct measurement items [47]. The average extracted values (AVE) were assessed, and our results showed that the values were all above the cut-off of 0.500 (cruise line quality = 0.838, cruise line image = 0.845, physical environment excellence = 0.661, satisfaction with the cruise line = 0.872, awareness of consequences = 0.771, and repurchase intention = 0.793), which demonstrated the convergent validity of the measures [47]. In addition, these values were greater than the between-construct correlations (squared) (see Table 1), which provided evidence of discriminant validity [54].

Table 1. Results of the confirmatory factor analysis (n = 250).

Research Variables	1	2	3	4	5	6	CR	AVE
1. Cruise line quality	1.000						0.939	0.838
2. Cruise line image	0.721 [a] (0.520) [b]	1.000					0.916	0.845
3. Physical environment excellence	0.446 (0.199)	0.484 (0.234)	1.000				0.854	0.661
4. Satisfaction with the cruise line	0.710 (0.504)	0.743 (0.552)	0.609 (0.371)	1.000			0.953	0.872
5. Awareness of consequences	0.539 (0.291)	0.479 (0.229)	0.434 (0.188)	0.582 (0.339)	1.000		0.910	0.771
6. Repurchase intention	0.725 (0.526)	0.702 (0.493)	0.586 (0.343)	0.787 (0.619)	0.621 (0.386)	1.000	0.920	0.793
Mean	4.973	5.200	5.901	5.660	5.433	5.460		
SD	1.419	1.252	1.138	1.143	1.208	1.238		

Note. Goodness-of-fit statistics for the measurement model: χ^2 = 224.038, df = 104, p < 0.001, χ^2/df = 2.154, RMSEA = 0.068, CFI = 0.972, IFI = 0.972, TLI = 0.963. [a] Correlations between constructs [b] Squared correlations

4.2. Structural Model

The structural model was generated. The model contained an acceptable fit to the data (χ^2 = 160.527, df = 67, p < 0.001, χ^2/df = 2.396, RMSEA = 0.075, CFI = 0.974, IFI = 0.974, and TLI = 0.964) (see Table 2 and Figure 2). Overall, the model accounted for about 78.5% of the variance in repurchase intention. The proposed impact of cruise line quality was assessed. As expected, the influence of cruise line quality on satisfaction (β = 0.266, p < 0.01) and repurchase intention (β = 0.339, p < 0.01) was significant. This result supported Hypotheses 1 and 2. The effect of cruise line image was evaluated. Our findings revealed that the path from cruise line image to satisfaction (β = 0.411, p < 0.01) was significant. Yet, the path from cruise line image to repurchase intention (β = 0.125, p > 0.05) was not significant. Therefore, while Hypothesis 3 was supported, Hypothesis 4 was not supported. The impact of physical environment excellence was assessed. Our results showed that physical environment excellence had a significant influence on satisfaction (β = 0.313, p < 0.01) and repurchase intention (β = 0.167, p < 0.01). Thus, Hypotheses 5 and 6 were supported. Lastly, the effect of satisfaction was assessed. Our findings revealed that the satisfaction and repurchase intention relationship was significant (β = 0.372, p < 0.01). This result supported Hypothesis 7.

Table 2. Results of the structural equation modeling (n = 250).

Hypotheses	Paths	Coefficients	t-Values
Hypothesis 1	Cruise line quality → Satisfaction with the cruise line	0.266	3.867 **
Hypothesis 2	Cruise line quality → Repurchase intention	0.339	5.006 **
Hypothesis 3	Cruise line image → Satisfaction with the cruise line	0.411	5.615 **
Hypothesis 4	Cruise line image → Repurchase intention	0.125	1.669
Hypothesis 5	Physical environment excellence → Satisfaction with the cruise line	0.313	5.793 **
Hypothesis 6	Physical environment excellence → Repurchase intention	0.167	2.992 **
Hypothesis 7	Satisfaction with the cruise line → Repurchase intention	0.372	4.703 **
Variance explained: R^2 (repurchase intention) = 0.785 R^2 (satisfaction with the cruise line) = 0.728	Total effect on repurchase intention: β Satisfaction with the cruise line = 0.372 ** β Cruise line quality = 0.438 ** β Cruise line image = 0.278 ** β Physical environment excellence = 0.283 **	Indirect effect on repurchase intention: β Cruise line quality = 0.099 * β Cruise line image = 0.153 * β Physical environment excellence = 0.117 *	

Note. Goodness-of-fit statistics for the structural model: $\chi^2 = 160.527$, $df = 67$, $p < 0.001$, $\chi^2/df = 2.396$, RMSEA = 0.075, CFI = 0.974, IFI = 0.974, TLI = 0.964 * $p < 0.05$, ** $p < 0.01$.
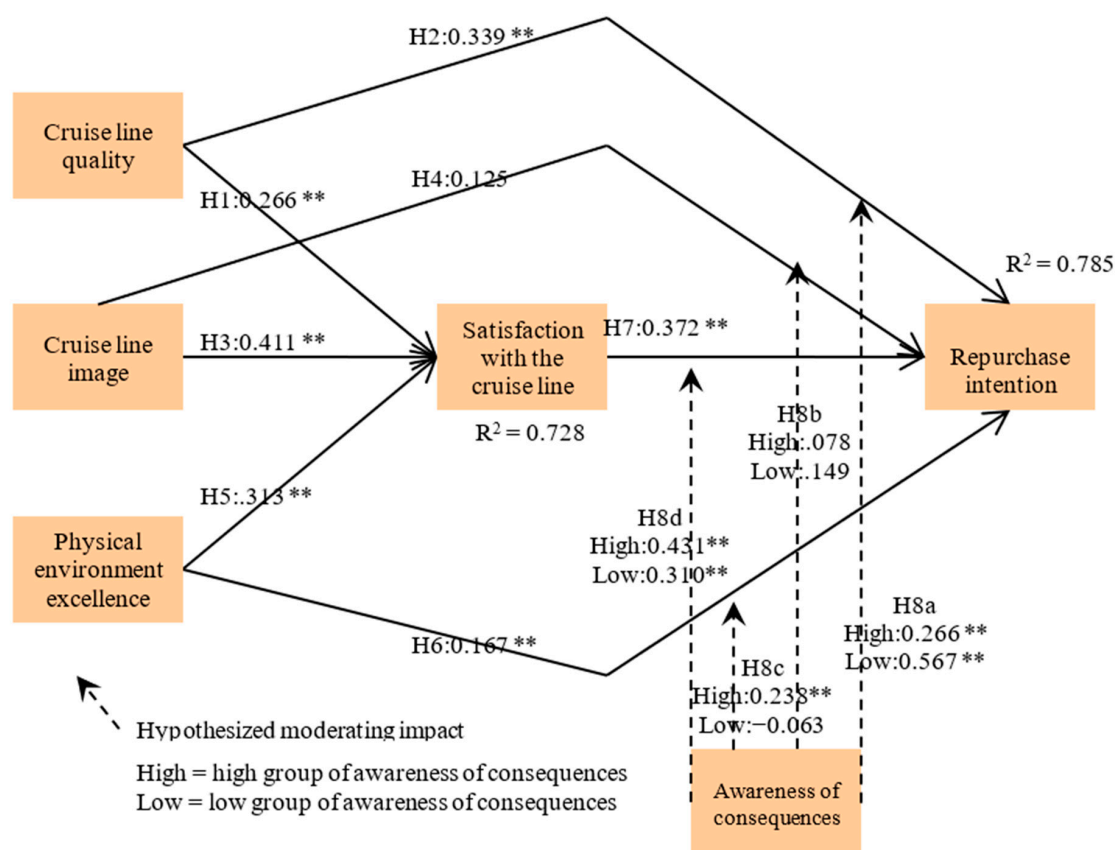

Figure 2. Structural model and invariance-test results. Note 1. Goodness-of-fit statistics for the structural model: $\chi^2 = 160.527$, $df = 67$, $p < 0.001$, $\chi^2/df = 2.396$, RMSEA = 0.075, CFI = 0.974, IFI = 0.974, TLI = 0.964. Note 2. Goodness-of-fit statistics for the baseline model: $\chi^2 = 304.384$, $df = 143$, $p < 0.001$, $\chi^2/df = 2.129$, RMSEA = 0.067, CFI = 0.948, IFI = 0.949, TLI = 0.934. * $p < 0.05$, ** $p < 0.01$.

4.3. Indirect and Total Impact

The indirect effect of the study variables was evaluated. As reported in Table 2, our findings showed that cruise line quality ($\beta = 0.099$, $p < 0.05$), cruise line image ($\beta = 0.153$, $p < 0.05$), and physical environment excellence ($\beta = 0.117$, $p < 0.05$) had a significant influence on repurchase intention indirectly through satisfaction with the cruise line. This finding implies that satisfaction acts as a significant mediator in the proposed model. Subsequently, the total effect of the study variables was examined. Our results showed that cruise line quality had the greatest influence on repurchase

intention (β = 0.438, p < 0.01), followed by satisfaction with the cruise line (β = 0.372, p < 0.01), physical environment excellence (β = 0.283, p < 0.01), and cruise line image (β = 0.278, p < 0.01) (see Table 2).

4.4. Test for Metric Invariance

A test for metric invariance was performed to investigate the moderating effect of awareness of consequences. The responses were split into high and low groups of awareness of consequences based on the result of a K-means cluster analysis. The high group contained 189 responses, and the low group included 61 responses. A baseline model that encompassed these high and low groups was generated. The loadings within the model were constrained to be equal across groups. Our results showed that the baseline model had an adequate fit to the data (χ^2 = 304.384, df = 143, p < 0.001, χ^2/df = 2.129, RMSEA = 0.067, CFI = 0.948, IFI = 0.949, and TLI = 0.934). The details about the baseline model assessment result are shown in Table 3 and Figure 2.

Table 3. Results of the invariance test for the structural model.

Paths	High Group of Awareness of Consequences (n = 189)		Low Group of Awareness of Consequences (n = 61)		Baseline Model (Freely Estimated)	Nested Model (Constrained to be Equal)
	β	t-Values	β	t-Values		
Cruise line quality → Repurchase intention	0.266	3.470 **	0.567	3.468 **	χ^2 (143) = 304.384	χ^2 (144) = 307.206 [a]
Cruise line image → Repurchase intention	0.078	0.907	0.149	0.714	χ^2 (143) = 304.384	χ^2 (144) = 304.539 [b]
Physical environment excellence → Repurchase intention	0.238	3.428 **	−0.063	−0.536	χ^2 (143) = 304.384	χ^2 (144) = 308.446 [c]
Satisfaction with the cruise line → Repurchase intention	0.431	4.893 **	0.310	1.826	χ^2 (143) = 304.384	χ^2 (634) = 304.978 [d]
Chi-square difference test:	[a] $\Delta\chi^2$ (1) = 2.822, p > 0.05 [b] $\Delta\chi^2$ (1) = 0.155, p > 0.05 [c] $\Delta\chi^2$ (1) = 4.062, p < 0.05 [d] $\Delta\chi^2$ (1) = 0.594, p > 0.05				H8a: Not supported H8b: Not supported H8c: Supported H8d: Not supported	

Note. Goodness-of-fit statistics for the baseline model: χ^2 = 304.384, df = 143, p < 0.001, χ^2/df = 2.129, RMSEA = 0.067, CFI = 0.948, IFI = 0.949, TLI = 0.934 * p < 0.05, ** p < 0.01.

The baseline model was then compared to the nested models. In each nested model, a particular path of interest was equally restricted between two groups. The chi-square test revealed that the path from cruise line quality to repurchase intention was not significantly different between groups ($\Delta\chi^2$ (1) = 2.822, p > 0.05). In addition, the paths from cruise line image to repurchase intention ($\Delta\chi^2$ (1) = 0.155, p > 0.05) and from satisfaction with the cruise line to repurchase intention ($\Delta\chi^2$ (1) = 0.594, p > 0.05) were also not significantly different across two groups. Therefore, Hypotheses 8a, 8b, and 8d were not supported. However, the linkage from physical environment excellence to repurchase intention ($\Delta\chi^2$ (1) = 4.062, p < 0.05) was significantly different between the two groups of awareness of consequences. This result supported the hypothesized moderating effect of awareness of consequences on the relationship between physical environment excellence and repurchase intention (Hypothesis 8c).

5. Discussion and Implication

The present research provided a deeper understanding of cruise passengers' post-purchase decision formation for the green cruise line. This study unearthed the apparent role of cruise line quality, cruise line image, physical environment excellence, and satisfaction with the cruise line with increasing repurchase intention. The proposed theoretical framework containing the convoluted relationships among research constructs satisfactorily accounted for the total variance in

environmentally responsible post-purchase intention among cruise passengers. Moreover, the inclusion of awareness of consequences and its impact on our research model was uncovered to be crucial for a better comprehension of such an eco-friendly decision formation. The findings of this research can be helpful for cruise practitioners who develop effectual customer service and retention strategies. Furthermore, this research made a considerable contribution to improving the existing knowledge regarding the driving forces of passenger retention for the environmentally responsible cruise line. In particular, the positive role of physical environmental quality in association with satisfaction in the cruise sphere was uncovered through this study.

When consuming a green product/service, a patrons' likely concern is if its quality/performance is lower than that of a conventional product/service [1,10]. The quality of a green product/service is the most important factor that either facilitates/inhibits travellers' environmentally responsible consumption of a green product/service. In line with this notion, our findings demonstrated the salient role of green cruise line quality in determining passenger repurchase intention, which is consistent with the result of a previous study [23]. Specifically, the results of the structural model revealed that the total influence of cruise line quality on repurchase intention was significantly stronger ($p < 0.01$) when compared to other research variables. Accordingly, it is apparent that in order to induce passenger eco-friendly post-purchase behaviours successfully, one of the best strategies is that cruise practitioners should direct their approaches toward boosting the level of their cruise line quality and performance.

Also, this study uncovered that cruise line image had a significant influence on passenger satisfaction. This finding is coherent with the existing studies [24,26]. However, cruise line image was not a significant indicator in association with repurchase behaviours. This outcome may provide a pragmatic implication that raising the cruise image is not the best strategy to lead passengers to repurchase the cruise trip. In addition, the physical environment showed a positive relationship with satisfaction and repurchase intention, which is consistent with previous research [36,37]. In particular, as the positive relationship between the physical environment and satisfaction has been largely unstudied in the cruise context, this result may underlay the theoretical base for the relationships. Furthermore, as diverse studies [12,13,41,42,45] have indicated, the outcome of this study showed that satisfaction is a significant determinant of cruisers' repurchase behaviours. This result can bolster the theoretical base of the relationships shown in the existing studies [12,13].

The result of this research showed that the relationship between physical environment excellence and repurchase intention was under the significant influence of awareness of consequences. The physical environment excellence and repurchase intention association was significantly stronger in the high group of awareness of consequences than in the low group (high group: β = 0.238, $p < 0.01$ vs. low group: β = −0.063, $p > 0.05$). This result implies that at a similar level of perception regarding physical environment excellence, cruise passengers who are strongly aware of environmental problems derived from cruise tourism have a stronger intention to repurchase the green cruise line product than those passengers with a low level of environmental awareness. The primary reason why the level of awareness of consequences influences the physical environment and satisfaction items, but other measurement items do not, is attributed to the analogous characteristics of physical environment and awareness of the consequence. Specifically, the physical environment and the negative consequence are mainly parts of external environment. In this regard, cruise travellers with higher concerns for the physical environment can be more sensitive to the adverse consequences caused by cruise trips. Theoretically, the present research deepened the existing conceptual framework explaining the formation of passenger eco-friendly decisions for the green cruise line by successfully taking the awareness of consequences and its influence into account. The result also broadened our understanding of the moderating role of awareness of consequences. From the practical aspect, for the effective enhancement of passengers' repeat patronage behaviours, cruise practitioners need to center on enhancing passengers' perceived awareness levels of environmentally harmful consequences resulting from the cruise industry.

The findings of this study demonstrated the dynamic role of satisfaction with the cruise line as a mediator. Specifically, satisfaction significantly and partially mediated the effect of cruise line quality and physical environment excellence on repurchase intention. In addition, it completely mediated the influence of cruise line image on intention. This result implies that the impact of quality, image, and physical environment excellence on passengers' repurchase intentions for the green cruise line can be maximized if they feel a strong level of satisfaction. This result is coherent with previous marketing and tourism studies that stressed the significant mediating nature of satisfaction [12,37,41,43]. This finding contains crucial theoretical meaning, because it offers an apparent view regarding the clear function of satisfaction in explaining cruise passengers' environmentally responsible post-purchase decision formation. Recognizing this mediation mechanism of satisfaction, cruise practitioners need to energetically utilize this factor to make the best use of cruise line quality, image, and physical environment excellence in boosting repeat purchase intentions.

Overall, to the best of our knowledge, this study is the first to discover the positive role of the physical environment in direct relation to satisfaction in the cruise field. Moreover, there is no current study to date that has explored the effect of cruise line quality, image, physical environment excellence, and satisfaction with the cruise line in a distinct conceptual framework in the green cruise context. In this regard, this study is of meaningful importance in integrating the model that may contribute to expanding knowledge in the field.

6. Limitation

The present study contained several limitations. First, an online survey was employed for data collection in the present study. Sampling a subset of a larger population is possible with the use of this survey method. However, it is hard to capture customers' immediate product/service consumption experiences. In order to avoid this issue, future research should use a field survey with real consumption situations. Second, which was stated in the methodology section, most survey participants were Caucasians/Whites. While the active participation of Caucasians/Whites in an online survey is quite common, the percentage (79.6%) was fairly high. Testing the proposed conceptual framework by balancing the ethnic background ratio is recommended for future research. In addition, this research only considered cruise travellers' behaviours. However, diverse facets should be considered in the cruise line together in order to enhance sustainability more broadly. In fact, a recent study [55] revealed that use of a vacation rental website deteriorated the problem of a high concentration of tourists in the Balearic Islands in Spain. Analogous effects can be caused in the cruise context whose main role is to navigate the vast ocean in the world. In particular, cruise anchoring can generate a substantial number of tourists in a sudden period time. This characteristic may result in a huge burden on the tourism spot, hindering the core concept of sustainability in tourism destinations. In this respect, future research ought to embrace a more diverse concept of sustainability in the cruise industry.

7. Conclusions

Sustainability is becoming important in various fields. In particular, awareness of the environmental impact receives a lot of attention in the cruise field. In this sense, understanding the cruise travellers' environmental purchase behaviours was one of the main objectives in this research. As a result, this study revealed that the awareness of consequence played a salient moderating role in the relationship between physical environment excellence and intent to repurchase the cruise line.

Appendix A

Cruise line quality

- Overall, the quality of this green cruise line is great.
- Overall, I consider quality of this green cruise line to be excellent.
- I would say that this green cruise line provides superior services.

Cruise line image

- My overall image of this green cruise line is positive.
- The overall image I have about this green cruise line is favorable.

Physical environment excellence

- Overall, the cruise ships of this green cruise line have attractive and eco-friendly interior/exterior designs and décor.
- Overall, the eco-friendly physical environment of the cruise ships of this green cruise line is excellent.
- Overall, the ambient conditions, such as air quality, temperature, odor, and noise of the cruise ships of this green cruise line are comfortable.

Satisfaction with the cruise line

- Overall, I am satisfied with this green cruise line.
- My decision to take this green cruise line was a wise one.
- As a whole, I have really enjoyed myself while taking this green cruise line.

Awareness of consequences

- The cruise industry can cause ocean pollution, climate change, and exhaustion of natural resources.
- Cruise tourism can possibly have huge environmental impacts on the ocean and wider environment.
- The cruise industry can cause environmental deteriorations, such as waste from rooms, dining, and other ship facilities, and excessive use of energy/water/fuel.

Repurchase intention

- I plan to travel by this green cruise line again in the near future.
- I will expend effort on repurchasing the product of this green cruise line when deciding on cruise travel in the future.

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