



What does cruise passengers' satisfaction depend on? Does size really matter?



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ABSTRACT

In a market characterized by gigantism and the trend toward the Las Vegas resort concept, our paper seeks to analyze passenger satisfaction when faced with the dilemma of a wider array of facilities and services, but at the cost of a cruise “en masse”. A sample of 105 thousand passenger ratings of 134 vessels and 9 different cruise brands reveals a clear negative relationship between passenger satisfaction and vessels' gigantism and, to a lesser extent, modern design. Satisfaction also seems to significantly depend on three groups of factors: the cruise line experience; the vessel's intrinsic characteristics, although its construction cost has no effect, and passengers' own profiles: their ratings clearly depend on their motivations for choosing a particular cruise but are not influenced by expert opinion of the vessel. So, predicting customer satisfaction for such a complex tourism product is a challenge for future planning in this sector.

1. Introduction

The main tendency in the cruise sector in recent decades has been the considerable and constant increase in ship size (Sun et al., 2014), which has led to the sector's definitive reorientation toward mass family tourism.

From the point of view of the cruise lines, this gigantism has entailed a manifold increase in their need for investment, as vessels can cost anywhere between 700 and 900 million dollars, and even as much as around 1400 million in the case of several of Royal Caribbean's Oasis class vessels, such as the Harmony, the Ovation and the Oasis of the Seas itself. From the point of view of cruise passengers, the experience that they are offered is richer and more varied, as the range of facilities and shipboard activities and spectacles is broader, as is the cuisine on offer, all of which bring a cruise closer in line with the concept of the Las Vegas Hotel Casino resort (Castillo-Manzano et al., 2018). However, a parallel outcome has been the experience being turned into one of mass-tourism, as these vessels carry between 3500 and 6000 passengers.

Satisfaction or lack of satisfaction, with this new cruise concept is constantly shared on the social networks and internet consumer opinion portals, generating an electronic Word of Mouth (eWoM) with the ability to influence potential passengers (Nieto-García et al., 2017).

Given this scenario, the purpose of this paper is to analyze vessels' current gigantism and the attributes associated with vessels' size and age to discover how much influence they have on cruise passengers' satisfaction as measured through online reviews written by the

passengers themselves. In other words, our aim is to test whether the greater number and variety of activities and facilities offered on today's new mega-vessels compensate for the negative effects that derive from the mass tourism experience.

We shall also test further hypotheses on the way that other factors influence passenger satisfaction, such as the cost of these new mega-vessels and the shipyards where they were built, the segmentation of the cruise market into general cruise lines and premium companies, and the quality of personal service, taking the main variable used in the sector as our proxy, i.e., the employee to passenger ratio (Swain and Barth, 2002). Lastly, in the above-mentioned eWoM context, we shall rate whether the opinions of influencers in the sector or of Travel opinion leaders affect passengers' opinions in a sector where it is important to take the right decision when choosing one's cruise vessel, as a cruise represents significant vacation expenditure (Swain and Barth, 2002).

What this paper does, therefore, is study satisfaction with one of the most complex products that exists in the tourism sector (Castillo-Manzano et al., 2015) in a context of new trends in the features and segmentation of the cruise market, together with the inexhaustible and detailed online spread of ratings and reviews of each of the cruises.

2. Data and results

The database is composed of 105 thousand unique cruise reviews for 134 cruise vessels operated by 9 different cruise lines, for cruises

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between 1999 and 2016, posted on the major cruise-rating website (Cruise Critic: <http://www.cruisecritic.com>). To be specific, 5 mainstream (Carnival; Costa; MSC; NCL and Royal Caribbean) and 4 Premium cruise lines (Celebrity; Disney; Holland American and Princess) have been considered in our study.

The use of online customer reviews published on a cruise guide website is a relatively well-established method in tourism studies (Zhang et al., 2013), as the number of surveys used could not be obtained with other traditional methods. Logically, one of the limitations is the risk of bias in the reviewer’s profile or the inflexibility of the attributes rated (Zhang et al., 2013). Specifically, in this case, the main limitation to working with ratings aggregated by vessel is that neither the time of year, nor the geographic location where the cruise took place can be included.

It is, nonetheless, unlikely that any bias caused by these two variables would be significant. First, regarding the time of year, because the vast majority of cruises operate in a never-ending summer, always pursuing good temperatures. Thus, in October or November, when the temperatures start to fall, a ship that has spent the summer in the Eastern Mediterranean will transfer to the Caribbean, or to South America, or to the Arabian Peninsula, for example, to provide summer in winter. This continual geographic programming of vessels means that the vast majority of the ships considered in this study have been in a range of different geographic areas during the broad 1999–2016 period considered, and this will dilute any possible geographic bias. In addition, the rating system used on Cruisecritic.com aims to eliminate any such explicit geographic bias by requiring the passenger to rate the vessel and the ports of call/destinations separately.

Table 1 presents the definitions of the variables used in our model and their main descriptive statistics.

Table 2 gives the results of the estimates, namely Ordinary Least Squares linear regressions. These estimates have taken into account the strong correlations expected among several of the explanatory variables used, for example, between $\text{Log}(\text{Size}_i)$ and $\text{Log}(\text{NormalCap}_i)$, as both of

these variables measure vessel size, the first in GT and the second by number of passengers. Notwithstanding, all the variance inflation factors of all the estimates are well below 5.

3. Discussion and conclusions

The following robust conclusions can be drawn from the results in Table 2. On the whole, no positive correlations can be observed among the variables that define the general trend toward cruise lines’ building of mega ships and customer satisfaction.

In fact, it is the smaller and, to a lesser extent, the older vessels that receive the highest satisfaction ratings. As Swain and Barth (2002) state, this might be due to smaller ships offering a different social experience, with more personal attention given to passengers by officers and crew.

So, one of the conclusions that can be drawn from our results is that the gigantism of new vessels is leading to a new type of cruise experience, one that is undoubtedly different, but which, at the same time, is also less satisfactory. These results are in line with Zhang et al. (2013), who consider that greater numbers of passengers have a negative impact on customer satisfaction, as a vessel with fewer passengers equates more to the rare and exclusive experience that a passenger expects from a luxury product. However, Swain and Barth (2002) arrive at different conclusions regarding age and size, as for these authors 70% of the variation in ratings of a cruise considered in their study was explained by year of launch (equivalent to our Age variable) and space/passenger ratio (equivalent to our $\text{Log}(\text{Size}_i/\text{NormalCap}_i)$ variable). A slight difference must be noted regarding this discrepancy: in 2016, cruise vessels are on average over twice as big as those at the end of last century (see Castillo-Manzano et al., 2018), which obviously could have changed these correlations.

With respect to luxury, our results show that cruise passengers are able to differentiate between general cruise companies, and Premium or Luxury lines, as the latter obtain better results. However, the concept of

Table 1
Description of the Variables and their descriptive statistics.

Variable	No. Obs. (dummies)	Mean	Median	Std. dev.
1. Endogenous variable				
Review_i : The mean rating given by cruise passengers in the reviews of the experience that they had on cruise ship <i>i</i> .	–	68.925	72	11.808
2. Explanatory variables				
Ship/Cruise Line Attributes				
NormalCap_i : Normal capacity (accommodation in double cabins) for cruise ship <i>i</i> (number of passengers).	–	2719.388	2550	947.918
Size_i : Size of cruise ship <i>i</i> expressed as a tonnage (GT).	–	101612.3	92663.5	36018.33
Size_i/NormalCap_i : The ratio between the size of cruise ship <i>i</i> in GT and the normal capacity of cruise ship <i>i</i> as the number of passengers	–	37.75174	37.74267	5.525193
Age_i : Cruise ship <i>i</i> ’s age as a number of months (as of December, 2016).	–	154.605	158.5	77.792
Cost_i : Cost of cruise ship <i>i</i> expressed in millions of real 2016 USD.	–	613.267	564.757	229.109
North_Europe_i : Dummy variable that takes a value of 1 if cruise ship <i>i</i> was built in a shipyard in the north of Europe, 0 otherwise.	55	0.410	0	0.494
Japan_i : Dummy variable that takes a value of 1 if cruise ship <i>i</i> was built in a shipyard in Japan, 0 otherwise.	2	0.015	0	0.122
Premium_i : Dummy variable that takes a value of 1 if cruise ship <i>i</i> is the property of a Premium cruise line, 0 otherwise.	45	0.336	0	0.474
Crew_i/NormalCap_i : Ratio between the number of crew members on cruise ship <i>i</i> and cruise ship <i>i</i> ’s normal passenger capacity (number of passengers).	–	0.403	0.409	0.073
Experience_i : Number of years that the cruise line for vessel <i>i</i> has been operating in the market.	–	40.5	45	10.484
Online Reviews				
No. reviews_i : Total number of reviews for cruise ship <i>i</i> .	–	783.776	795.5	506.503
Newcomers_i/No. reviews_i : number of reviews of cruise ship <i>i</i> made by first time cruise passengers and the total number of reviewers for cruise ship <i>i</i> .	–	6.086	5.760	3.735
Family_i/No. reviews_i : ratio between the number of reviews for cruise ship <i>i</i> that choose the “family trip” option as the main motivation for their cruise and the total number of reviews for cruise ship <i>i</i> .	–	22.596	20.973	10.839
Revieweditor_i : The numeric value of the review made by a Cruisecritic editor of his/her experience on cruise ship <i>i</i> (for only 128 of the 134 vessels).	–	4.063	4	0.435

Table 2
Estimates for the dependent variable: Log(Review_i).

Independent Variables	Model I	Model II	Model III	Model IV	Model V	Model VI
Ship/Cruise Line Attributes						
Log(NormalCap _i)	–	–	–0.1330 (0.0515)**	–	–	–0.1241 (0.0479)**
Log(Size _i)	–0.0846 (0.0278)***	–	–	–0.0882 (0.0258)***	–	–
Log(Size _i /NormalCap _i)	0.0641 (0.0903)	–0.0406 (0.1294)	0.0626 (0.1084)	0.0490 (0.0858)	–0.0690 (0.1289)	0.0312 (0.1012)
Age _i	0.0003 (0.0002)	0.0004 (0.0002)**	0.0002 (0.0002)	0.0004 (0.0002)**	0.0005 (0.0002)***	0.0003 (0.0002)*
Log(Cost _i)	0.0136 (0.0344)	–0.0180 (0.0335)	–	0.0274 (0.0327)	–0.0024 (0.0316)	–
North_Europe _i	0.0814 (0.0270)***	0.1010 (0.0277)***	0.0940 (0.0256)***	0.0653 (0.0268)**	0.0877 (0.0277)***	0.0803 (0.0264)***
Japan _i	0.0371 (0.0241)	0.0305 (0.0301)	0.0307 (0.0254)	0.0496 (0.0228)**	0.0473 (0.0267)*	0.0437 (0.0246)*
Premium _i	0.2421 (0.0300)***	0.2596 (0.0316)***	0.2575 (0.0309)***	0.2233 (0.0296)***	0.2417 (0.0327)***	0.2397 (0.0316)***
Crew _i /NormalCap _i	–	0.0550 (0.2802)	–0.4694 (0.3491)	–	0.0774 (0.2871)	–0.4006 (0.3313)
Experience _i	0.0033 (0.0010)***	0.0028 (0.0010)***	0.0035 (0.0009)***	0.0031 (0.0010)***	0.0024 (0.0010)**	0.0032 (0.0009)***
Online Reviews						
No. reviews _i	0.0002 (0.0000)***	0.0001 (0.0000)***	0.0002 (0.0000)***	0.0001 (0.0000)***	0.0001 (0.0000)***	0.0002 (0.0000)***
Newcomers _i /No. reviews _i	–0.0021 (0.0032)	–0.0040 (0.0032)	–0.0023 (0.0029)	0.0002 (0.0032)	–0.0018 (0.0032)	–0.0007 (0.0030)
Family _i /No. reviews _i	0.0042 (0.0009)***	0.0039 (0.0010)***	0.0050 (0.0009)***	0.0038 (0.0009)***	0.0035 (0.0010)***	0.0047 (0.0010)***
Log(Revieweditor _i)	–	–	–	0.2402 (0.1289)*	0.1918 (0.1343)	0.2097 (0.1320)
Intercept	4.3681 (0.3427)***	3.9669 (0.4384)***	4.6923 (0.3686)***	4.0478 (0.3660)***	3.7091 (0.4565)***	4.4287 (0.4317)***
R ²	0.6965	0.6803	0.7046	0.6749	0.6565	0.6805
Test joint significance	31.82***	30.07***	29.83***	26.66***	24.58***	23.09***
Number of observations	134	134	134	128	128	128

Note: Standard errors robust to heteroscedasticity in brackets. Statistical significance at 1%***, 5%***, 10%*.

Premium cannot be easily defined as one or two simple factors, but, rather, seems to be a complex concept linked to exclusiveness and luxury. In fact, if we test two of the main factors that, a priori, could define the Premium experience, we see that a better crew-passenger ratio and more space per passenger are not significant. In addition, Zhang et al. (2013) also stress the non significance of the variable associated with quality of service (Crew_i/NormalCap_i). As such, one future line of research would be to find empirical evidence regarding the true sources of satisfaction with the Premium experience. It is also concluded that passengers value more highly vessels belonging to cruise lines that have a greater number of years of experience in the cruise market.

Something else that stands out the fact that the vessel’s real cost does not result in greater passenger satisfaction, although the vessel’s shipyard of origin, where it had been built, does have an influence (especially if it was built in a shipyard in the North of Europe), which could have interesting management implications for the cruise industry.

Lastly, if we focus on the variables most related to online reviews, the greater satisfaction associated with vessels with large numbers of “family” cruise passengers stands out, demonstrating that cruises have evolved with notable success from a market niche focused on seniors, retirees and newlyweds to becoming a holiday option available for the family market (Castillo-Manzano et al., 2018).

Furthermore, it can be observed that the cruise passenger community is more willing to indicate a good experience than a bad one, and that there is a clear positive correlation between the number of reviews that a vessel receives and the positive rating that it obtains. The fact that reviews that emphasize positive aspects are more likely to receive helpfulness votes might influence this bias (Fang et al., 2016). And with regard to the influence that expert reviews (cruise critic senior editor) might have on user ratings, the lack of a clear and significant relationship between the two is surprising. However, this lack of correlation sometimes also exists in online hotel reviews (Vermeulen and Seegers, 2009). This means that it is the two-rating model that cruise-critic.com uses -experts versus users- that is being called into question,

compared to the single user rating found on the great majority of tourist websites and forums, like tripadvisor.com or yelp.com. This is even truer given that for new vessels, with few to no user reviews, the score given by the editor senior is usually the reference point used by future passengers.

To summarize, these conclusions demonstrate just how difficult it is to define and predict the satisfaction of such a complex tourism product as a cruise.

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