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Published in:
World Academy of Science, Engineering and Technology

Published: 01/04/2021

Document Version
Publisher's PDF, also known as Version of record

Published under the following license:
Unspecified

Please cite the original version:
Understanding Cruise Passengers’ On-board Experience throughout the Customer Decision Journey

Sabina Akter, Osiris Valdez Banda, Pentti Kujala, Jani Romanoff

Abstract—This paper examines the relationship between on-board environmental factors and customer overall satisfaction in the context of the cruise on-board experience. The on-board environmental factors considered are ambient, layout/design, social, product/service and on-board enjoyment factors. The study presents a data-driven framework and model for the on-board cruise experience. The data are collected from 893 respondents in an application of a self-administered online questionnaire of their cruise experience. This study reveals the cruise passengers’ on-board experience through the customer decision journey based on the publicly available data. Pearson correlation and regression analysis have been applied, and the results show a positive and a significant relationship between the on-board environmental factors and on-board experience. These data help understand the cruise passengers’ on-board experience, which will be used for the ultimate decision-making process in cruise ship design.

Keywords—Cruise behavior, on-board environmental factors, on-board experience, user or customer satisfaction.

I. INTRODUCTION

In the tourism field, cruise lines are known as a usual dynamic industry [1], with the design of a cruise journey crucially requiring the consideration of the on-board customer experience [2]. A limited amount of research investigates the customer satisfaction on the on-board cruise ship experience. The existing literature emphasizes that the drive for taking a cruise is influenced by several factors [3]. The present study defines several elements of “on-board environmental factors” which are related to the overall on-board customer experience.

The customer experience model states that experiences arise from specific events with the correspondent environment or response of different stimuli, including physical attributes (products, facilities, and the scenario), services and people [1]. Regarding physical attributes, the primary literature is presented [4]-[6], cited in [1], to analyze the following factors: ambience (sounds, cleanliness, lighting, music, temperature), design and functionality (decor, colors, layout, size, entertainment architecture, seating comfort), and social aspects (crowding, queues, crew friendship). A recent study [7] examines service based on the experience of using determinants of the cruise purchase process of embarkation, food, entertainment, cost, service, excursion, and the stateroom. In a study of the decision-making process of cruise passengers Petrick et al. [8] found that loyalty, social influences, and familiarity were the main factors that affect the decision to go on a cruise vacation [3]. What this literature shows is that there are different factors relevant to a cruise experience that could be considered as critical success factors for the cruise industry.

Over time, companies have recognized that critical success factors of the cruise ship are not limited to single transactions or factors. However, the method of the overall rating of the ship from “on-board environmental factors” establishes a long-term relationship between companies and customers. Despite this, previous research has a significant lack of attention for identifying on-board environmental factors, and their influence on cruise on-board experience. Therefore, the present research aim is to examine the relationship between on-board environmental factors, and customer overall satisfaction in the context of the cruise on-board experience. The model parameters of the model are derived from the general scientific literature on customer satisfaction and on-board environmental factors and applied to the cruise ship design context.

II. CUSTOMER SATISFACTION AND DECISION JOURNEY

The consumer decision process model is widely recognized and refers to customer activities [9], whereas most of the consumer behavior studies refer to the cognitive paradigms [10]. Engel et al. [11] stated that consumer behavior refers to the activities that involve consuming, disposing of the product and service along with the decision-making process. Dibb et al. [12] describe that the consumer behavior includes pre/post purchase activities and the act of purchase itself. In order to describe the consumer behavior, several research models have been developed [11], [13], [14]. The common ground of the models consists of a five-stage consumer decision process, i.e. problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation stages [15], [14], [9]. The customer may skip a few stages during a regular purchase, but the new customers can follow all of those five stages in order to complete the buying process. In this paper, the process of customer decision is considered as a customer decision journey.

Notably, the result of customer satisfaction can be post-consumption or post-usage evaluation, which consists of both cognitive and effective elements [16]-[18]. Cognitive aspects refer to the consumption experience of the product and service cited in [19]. In contrast, according to [20] customer satisfaction is what is offered by the product of service which

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has a close relationship with the personal believes. In addition, the effective elements refer to the customer emotional response and psychological state, which are a result of the transactional experience with an organization [21]. Thus, customer satisfaction is not limited to the cognitive, but it also covers the emotional aspect [22]. Reference [23] stated that understating of satisfaction is usually measured towards the outcome of the tourism experience. Reference [24] stated that customer satisfaction is the overall experience with the company, with the most satisfied customers willing to pay a higher price [17] and provide positive word of mouth comments [25]. Reference [26] points out that satisfaction is not limited to the performance expectations only but also the judgment of the performance. The satisfaction towards customer ratings has been widely studied in various literatures (e.g., [27], [28]). “One of the biggest strengths of researching customer ratings is that ratings can show overall customer satisfaction in a direct way” [29].

Reference [30] describes that a purchase behavior is the result of various factors that influence the characteristics of individual customer decision making processes including, purchase behavior, shopping habits, brands the customer buys or the chosen retailer. The customer usually selects a commodity and makes an estimation based on the available money the customer can spend. Lastly, the customer also analyses the regular price of commodities and take the decision to consume the commodities [30]. Along with that, there are many other factors that influence purchasing such as social, economic, cultural, personal and physical state [30].

III. ON-BOARD ENVIRONMENTAL FACTORS

Most firms look into the high level of customer satisfaction as the main goal [31], and it has become the key criteria for on-board environmental factors. It is widely expected that on-board user experience is an integral part of the cruise industry, and it is growing continuously. Notably, customer satisfaction is also affected by the place or ambiance [32]. Ambient conditions affect the five senses [33] and it has been associated with some dimensions such as sounds, cleanliness, lighting, music, temperature, air quality, odor etc. [33]-[37], [6], [1]. Therefore, ambient factors are not visible enough. “The ambient factors of the servicescape were found to influence servicescape satisfaction” [37].

The layout and size of the ship also affects the cruisers [6]. In terms of leisure service, layout/design refers to the service areas, furnishings, the arrangement of passageways, equipment, and the spatial relationships among these elements [33]. Research literature has considered layout/design factors, and it has been associated with some dimensions such as style of decor, colors, size, entertainment architecture, seating comfort or arrangement raised by [33]-[38], [6], [1]; comfort mentioned by [31]. Many passengers experience the design, layout, and facilities of the shipscapes as a whole, including also the co-created reality [6]. The social dimension refers to the people of the organization such as customers, employees, non-customers and so on [34]. Research literature has considered social factors, and it has been associated with some dimensions such as crowding, queues, crew friendship raised by [34], [35], [6], [1]; embarkation experience mentioned by [7]. Cruisers closely interact with cabin attendants, waiters, and bartenders and share a strong feeling with them. These do not have direct interaction, but they do have a social effect [6].

Measuring customer satisfaction leads improved product and service quality, which in turn increases the competitive advantage of a company [39], [40], cited in [41]. Product/service factors have been associated with some dimensions such as food presentation, size of food serving, menu design, food variety; service raised by [36]; food experience by [7]; service experience provided by companies by [7]; food quality mentioned by [42] and [31]. Service quality has been seen as an essential input to customer satisfaction [43]. The quality of the food has significant influence on customer satisfaction [44]. A few of the studies pointed out the correlation between customer satisfaction and loyalty with employee friendliness, quick service, menu variety, courtesy, and quality of service [45]-[47], cited in [32]. More precisely, pleasure refers to the emotional status such as happiness or joy, stimulus concerns the state of engagement, excitement, stimulation which one feels, while dominance refers to the control [31]. On-board enjoyment factors have been associated with some dimensions such as pleasure/enjoyment, excitement, aggravation raised by emotional response mentioned by [8], emotional experience by [31]; entertainment experience mentioned by [7]. Positive emotional experience considered as satisfaction [31]. Li and Kwortink [7] found that food and entertainment experience are the most significant factors that lead to overall cruise experience. Based on these findings we have built the main parameters for our model; see Table I.

Research literature has considered overall satisfaction, and it has been associated with some dimensions such as country image/brand, price raised by sign, symbol and artifacts mentioned by [33]; costs experience by Li and Kwortink [7]. The price has also been seen as affecting customer satisfaction [32]. Various studies have provided empirical evidence for supporting the result that customer satisfaction has a significant relationship with image [48]-[50], cited in [51]. The brand name was seen as an integral decision variable for customers and has a significant impact on choice-making [52]. The theoretical analysis was established based on the on-board environmental factors that include ambient factors, layout/design factors, social factors, product/service factors, on-board enjoyment factors and overall satisfaction. The literature review is shown in Table I. These are all significant factors influencing the user or customer satisfaction. Notably, there is little literature available to measure the on-board experience throughout user or customer satisfaction.

IV. MODEL AND RESEARCH METHODOLOGY

To explore the on-board environmental factors, the authors have introduced six factors referring to customer experience. These are ambient, layout/design, social, product/service and on-board enjoyment factors, and overall satisfaction. Each factor has a dimension containing several elements. The proposed framework is shown in Fig. 1. The whole circle (see
Fig. 1) is considered as the overall satisfaction (overall rating of the cruise), whereas the individual part of the circle demonstrates various factors including on-board experience regarding ambient, layout/design, social, product/service, and on-board enjoyment factors. Those factors are considered as independent variables, whereas the overall satisfaction is a dependent variable which is affected by those independent variables. In addition, the independent variables could increase or decrease based on different cases and scenarios.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Dimensions</th>
<th>Authors</th>
<th>Industry and field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient factors</td>
<td>Sounds, cleanliness, lighting, music, temperature, air quality, odor, and so on.</td>
<td>[33]-[37], [6], [1]</td>
<td>Cruise, service organizations, casino (shipscape, atmosphere, servicescape)</td>
</tr>
<tr>
<td>Layout/design factors</td>
<td>Style of decor, colors, size, entertainment architecture, seating comfort or arrangement</td>
<td>[33]-[38], [6], [1]; comfort mentioned by [31]</td>
<td>Cruise, sports and casino settings, service organizations, food service, leisure service settings, casino (shipscape, atmosphere, servicescape, festivalscape)</td>
</tr>
<tr>
<td>Social factors</td>
<td>Crowding, queues, crew friendship</td>
<td>[34], [35], [6], [1]; embarkation experience mentioned by [7]</td>
<td>Cruise (shipscape, atmosphere, servicescape)</td>
</tr>
<tr>
<td>Product/service factors</td>
<td>Food presentation, size of food serving, menu design, food variety; service</td>
<td>[36]; food experience mentioned by [7]; service experience provided by companies by [7]; food quality by [42] and [31]</td>
<td>Cruise (shipscape, atmosphere, festivalscape)</td>
</tr>
<tr>
<td>On-board enjoyment factors</td>
<td>Pleasure or enjoyment, excitement, aggravation</td>
<td>Emotional response mentioned by [8], emotional experience by [31]; entertainment experience by L. [7]</td>
<td>Cruise (festivalscape, shipscape)</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>Country image or brand; price</td>
<td>Sign, symbol and artifacts mentioned by Bitner [33]; costs experience mentioned by [7]</td>
<td>Cruise, service organizations (servicescape)</td>
</tr>
</tbody>
</table>

The relationship model for this study is formalized as:

\[ Y_s = \beta_0 + \beta X + e \]  \hspace{1cm} (1)

where \( Y_s \) = tourists’ overall level of satisfaction, \( \beta_0 \) = constant
(coefficient of intercept), \( X = \) on-board environmental factors (factor 1), \( \beta = \) regression coefficients of factor 1, \( e = \) error term and,

\[
Y_s = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e
\]  

(2)

where \( Y_s = \) tourists’ overall level of satisfaction, \( \beta_0 = \) constant (coefficient of intercept), \( X_1 = \) ambient; \( X_2 = \) layout/design; \( X_3 = \) social; \( X_4 = \) product/service and \( X_5 = \) on-board enjoyment factors, \( \beta_1, \ldots, \beta_5 = \) regression coefficients of factors 1 to 5, \( e = \) error term.

Fig. 1 presents a proposed framework to measure customer onboard experience based on on-board environmental factors. The model presents the interrelationship between ambient, layout/design, social, product/service, on-board enjoyment factors and overall satisfaction.

V. DATA ANALYSIS AND DISCUSSION

As an example, data to test the model, the Oasis class (i.e., Oasis of the Seas, Allure of the Seas, Harmony of the Seas and Symphony of the Seas) of Royal Caribbean International

<table>
<thead>
<tr>
<th>Factors</th>
<th>Dimensions</th>
<th>Cruise - Oasis class Questions</th>
<th>SPSS calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient factors</td>
<td>Sounds, cleanliness, lighting, music, temperature, air quality, odor, etc.</td>
<td>• How did you like your cabin no. XX?</td>
<td>• Like the cabin</td>
</tr>
<tr>
<td>layout/design factors</td>
<td>Style of decor, colors, size, entertainment architecture e.g., child-friendliness, seating comfort or arrangement e.g., safety</td>
<td>• If you traveled with children: Was the cruise child-friendly?</td>
<td>• Child-friendliness</td>
</tr>
<tr>
<td>Social factors</td>
<td>Crowding, queues, crew friendship, embarkation experience</td>
<td>• How well was the embarkation organized?</td>
<td>Average</td>
</tr>
<tr>
<td>Product/service factors</td>
<td>Food presentation, size of food serving, menu design, food variety, food quality, food experience, risk: uncertainty of buying product/ unfavorable consequence of the purchase, eco-friendly cruises</td>
<td>• How do you rate the cuisine/the food and beverages offered on the Oasis of the Seas?</td>
<td>Embarkation organization + tour operator guide on board Average</td>
</tr>
<tr>
<td>On-board enjoyment factors</td>
<td>Entertainment experience, emotional experience, aggravation</td>
<td>• How do you rate the service in the restaurant, cabin and bars?</td>
<td>Food + Service + extra expenses on board Average</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>Cruise brand and manufacturer country image (positive or negative image)</td>
<td>• How do you rate the price / performance ratio of the offered shore excursions?</td>
<td>Overall rating of the ship + the price / performance ratio of the offered shore excursions Average</td>
</tr>
</tbody>
</table>

The questionnaire is divided into six sections. The questions of the first factor are related to on-board factors because the cruise consists of sounds, cleanliness, lighting, music, temperature, air quality, odor, etc., which impact on the question related to, for instance, the cabin. On the other hand, the layout/design factors of the cruise consist of interior design, entertainment architecture etc., which in turn impact on question about child friendliness. Moreover, the social factors of the cruise consist of crowding, queues, crew friendship, embarkation experience etc., which reflect on questions about the embarkation organization and the tour operator guide on-board. Product/service factors of the cruise involve food experience, service experience etc. that refer to questions regarding food, service and extra expenses on-board. On-board enjoyment factors of the cruise lie on pleasure or enjoyment, excitement, aggravation, entertainment experience etc. that refer to the questions regarding entertainment, sports, fitness and wellness. In addition, the overall customer satisfaction of the ship consists of the country image or brand and price etc., which impact on the questions about the price/performance ratio of the offered shore excursions and overall rating of the ship. Respondents were requested to provide their agreement level of each item on a five-point Likert scale, where 1 is considered “strongly disagree” and 5 is “strongly agree”.

According to the findings, this research has developed the following model: Overall satisfaction = -0.669 +0.190 ambient factors +0.198 social factors +0.377 product/service factors...
+0.302 on-board enjoyment factors +error. The index of the affected factor ratio represents the higher weight on cruise passenger satisfaction. Therefore, the proposed model is used to describe the ratio of ambient, social, product/service and on-board enjoyment factors on overall satisfaction, which refers to on-board cruise experience (see Fig. 2). The on-board environmental factors with a higher influence in the cruise passenger satisfaction go from 38%, 30%, 20%, and 19% in product/service factors (i.e., food and service), onboard enjoyment factors (i.e., entertainment and sports, fitness and wellness), social factors (i.e., embarkation organization and tour operator guide onboard) and ambient factors (i.e., cabin), respectively, affected the overall satisfaction level. The results also point out that the percentage of various factors is not equally affecting the overall satisfaction. In contrast, the overall satisfaction level is 28% when all on-board environmental factors are considered together. Based on these critical success factors (affected) ratio, the decision-maker can focus on further development and on getting more information about that and continue this analysis in order to know what to develop. Therefore, the cruise passenger value will improve based on this continuous improved ratio.

![Fig. 2 A proposed model of user motion to describe factors affecting the on-board experience in “Oasis class”](image)

**VI. CONCLUSIONS**

The result of this research is significant for the process of decision-making because it intends to improve the rate of customer sustainability and attract new consumers to improve and change the design of the cruise and/or operation. The significant amount of literature provides the general relationship between the on-board environmental factors and overall satisfaction. There is a path from on-board environmental factors towards overall satisfaction. This study is designed to investigate on-board environmental factors, which are the ambient, layout/design, social, product/service, and on-board enjoyment factors, and overall satisfaction and its influence of customer on-board experience. To investigate the impact of on-board environmental factors on customer on-board experience in cruise sector in general results of multiple regression in this study show that there is a positive relationship or satisfaction between the selected on-board environmental factors and overall satisfaction. It also highlighted product/service and on-board enjoyment factors as a stronger predictor of highlighted customer overall satisfaction compared to social factors and ambient factors, which shows the relationship and supported to the proposed framework and model. Further research direction is progressing with an empirical study by comparing with more cases of ship classes and operators utilizing the proposed model.

**APPENDICES**

**Appendix 1: Survey Questionnaire**

**Questionnaires: Oasis Class**

- How did you like your cabin no. X?
- How do you rate the cuisine/the food and beverages offered on the Oasis of the Seas?
- How did you like the entertainment program?
- Your rating of sports, fitness and wellness on board the Oasis of the Seas:
• If you traveled with children: Was the cruise child-friendly?
• How do you rate the service in the restaurant, cabin and bars?
• Please give an overall rating of the ship Oasis of the Seas\Allure of the Seas\Harmony of the Seas\Symphony of the Seas

Questions about the Tour Operator Royal Caribbean
• How well was the embarkation organized?
• How satisfied were you with the tour operator guide on board?
• How do you rate the extra expenses on board (1 = very affordable, 5 = very high)?
• How do you rate the price/performance ratio of the offered shore excursions?
• Would you travel again with Royal Caribbean?

Appendix 2
SPSS software was utilized for data analysis. Data analysis was conducted in four steps, such as reliability, exploratory factor analysis (validity of data), correlation analysis, and regression analysis.

The number of the layout/design factors was dramatically low (only 102 in total), and therefore this factor was removed from the data analysis part. However, more than 745 respondents were found in other factors which lead to run the regression analysis very well (see Table III). In contrast, the data were limited and less questions raised by factors (ambient factors, social factors, product/service factors, on-board enjoyment factors) by the case company cruise Oasis class. For this reason, data did not show four factors with eigenvalues above 1 (here with eigenvalues above 0.6 were extracted), that is why hypothesis, H1-1, H1-2, H1-3, and H1-4 data are less valid only for this case company, but the data are reliable. The findings are also highlighted in the multiple regression (Model: Overall satisfaction = -0.669 +0.190 ambient factors +0.198 social factors +0.377 product/service factors +0.302 on-board enjoyment factors +error). Table III also shows that the adjusted R2 is equal to 0.273. This is almost the same value for R2 and adjusted R2 which indicates a well-fitted model.

Overall, the study found that the Pearson correlation is significant and positive impacts of the independent variables on the overall customer satisfaction were taken as a dependent variable. It is also highlighted in linear regression, 26% (R square) of their overall satisfaction determined by “on-board environmental factors”, hypothesis H1 is supported, because data show that there is only one factor “on-board environmental”, therefore the result is more reliable and valid for this case company - Oasis class.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Predictor variable</th>
<th>Outcome variable</th>
<th>Global F (p-value)</th>
<th>Intercept/ Constant</th>
<th>Unstandardized Coefficients B</th>
<th>Unstandardized Coefficients Standard error (S.E.)</th>
<th>Standardized coefficients Beta</th>
<th>t value (p-value)</th>
<th>R2</th>
<th>Adjusted R2</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>On-board environmental factors</td>
<td>Overall satisfaction</td>
<td>0.000 -0.609 1.050</td>
<td>0.064 0.508</td>
<td>16.397 0.000</td>
<td>0.258 0.257</td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1-1</td>
<td>Ambient factors</td>
<td>Overall satisfaction</td>
<td>0.000 -0.669 0.190</td>
<td>0.046 0.140</td>
<td>4.102 0.000</td>
<td>0.277 0.273</td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1-2</td>
<td>Social factors</td>
<td>Overall satisfaction</td>
<td>0.000 -0.669 0.198</td>
<td>0.047 0.145</td>
<td>4.247 0.000</td>
<td>0.277 0.273</td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1-3</td>
<td>Product/ Service factors</td>
<td>Overall satisfaction</td>
<td>0.000 -0.669 0.377</td>
<td>0.047 0.272</td>
<td>7.954 0.000</td>
<td>0.277 0.273</td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1-4</td>
<td>On-board enjoyment factors</td>
<td>Overall satisfaction</td>
<td>0.000 -0.669 0.302</td>
<td>0.049 0.208</td>
<td>6.206 0.000</td>
<td>0.277 0.273</td>
<td>Supported</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REFERENCES


