An econometric model for the governance choices in the heterogeneity of cruise destinations

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Abstract

The aim of paper is to identify the job as strategic leverage of a governance able to direct all business processes for the job and passenger satisfaction on board a cruise ship. For this, it should be essential a leadership figure for supporting the strategic choices of the cruise company toward a distinctive positioning on the market. The destination is a relevant factor in the process of cruiser choice. The methodology uses an econometric multi agent logit model based on RP survey and database of a sector leader. The model identifies the destinations with major customer satisfaction.

Keywords: Cruise Company; job and customer satisfaction; destination; multi agent logit model.

1. Introduction

The cruise service and its industry can be proud of a role and a position of great relevance in the international economic and social scenario thanks to the progressive development of demand and supply cruise tourism sector.

The atlas of ship itineraries includes macro and micro areas all over the world representing already defined tourist destinations that detect consumer loyalty and define its preferences, and emerging areas.

This global business motives and associates interests and investments of plurality of subjects, public and private, in the certainty that the involvement in the cruise industry can guarantee significant results and favorable returns on investments. This customer satisfaction become important to other entities as tourist destinations and leads to the constant composition of shares of all areas on total supply.

In the literature a great attention to the evaluation of the effect of a destination's image on the loyalty intentions of tourists.

The study analyses market destinations by main economic variables affect the relationship passenger-loyalty by performing a multi agent MNL model. Tourist destination preferences are based on heterogeneity of the cruise markets. The model results show that there are significant differences among these areas in terms of the itineraries and scenarios on tourists' choices. Barroso, C. and Martín, E. and Mart, D.
The cruise companies have a variety of deployment solutions and exploit them in order to maximize their earnings; in addition, they are more and more diversifying the service proposal to their customers and take advantage of contingent benefits arising by the displacement of their ships in regions which present criticalities and opportunities useful for their business.

In this contest it fits the object of the paper which, in the differentiation strategy cruise service, aims to promote the “work” as competitive leverage that can direct the evaluation modalities of the main factors for the improvement of quality service.

Seeing as capital and technology are easily available and the organizational capacity depends on the people who imagine and express it, it is clear that the only real differential competitive variable available to the company is indeed the “work”. Creativity springs from the thought of the people and with it the innovation process and the change that allow the company to express its ability to compete.

This will increasingly reward organization which has the willpower to constantly redefine its way of being. It should become a critical success factor of the cruise line directly influencing customer satisfaction. But in the choosing process of the cruiser, one of the most important of decisions is the choice of destination and the price of the service is a variable strongly conditioning. To study the behavior of choice for passengers using a multi agent model that considers customers of different nationalities aboard of a ship of MSC Cruises.

The application of the model allows us to calculate the elasticity of demand to vary the prices and, consequently, to study the effects of such variations on the behavior of choice among different destinations by a RP survey; in addition it was supplemented by a sample of comment form provided by MSC.

2. Cruising contest

Generally in the market there is always a significant number of competitors, but in the case of cruise companies, it is never so great that we can say that each company has a negligible effect on the variable price. In fact, there are four leaders who, in turn, incorporate a diverse number of other brands. Structurally it is, therefore, in the presence of oligopoly in which focuses on problem of strategic interaction among a limited number of companies within the cruise industry.

This is a sector where entry barriers, although high, do not prevent the entry of other competitors and each of them has a significant productive capacity (the ships) and level of service offered is quite standardized. The cruise industry requires huge investments with a recovery time of a new ship by 5/6 years.

In the case of a cruise leader, its behavior is characterized by a strategic interaction and non-collusive action that allows it to lead the market, define its strategies with less attention to competitors as they can weaken leader’s initiatives by mimicking its actions, Baker, D. A., and Crompton, J. L. (2000) and Baker, D.A. and Fulford, D.M. (2016).

Today it is still possible to say as worldwide, despite the critical socio-economic situation, the cruise industry will continue its growth driven mainly by supply of new ships. For the period 2017-2020, in fact, have already been confirmed to launch additional 38 ships with a worldwide passenger capacity about 99,990 (Cruise Market Watch 2018).

Every year the inclusion of new vessels, supported by very high employment rate,
leads to predict further growth of worldwide passengers carried to exceed 27 million at the end of 2020 (Cruise Market Watch 2018).

In line with what is recorded for several years, lowering the percentage of North American passengers while they are continuing to grow in absolute terms. The European clientele has grown in the last decade of 123% modifying the global balances and going to exceed the 30% share of the world total CLIA (2016), G.P. Wild (2016-17).

Remarkable is the growth of Scandinavian countries, Australia and New Zealand although, in absolute terms, represent a small portion of the world’s total. On the contrary, appears quite modest Brazilian market growth over the past five years. Some screenings of CEO of the Singapore Cruise Centre have shown, instead, the huge potential of the Asian clientele that, if it will reach 3% of the rate of market penetration, this would result in more than 70 million cruise passengers: a market of more than three times the entire current global demand. China will overtake United States and Germany to become the largest travelers market.

To meet this growing demand, the companies are investing in new orders for shipbuilding. New ships that in 2014 was back to navigate mainly in the Caribbean; this is an area where is concentrated most of cruise supply, but in recent years it lost appeal in favor of the Mediterranean and other new areas. Since 2014 there is a turnaround that penalizes the Mediterranean caused by economic and social instability and conflicts affecting various countries facing the whole Sea.

Speaking of the supply, a distinguishing feature is the placement of the ships. The ability to offer its customers new destinations and itineraries, as well as modify existing ones, is the platform for the success of cruise phenomenon.

The aim of companies is, therefore, the guarantee for satisfying travel experience to international customers by facilitating the exit of the tourists from their countries, simplifying transactions in pre-post boarding phases and promoting the construction of multi-country itineraries.

The cruise phenomenon enables a large number of activities connected to a cruise. Growth strategies of the major companies look for great ship capacity and its armament, more local ports, more destinations and new itineraries to match demand of passengers.

We can read all this even through economic and employment dynamics that the entire production and the cruise tourism generate: shipyards for the building and maintenance of ships, cruise ports, shipping agencies, service providers also in support of transit passengers, security operators at ports and aboard, logistics companies, brokers and insurance sales, etc.

The cruise industry is presented as the growing segment. The estimate of the demand potential is also justified by the market penetration rate, within a country, but is still low for the cruise product, especially in Europe.

The reasons for the continuous development of cruise tourism can be found in the versatility of its industry that has managed over the years the increasingly diverse and complex needs of users through a mix attractions, events and combinations of itineraries (cultural tourism, shopping tourism, worldliness, etc.) promoted by excursions inland. In addition, the sector has a key element of relocation allowing to “move” the ships and to change the itineraries depending market trends limiting the impact also of critical events.
3. Leadership for excellence in cruise services

The cruise service management is an activity very complex: it is important that within the governance there is a figure as leader able to diffuse, in particular working environment, a specific code of conduct and communication encouraging a distinctive positioning of the company well through the satisfaction of staff on board.

The several activities that take place on board are subject to judgments of quality and each one must be done to reduce the risk of dissatisfaction on the part of the passenger.

However it is considered that the relational quality, professionalism, competence and experience of all personnel on board are in fact the starting point. It is on board the ship that a company really will test the customer satisfaction.

The leader is the person who leads people to share the work. The leadership, therefore, is the condition of the person who assumes the role of leader and he should have:

- A project to realize
- Listening ability and communication skills
- Emotional intelligence showing determination and courage
- Power of persuasion and motivation of people.

In addition:
- He must be able to manage an emergency
- He must consider the change as opportunities for innovation.

In a company, the leadership can be entrepreneurial or managerial type: the first is performed by the entrepreneur, the second by manager. In the organizational context you can also create situations of informal leadership recognized among colleagues.

If we assume that people are the most important competitive resource available to the company, then the main task of the leadership is creating the conditions of wellness organizational making personnel satisfied with their role ensuring a constant and a high level of motivation to work.

In other words, the leader should have a great talent for problem solving establishing a positive relationship with the crew. This will put in direct relation the job satisfaction with the customer satisfaction. The degree of understanding and satisfaction of customer needs are necessary requirements of social intelligence.

The leadership represents the focus which consents to reap the synergies that are latent in the relationship. They are emotional and cognitive synergies through the exchange of information and knowledge, cooperative that involve the customer in the production process.

These synergies have a great effect on the final outcome generated by the contact between the cruiser and company personnel allowing the efficiency and efficacy of the processes to improve the excellence in the performance of their tasks, Normann, R. (1984).

This does not mean that there is a greater intensity as regards the personal aspect in services with respect to industry. It simply means that the result is not measured only in terms of output, but also of in terms of outcome and depends in large part on the personality of individual who interacts with the customer, Baccarani, C. (2009). The current panorama of cruise services shows a multitude of touristic offers, Grove, S.J.
and Fisk, R.P. and Bitner, R.J (1997). If on the one hand there is the attempt of making each cruise as an exclusive dream, on the other hand it reiterates a continuous process homogenization and imitation of the most successful examples. But the cruisers are becoming more aware of finding a good voyage where the human element can value their touristic experience.

4. The strategic management of cruise service

Fewer and fewer areas of the world remain to be explored by itinerary planner of the cruising companies to identify and test new destinations and new combinations of the itineraries.

The growing supply of cruise industry leads companies to look for features to diversify on the international market, often limiting it to a demand target more identifiable (niche).

It’s good to remember that the cruise production was born to offer the voyage experience uniquely of very high standard and therefore luxury.

In literature, there are only attempts about exact and specific definition of the luxury product or service. These difficulties to approach to the dimension and definition of luxury in an objective manner appear much more evident for the intangible productions, services and consequently also and above all of the cruise products. They are complex output, combinations of many factors, among which emerge the personal performance of the front office that is the interaction between the cruise line and passengers.

It is impossible to standardize the dynamics in their entirety and that often differ for details or unimportant moments but fundamental to offer a unique tourism experience. The reception, for example, is the crucial center in the daily hotel, is the department more visible than others; the front office interfaces and enters into a relationship with the passengers more than the staff of the other sectors and pays attention to the details of hospitality.

The reception directs attention to communication among people and creates an affable climate, open and welcoming on board.

Defining the hospitality as a standardized service is, in fact, a limit, an implicit contradiction: it isn’t only standardized procedures, but it often requires work impromptu, very personalized tended to intervene in all circumstances and more disparate situations.

Each customer has his own personality, he’s never routine. Monitoring procedures is therefore necessary but not sufficient to satisfy completely the passenger because he is the focus of the management and travel arrangements. So the combination of tangible and intangible elements that characterizes the cruise production makes even more complex the distinction and classification of output, in our case of the service.

The governance of a cruise company should understand what and how many can be levers and solutions to ensure at the customer an amazing and exclusive experience, researching and providing elements that can become real competitive factors.

Among the tangible elements surely there is the ship with its spaces and facilities; the ships with the greater size which have a series of solutions of reception and hospitality varied and innovative can create a strong appeal thanks to fantastic aspect of the board attractiveness.

It seems established that in cruise sector make the difference the uniqueness of experience and a strong personalization of the service. Although over the years the customer has changed and the requests of the demand have taken other contents
determining a less formal atmosphere than the past, the attention to passengers remains an imperative key.

The uniqueness of the experience is achieved mainly through the proposals for inland excursion and the time to spend in the destinations served. Destinations which become focal element of the product differentiation strategy including in the itineraries the ones that cannot be reached by larger ships. In Italy, for example, various ports of call may enter in the cruise worldwide geography facilitating the access to areas unreachable by large cruise ships, but where the tourist has the possibility to go in authentic places and contexts cannot be visited by a lot of passengers Harris, K. and Baron, S. and Parker, C. (2000).

Territorial initiatives to support the development of an area and cruise tourism would create a relationship between cruise lines and destinations, with consequent economic, environmental and social benefits.

The cruise product is good highly promising and its success also depends on comparison with the tourist areas and demand expectations.

The competitive position has to come also from the destination by focusing on the protection of the interests of the territory and the positive use of local resources.

It must therefore be an approach aimed at the requalification of the tourist offer of docking locality and the management of tourist flows through the policies of territorial marketing yet.

We can talk about innovative proposals of itinerary affecting the development of more effective and efficient coordination sea-land encouraging specific target market with the creation of product thematic plan and using the concept of proximity, namely to accompany the tourist inside the experience and local culture.

Now, not only the ship and the tourist trip attract passengers, but also a service "extended" beyond the border of the cruise industry.

The boundaries are labile, the competitive dynamics tends to wager on offer modalities of the service; instead, the competition is to be played outside the industry also to respond in different ways to the same needs: the point of reference is always the customer.

Differentiation is the result of a choice of quality and the company must define the demarcation line to address the needs of consumers. The concept of need is in itself a concept difficult to categorize because it changes its nature in relation to the reference framework.

In this way the cruise companies determine the choices of customers who turn their attention to the destinations and itineraries offered to create an exemplary holiday Gronroos, C. (2000). So it is created a new harmony between the companies trying to differentiate more and more of their proposal to achieve customer segments and a class of cruise passengers who demand just this type of product differentiation.

New customers are appearing from new areas with high spending power and consumption profile unlike the North American or European tourist. Then there are so-called aspirant, that although not belonging to a high-end income, they aspire to live experiences high cruising exclusive. Competition, therefore, is moving on this type of supply dedicated to that segment non price sensitive customers and therefore not conditioned in the purchasing process in which the difference requires customization and a strong focus on the human element. Gilmore J.H. and Pine, B.J. (2002).
5. Elasticity of probability for different scenarios of cruise destinations

The model uses two databases, one of which consists of a comment form that each cruising company gives to its passengers to fill out during the cruise; it is a module of comments on the service offered on board. The second is a survey carried out through a questionnaire submitted to a sample of passengers before boarding.

The element that distinguishes the choice of a cruise is certainly the price, influencing significantly the purchase decision.

After all, through the price policies the cruise lines have been able to attract younger segments of the population, modifying the cruise luxury product in mass product and, then, varying destinations can change the price sensitivity.

Over time they have identified three classes respectively with low, medium and high price sensitivity. The degree of loyalty is a factor which must be carefully considered because the repeater can develop a different buying process evaluating its choice by focusing on other aspects such as the innovations, newness, new destinations and itineraries introduced by the company in its holiday packages.

The comment forms are used by the company to assess the degree of satisfaction of the cruise to improve the service proposal.

The questionnaire submitted to the passengers reports a series of questions relating to all ship services such as: boarding procedures, destinations and new itineraries, hospitality, cleaning the ship and cabins, catering and bar, crew. It includes also information and data of all travelers on board.

The Revealed Preferences method was used for the survey Catalani, M. and Zamparelli, S. (2010). The approach is a multi-agent MNL logit. It allows a valuation of the coefficients of the utility function based on the choices made by a sample of different groups of passengers relating to flows demand in a given period of time.

Maximum Likelihood simulation provides the value of the unknown parameters maximizing the probability of the passenger choices. It depends, besides the model of choice adopted, by sampling strategy adopted.

The demand models, once calibrated and validated, can be considered for all purposes as functions of demand in the econometric terms, relationships that express the dependence of demand of the choice alternatives considered by the relevant variables. This allows us to use the demand models as analytical tools for the interpretation of the current situation and for the prediction of future scenarios; in addition it allows us to expand, at demand models, the microeconomic concepts of direct and cross-elasticity of demand functions with respect to infinitesimal variations or discrete of the attributes that appear in the utility function, McFadden, D. (1973).

The direct elasticity can be expressed, in terms of probability, as the percentage change in the probability of choosing the alternative \( j \), compared to the percentage variation of an attribute \( k \) of the same alternative \( X_{kj} \):

\[
E_{kj}^{[j]} = \frac{\Delta p[j]}{p[j]} \frac{\Delta X_{kj}}{X_{kj}}
\]  

(1)

Similarly, the cross-elasticity, in probabilistic terms, is the percentage variation of the choice probability of the alternative \( j \), compared to the percentage change of an attribute \( k \), relating to another alternative \( h \), \( X_{kh} \).
In the case of infinitesimal variations of the attributes you have, instead, the elasticity in the point expressed as percentage changes of the choice probability of the alternative \( j \) with respect to infinitesimal variations of the attributes of the same alternative (direct elasticity) or of another alternative \( h \) (elasticity cross):

\[
E^{p[j]}_{kh} = \frac{\Delta p[j]}{p[j]} \frac{\Delta X_{jh}}{X_{jh}} \tag{2}
\]

In the case of infinitesimal variations of the attributes you have, instead, the elasticity in the point expressed as percentage changes of the choice probability of the alternative \( j \) with respect to infinitesimal variations of the attributes of the same alternative (direct elasticity) or of another alternative \( h \) (elasticity cross):

\[
E^{p[j]}_{kj} = \frac{\partial p[j]}{p[j]} \frac{\partial X_{kj}}{X_{kj}} \tag{3}
\]

\[
E^{p[j]}_{kh} = \frac{\partial p[j]}{p[j]} \frac{\partial X_{kh}}{X_{kh}} \tag{4}
\]

In the case of the model Multinomial Logit the elasticity in the point (3) and (4) can be expressed analytically and in a compact manner, by the formulas:

\[
E^{p[j]}_{kj} = (1 - p[j])X_{kj} \beta_k / \theta \tag{5}
\]

\[
E^{p[j]}_{kh} = -p[j]X_{kh} \beta_k / \theta \tag{6}
\]

In our case, the formulas (5) and (6) have been used, Catalani M. (2004).

6. Results of multi agent MNL calibration

The data collected with the experimental investigation (n.112 questionnaires) and through comment forms (n.900) provided by MSC Cruise, was been processed with the software NLOGIT Green, W.H. (2007). This program maximizes the log likelihood function. Upstream of the process of choosing the cruiser, one of the most important decisions is choosing the destination and itineraries.

The aim of this investigation is to study the behavior of the passenger in the choice of destination and then calculate the probability that he chooses a destination rather than another.

The choice is among 5 alternatives: Mediterranean, Caribbean, Northern Europe, South America and Transatlantic. Though two database relating to the 5 choice alternatives, data were collected on the characteristics of passengers and service used as variables in the model. They, also called attributes, are of great importance because they affect the choice of destination directly. The attributes used are: the purpose of the journey, the age of the passenger, the price of the cruise, the nationality, the social status, the journey period, and the passenger income. In the model, income was used as a variable that interacts with the constant specific alternative, as well the constant itself.

The application highlights the low statistical significance of the variables such as the
journey purpose, passenger’s age, journey period; therefore the other four variables indicated above are significant for the model, as the table 1 shows.

Model calibration was been applied to the following destinations:

Choice 1 Mediterranean
Choice 2 Northern Europe
Choice 3 Caribbean
Choice 4 South America
Choice 5 Transatlantic

The choice 4 South America was excluded because the cruise prices are not reliable inasmuch pricing policies depend directly on local travel agencies. Consequently the choices became: 1. Mediterranean, 2. North Europe, 3. Caribbean, 4. Transatlantic.

The table 1 shows the results of the application.

### Table 1. Results of the simulation model

| Variables        | Coefficient | Standard Error | b/St.Er. | P[|Z|>z]|  
|------------------|-------------|----------------|---------|-------|  
| Nationality      | 1.707       | 1.459          | 1.170   | .242  |  
| Social Status    | 1.847       | 1.016          | .818    | .069  |  
| Income           | - .829      | 1.092          | -.759   | .448  |  
| Price            | - .917      | .256           | -3.578  | .0003 |  
| A1               | -1.203      | .835           | -1.440  | .150  |  
| A2               | -.342       | .656           | - .520  | .603  |  
| A3               | -.267       | .574           | -.466   | .641  |  

Source: our elaboration.

The observed data show that the variables income, price, nationality, status have a good fit. In particular, the variable price has a very high value T student, followed by nationality, status and income. The results of simulation related model Log Likelihood function (-36.66), Chi-squared (28.29), R-sqrd (.38) and RsqAdj (.33) are all reliable.

In table 2 the results of point direct elasticity are shown along the diagonal, while all the other values represent the point crossed elasticity obtained with MNL. From formula (5) and (6) it results that direct point elasticity is positive if the attribute $X_{kj}$ and the coefficient $\beta_k$ are both positive (negative otherwise). In other words, the variation in the probability of choosing an alternative increases if the value of an attribute that represents a utility (positive $\beta$) increases, moreover the increase will be greater percentage as the values of the coefficient $\beta_k$ and of the attribute $X_{kj}$ are higher the value of the probability of choosing the alternative j is smaller.

In the case of choice among different destinations, characterized by different pricing, the direct elasticity of the probability of choosing a destination with respect to the price will be negative if the coefficient $\beta_k$ of the price attribute is negative. Moreover this elasticity will be higher in absolute value for that destination for which the price is
higher compared to a destination with lower price. At last if the probability of choosing the destination is low, namely that destination is not very attractive, the elasticity with the same parameter $\beta_k$ and attribute $X_{kj}$ will be greater.

In other words, a percentage increase in the price of the second destination will correspond to an increase in the probability of choosing the first destination, an increase that will be greater as the prices of the second destination are higher and the probability of choosing it is higher. Note that the cross elasticity of the MNL is constant for all the alternatives $j$ because the variation of an attribute of a certain alternative causes the same percentage variation in the probability of choosing all the other alternatives (IIA) McFadden, D. (1973), Ben Akiva, M. and Lerman, S. (1985).

Table 2. Direct and cross destination price elasticity

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<tbody>
<tr>
<td>$E_1$</td>
<td>-11.63</td>
<td>6.09</td>
<td>3.15</td>
<td>2.39</td>
</tr>
<tr>
<td>$E_2$</td>
<td>6.09</td>
<td>-15.52</td>
<td>5.73</td>
<td>3.70</td>
</tr>
<tr>
<td>$E_3$</td>
<td>3.15</td>
<td>5.73</td>
<td>-14.30</td>
<td>5.42</td>
</tr>
<tr>
<td>$E_4$</td>
<td>2.39</td>
<td>3.70</td>
<td>5.42</td>
<td>-10.51</td>
</tr>
</tbody>
</table>

Source: our elaboration

As table 2, the direct elasticity values varies from -11.63, -15.52, -14.30, -10.51 respectively, Mediterranean, North Europe, Caribbean, Transatlantic routes. As regard the cross elasticity, all positive values, they vary from 6.09, 3.15, 2.39 if compared with choice 1 (Mediterranean) respect to choice 2 (North Europe), choice 3 (Caribbean) and choice 4 (Transatlantic).

The direct income elasticity presents little variation of the values compared to that of the price: for example, the choice 4 (Transatlantic) is slightly higher -10.21 than that price -10.51.

From simulation it results the passenger probability to choice the best destination is the North Europe 32%, followed by Transatlantic 26%, Caribbean 24% and lastly Mediterranean 18%.

It needs to point out that the low probability to choice the Mediterranean, now it remains a decrease of preferences due to instability in several countries bordering area. Moreover, it should be noted that the Mediterranean preference resents yet to the fact that the first timers interviewed on board MSC cruise during the MED itinerary will choice new attractive areas.

7. Conclusions

The model identifies the preferred destinations through a sample of passengers on board a ship of MSC Cruises and comment forms. The study can be considered as a tool to support the governance strategies in the identification of favorite destinations and itineraries to improve the holiday packages and to satisfy a demand increasingly diverse
and exacting in buying choices. The cruise companies are directing their offer to new destinations such as South East Asia, Alaska and Australia to address the drop in demand that is occurring in markets such as the Mediterranean aiming to countries with economic and social improvement and towards customers who require a more personalized and luxury vacation.

In the international competition, moreover to the strategies of market penetration and product differentiation, the companies should devise new cruise networks and guidelines to implement market development strategies. It is important to consider also that the passengers may exclude from their process choosing those companies that offer a great number of destinations, because it can increase the perception of the risk. It shows that the competitive advantage of a company is achieved by improving the quality of work and staff satisfaction. They must be guided by the principles of correct leadership also aimed to the centrality of the customer; that is to say, it needs a real readiness to “listen” to the customer and thus to grasp the nature of a possible conflict. The cruise company through the mediation of the contact staff intends to guarantee a high quality service with full customer satisfaction.

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