LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE ∎

ST3188 The Research Proposal: Carnival Corporation

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Contents

Executive Summary

How perception of cruising has changed since the start of the pandemic, amongst which demographics and to what extent customers' concern on how safe a cruise is affected passengers levels?

The Covid-19 pandemic has changed a lot: from how we interact with our friends and family, to how we shop and, most crucially here, how we vacation.

Once described as faithful customers, cruisers' perceptions have drastically changed*:* months before the 2020 pandemic, 92% of them would book another cruise holiday (amongst other holidays, including land holidays). This percentage fell to 84% during the pandemic and it is now down to 74% at the beginning of 2021.

Understanding the reasons behind this change of mind is essential to return to a pre-COVID-19 level of bookings. More worryingly, if these reasons are shared with *non-cruisers*, it will act as a deterrent for the next generation of cruisers.

Using Carnival's customer database we expect to reach around 3,000 *cruisers* from Carnival's top ten selling countries and other 3,000 *non-cruisers* (or more) through a referral system. Our marketing campaign will run simultaneously to a ramp-up of Carnival's social media presence. To reduce *non-reach* numbers (and hence non-response answers) we ask participants where they would like to be contacted with further and *personalised* information: at home or work.

By using a cluster based logistic regression approach we predict the probability of *repeated booking* based on the newfound variables. These new variables are also used to shape personalized offers to current and new customers, while providing a rational explanation of customers' behavior, such as a change in perceptions.

Company Profile, Logo, Vision and Mission Statement

On Vision Statement*: '(...) to operate safely, to protect the environment, and to be in compliance everywhere we operate in the world. On this foundation, we aspire to deliver unmatched joyful vacations for our guests, always exceeding their expectations (...).*

On mission: *'Together, we deliver joyful vacation experiences and breakthrough shareholder returns by exceeding guest expectations and leveraging our industry leading scale'* (Carnival Coporation & PLC , 2021)

Funded in March 1972, Carnival Cruise is the largest single cruise operator, owning a fleet of 23 ships, employing more than 36,000 worldwide and present in several countries (September 2020) (Wikipedia , 2021). Together with Royal Caribbean International and Norwegian Cruise Lines, they dominate the cruise market, with Carnival holding almost 42% of the market share (Kai Wang, 2016).

The impact of the Covid-19 pandemic was heavily felt on the travel and tourism industry, but the non-sail rule issued in September 2020 by the USA Centre for Control of Disease Control and Prohibition greatly impacted Carnivals' financial position, reporting a net loss of $1.7 billion. Still, Carnival Corporation is in an excellent cash position, with 9.5 billion dollars, despite the net loss (Wikipedia , 2021). As other industries heavily affected by the pandemic, Carnival PLC is focusing to return to pre-pandemic levels, capture new demographics for future development, and return to pre-pandemic growth rates:*" the cruise industry was increasing passenger growth rate, on average, a 7.2 percent a year since 1990*" (Kai Wang, 2016).

Cruisers' Profile

Most of the passengers are from North America, followed by Europe and the Asia Pacific region. Despite the Covid-19 pandemic, loyalty levels remain strong but still down when compared to previous years. In terms of marketing research, cruisers have been historically divided into four precise annual income levels: above 200,000 dollars, between 150,000 and 200,000 dollars, between 100,000 and 150,000 dollars, and below 100,000 dollars. Cruising passengers have become increasingly diverse in the last decades (both in terms of generations and income level), '*Baby Boomers seem to be more interested in port, destinations, and sightseeing options. Traditionalists are focused on programs for children and families, while Gen Y and Millennials are more concerned with cost, convenience, and onboard entertainment.* (The Florida-Caribbean Cruise Association , 2018).

Where Passengers Come From
Represents Total Ocean Cruise Passengers (in Millions)
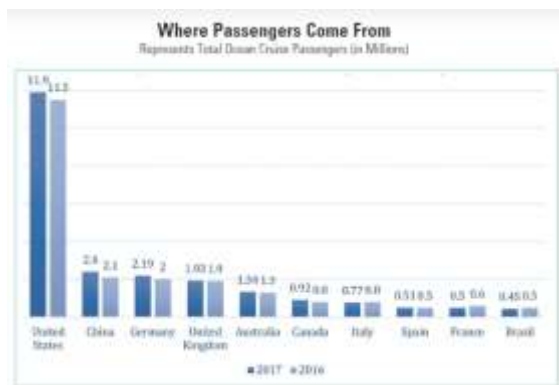
While diverse and from different income levels, non-cruisers and the general public still hold an out-of-date picture of the industry: cruises are still associated with the elderly and/or pensioners. Changing this wrong perception and sending the right message is essential: if ships are perceived (from *non-cruisers*) as floating Petri dishes, full of old and potentially sick people, future and present passenger growth will be heavily damaged.

Our research proposal has taken these factors into consideration; allowing us to target cruisers according to their expenditure profile, income group, and level of arousal, amongst others. With the help of actual customers, non-cruisers are reached and important data about them is gathered. Our statistical technique allows Carnival to forecast the level of bookings, identify new trends, cluster customers under new and more familiar variables, and understand how perceptions about the industry have changed since the pandemic.

The Research Proposal

### *Stage One: Cluster Analysis – Data Gathering*

Our first step consists of emailing all four income groups of cruisers using Carnivals' database. We estimate that each single sample size (95% confidence interval) would need 296 participants[1] and be carried out in each of these ten countries (see figure 1); making the total number of cruisers participants, four our statistical analysis, to 2,960.

We start contacting participants via email and asked them to complete a short questionnaire. We hope that an initially short questionnaire will minimize the *non-response* rate and engaged as many current cruisers as possible for the next stage of our campaign (see the questionnaire on Annex II). Because, on average, the online survey response rate is not greater than 26%, we should contact, at least 1138 active cruisers from Carnival's database (in each country) via email. Additionally, we want to target all four income groups, and hence we will be emailing 285 from each income frame. Assuming that the response rate is similar between groups, we

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[1] $n = \frac{\pi(1-\pi)Z^2}{D^2} = \frac{0.74(1-0.74)(1.96)^2}{0.05^2}$

will end up having 74 participants per income group, 296 in total (our sample size). Last question in our survey will be to ask customers if they wish to receive further information at home or work. Those who respond affirmatively will be selected for the next stage of our campaign.

Stage two in our data collection is following up with a brochure (sent to home or work) that will contain, amongst other things: industry news, Covid-19 solution/news, pictures of selected destinations (to be matched with the customer last cruise holidays), and discounted offers and
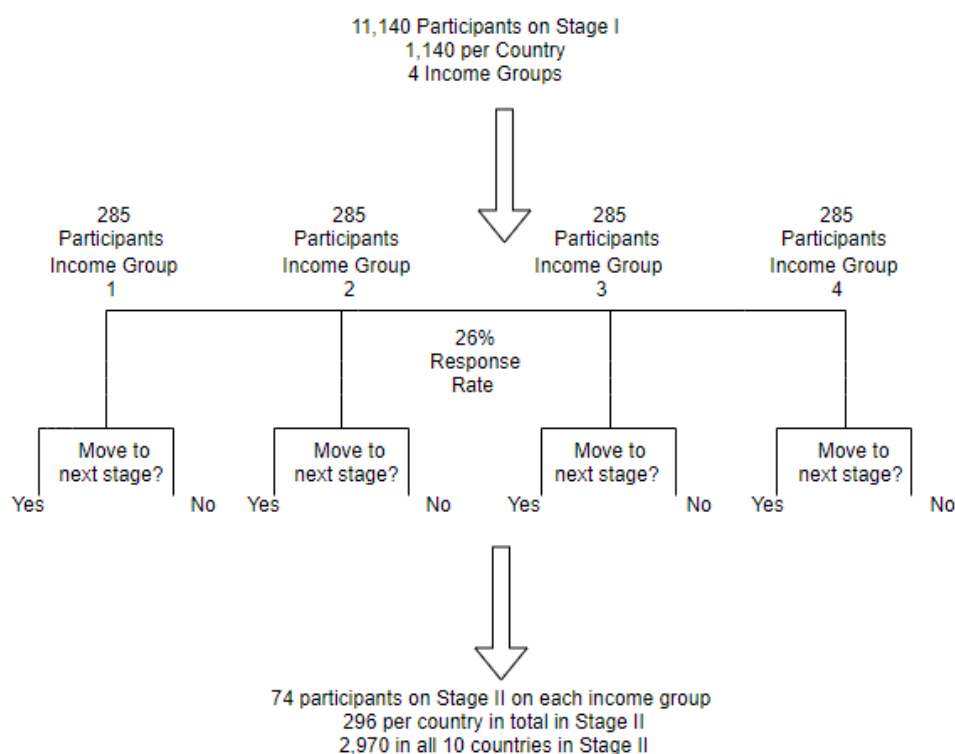
incentives. Inside the magazine, the customer will find an extremely attractive **offer** (based on her last holiday destination and income group) that will be redeemed upon completion of an online survey (*our 'cluster' survey*). Once the customer has completed the survey, the redemption coupon will be emailed and downloaded as a pdf. The pdf will include an **additional offer** (securely linked to Carnival database) for new customers that, if completed by a new customer, guarantee further discounts to the existing customer. The goal here is to lead Carnival's customers to invite *non-cruisers* to complete our online survey too.

This is crucial in our strategy: in doing so we are reaching two different population segments in one campaign, and gathering further data with the help of actual clients. This in time, increases the probability of current customers booking new cruise holidays and new *referral bookings* (see Annex II for a flow chart of the whole campaign).

Stage one: Cluster Analysis: Methodology and Theoretical Foundation

A recent and interesting attempt to understand customers' perceptions can be found on Tourism Management No 85 (Tianyu Pan, 2021). Here the authors study the relation of industry perceptions and financial status (of consumers). By using factor analysis underpinned by travel, leisure constraints, and prospect theories[2] they explain the causes behind positive and negative bias against the industry. Previous studies have attempted to explain the level of arousal[3] and advertising effectiveness (Hongyan Jiang, 2020); concepts that we introduce in our cluster analysis. Because cluster analysis can be very sensitive to data variations (i.e, it may produce very different results as a consequence of small data variation) and it is particularly sensitive to outliers, we have to ensure that our cluster variables belong to a specific category and are not isolated.

Hence, our twenty-four variables can be intentional, structural, economic, emotional, Covid19, or arousal variables (see Annex 1).

- *Intentional variables*. Belong to the behavioural sphere and decision making such as '*I intend to book a cruise holiday next year/this year*'.

- *Structural variables*. Factors that affect the possibility of sales, choice, etc, and the customer have no control over it: *How easy is it to book a holiday, get a refund, contact customer service, etc*.

- *Economic variables.* Directly related with the price and cost of the product: *'cruise holidays are expensive', 'cruise holidays are good value for price'*, etc.

- **Covid-19 variables.** Questions aimed to understand the impact of the pandemic in the decision-making process.

- *Emotional variables.* Family and personal variables. '*I prefer to travel solo/with a friend', 'I prefer to travel with family',*

- *Arousal variables.* Divided between low- and high-level arousal destinations.

Here the customer, now in stage II, is asked to simply tick her level of agreement (or disagreement) about a series of statements[4]. The data is later gathered and individual answers are aggregate to cluster customers' under new *research variables.* These emerging clusters

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[2] Prospect theory attempts to explain decision making under stress conditions.

[3] In an advertising context, arousal is defined to the level of stimulation or risk-taking behaviours. Individuals with high level of arousal will seek risky activities (bungee jumping, parachuting, etc), cities with night life, activities that provide an immediate level of gratification. This type of people also tend to evaluate advertising to the extremes: either very positively or very negatively. Low or medium arousal individuals instead, tend to look for family or traditional types of destinations, such as cultural cities, sightseeing, family friendly activities, etc.

[4] 1=Disagree, 7=Agree

will be the answer to understand customers (both *cruisers* and *not*) changing perception after the pandemic, booking intention and other useful variables (income, family, level of arousal, etc) that will be used for advertising.

Ultimately, identifying individual and income segment characteristics will help Carnival '*to identify the congruency between message appeals and audience segments to increase the precision of destination advertising and maximize its effectiveness*' (Hongyan Jiang, 2020).

Stage One: Cluster Analysis - Technical details

Our preferred method is hierarchical clustering, using Ward's procedure. Instead of using Euclidean distance as a measure of likeness, we will use the correlation-based distance method. In doing so, we are shifting the weight from frequency and income to *customer characteristics.* The rationale here is that by using Euclidean distance we risk separating customers in different clusters because they have different, say holidays frequency or income, but they share the same taste and preferences (and hence belong to the same group). In other words, profile-based clustering is indicated here.

Hierarchical methods also offer the advantage of producing icicle and dendrogram plots, making data interpretation easier for managers or decision-makers with non-statistical experience. We validate the sample, by randomly dividing it into two halves, performing hierarchical clustering analysis in both samples. The second time, we will divide (again, randomly) the sample into two new halves, but this time performing *k-means* (non-hierarchical) clustering analysis. This combination of cross validation and using different clustering methods will help us to compare clustering results and validate our findings. The expectation here is that while clusters may slightly vary, the results are strong enough to use it with confidence on the next stage.

Stage Two: Logit Analysis

Logistic analysis starts immediately after clustering is completed and it will allow managers to forecast an increase in the probability of repeat bookings based on a unit increase of one new clustered variable (holding the other constants). It will provide insight into why customers may be reluctant to book new holidays, providing a rational explanation, while targeting them at the same time based on particular preferences (like the individual level of arousal, structural, family, and emotional variables)

Here '*repeated booking*' is a binary logistic regression function of the form,

$$\text{repeated booking} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

with new clustered variables, $X_1, \dots X_n$,.

Because we are running a binary logistic regression (two options), current customers will be coded as one and non-cruisers[5], coded as two.

As in cluster analysis, we use the IBM SPSS package. Due to the number of variables and the research question, complete separation is unlikely[6]. The main risk here is overdispersion. Overdispersion can occur as a consequence of correlation between the variables, and because we are running a logistic regression based on **cluster analysis**, our variables would be correlated. The immediate problem is that the standard errors ($SE = \frac{\sigma}{\sqrt{n}}$) will be too small. Being the standard error too small makes the test statistics too big (we use SE to calculate test statistics) and hence we may believe that coefficients are significant, when in reality they are not. We will control for overdispersion by calculating the dispersion parameter[7]: good values should be between 1 and less than 2.

$$ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

Once coefficients of the variables have been calculated and converted to odd ratios (e^{β_0}), we interpret them with the help of our cluster analysis (which has provided us the *'raison d'être'* of each categorical variable.

Time Scale

Almost all of the countries in our sample are from the Northern hemisphere, except for Brazil. Summer in the northern hemisphere runs from around the 20th of June until almost the end of September. In Brazil (and the whole Southern Hemisphere), is from December until March.

Our campaign should start, not later than the beginning of March and it will last until the end of April. Regardless, we don't expect too many early bookings this year (due to the uncertainty created by the pandemic), but the opposite: vacationers may be reluctant to book in advance (compared with other years). A solution here may be offering a sort of 'Carnival's*Covid-19 insurance*' against unexpected cancelations.

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[5] These are the ones reached through referral and have completed the online survey.
[6] Complete separation sometimes happen when we try to fit too many variables with very few cases. Considering the amount of data that we are handling; this will certainly not be the case.
[7] We calculate dispersion parameters in SPSS by adding the Hosmer and Lemeshow goodness of fit statistics, and from the output, dividing the Chi-square test statistics (say 6.305) by the degree of freedom (say 8). A result of 0.7881 indicates under dispersion.

Interpretation

Apart from the benefits above named, our marketing campaign allows Carnival's managers to compare predictions made **before the vacation period** with the actual level of bookings amongst *cruisers* and *non-cruisers.* Questions like,

- Are repeated bookings amongst *cruisers* a consequence of offering the right incentives (as per our predictive model)?
- Are new bookings, amongst *non-cruisers,* a consequence of offering the right incentives (as per our predictive model)?
- Have we offered to (new and current customers) the correct incentives?
- How significant is…..(income, price, health & safety, etc.) when booking cruise holidays?

Our model will be long-lived: subsequent campaigns will proportion more data that will help to refine our predicted model (for both *cruisers* and *non-cruisers*). Furthermore, our model can be used and tested using data before and after the pandemic and further refine its accuracy level.

The Role of Social Media

No modern marketing campaign can be thought of as isolated from the social media phenomena. Our campaign will run together with an increase in Carnival's social media presence. To what extent and how will be discussed in detail with Carnival's managers, but here we briefly develop some points.

From strangers to friends

Gathering a new audience is not easy, but this can be done with the help of Facebook, Twitter, and Google. Once a topic is found (for instance, Should Travel Agencies ask for Vaccination Passports?) we should start the conversations. From creating discussion groups, hash tagging on Twitter, to posting videos on our Facebook, these are valid tools to expand our audience.

From friends to customers

Once our audience has expanded it is time to target our, yet potential, customers. Using historical research and profiling we can offer the right deal to the right customer. We may well find actual customers in doing so and is here where we can lead them to Carnival's latest campaign. On the other hand, new customers can be offered the same type of deal that we have in our referral campaign.

From customers to preachers

Nothing better than free advertising and nothing more effective than happy customers preaching the virtues of our product. Once again, social media here is ideal to spread the voice and deliver the good news. Similar incentives can be used here: the same as the ones '*reserved*' for current customers referring to friends and family,

Rather than competing, social media will be complementing and strengthening our more traditional campaign. In doing so, customers that have not responded to our initial email or failed to complete Stage II may be attracted by a smart and well thought social media campaign. It is of crucial importance that offers and discounts on social media are the same as the ones in our campaign, otherwise, they will be competing campaigns.

Further Research

Additional research can be done once our data is gathered, that without doubt, will provide useful insights.

By selecting the variables that are closely related to behavior, such as level of arousal and number of bookings, we could try and predict the effectiveness of our advertisement campaign. Rethinking Carnivals' media presence outside the USA is also of vital importance. For example, it did not take us long to note the differences between Carnivals' USA website and the UK one. The English web page is unappealing, poor, and populated with just an invitation of contacting local travel agencies. The .com domain is aimed at the USA and Australian customers exclusively, while the domain .co.uk is literally non-existing: on typing it on the browser it directed us to the following website: *https://www.carnival.com/content/uk-plan*.

As in our research proposal, Carnival should aim to replicate this and other marketing campaigns in countries outside the USA, specifically their ten top sellers countries.

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Annex I: The Cluster Variables

These are all 24 variables that both cruisers and non-cruisers will be asked to express their degree of agreement (1=Disagree, 7=Agree)

- Booking a Cruise holiday is easy
- Cruise Holidays are a good value for money
- Cruise holidays are expensive
- I intend to book a cruise holiday as soon as they become available
- I am not planning to book cruise holidays until the pandemic is completely gone
- I am indecisive about booking a cruise holiday
- I prefer cruise holidays to land holidays
- My family and friends are not interested in cruise holidays
- Cruise holidays are for all type of people, ages, and income
- Cruise holidays are for old people
- Cruises are bad for the environment
- Cruises are good for destination countries
- Cruises are not enough Covid-19 safe
- I am more concerned about the H&S in port than in ships
- I would like to know what cruise companies will do in case of a Covid19 outbreak on board
- I would like to know what cruise companies will do in case of a Covid19 outbreak on our destination
- Cruises do not have enough medical personnel on board
- Cruise suites do not have enough ventilation
- I trust that Cruise companies are making their ships Covid-19 safe
- Cruise companies should provide a Covid-19 insurance in case of outbreaks
- Cruises companies should focus more on recycling and sustainability
- I prefer port destinations, nightlife style (i.e., casinos, clubs)
- I prefer port destination with family orientated activities
- I prefer port destinations of historical and cultural cities.

Annex II: The Questionnaire

This is the short questionnaire that will be used in our mailing campaign to select participants from Carnival's customer database for the *brochure stage*.

- ✓ Identifying questions (name, gender, age, and income group)
- ✓ To which destination were your last holidays with us?
    - o ……………..
- ✓ How satisfactory was your experience?
    - o Very Satisfied
    - o Satisfied
    - o Neutral
    - o Dissatisfied
    - o Very dissatisfied
- ✓ What type of holidays do you expect to take this year?
    - o Land Holidays
    - o Cruise Holidays
    - o Both
    - o Other
- ✓ To which destinations?
    - o ……………….'
- ✓ This year at Carnival Cruise we are launching our biggest Cruise Holidays Program in our history. Together with our partners across the globe, local authorities, and Health and Safety specialists, we have made our ships and destinations safer than ever. This year we are offering tailored discounts for you, your family, and friends. Vacation with us has never been more convenient! To this end, we have prepared our brand new '*2021 Carnival's holidays*', where you can find all this exciting news (and much more) plus exciting tailor-made offers for you and your loved ones.

  Would you like to receive it (at no cost)?
    - o Yes
    - o No
- ✓ Where would you like us to send it?
    - o Home
    - o Work
    - o Other
- ✓ Thanks for participate and see you soon!

Annex III: The Marketing Campaign Flow Char

Carnivals' customer database → Ensure emailing list is divided equally by all four income groups → Ensure that, at least, 285 of each income group is on the final mailing list

Personalise brochure
Assign Special Offer
Assign ID #
Assign referral offer ← 296 responses (26% response rate) ← Review of the final mailing list

Send brochure to Home or Work → Cruiser Completes Survey? → No → Brochure Non Response #

New data is acquired
&
unique pdf is downloaded

Customer refers offers to a *non cruiser?* → No → Referral Non Response #

Yes

Non Cruiser data acquired & pdf downloaded

Four possible outcomes:
Target customer books new holiday
New customer books holidays
Both customer book holidays
None book holidays