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Key drivers of airline loyalty

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Keywords

loyalty, key, airline, drivers

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Differences in drivers of airline loyalty for a number of segments were identified. For example, loyalty programs play a key role for business travellers whereas airline loyalty of leisure travellers is difficult to trace back to single factors. For none of the calculated models satisfaction emerged as a key driver of airline loyalty.

Keywords: Airline choice, airline loyalty, business travellers, leisure travellers, satisfaction

1 Introduction and prior work

In March 2010 the Director General and CEO of the International Air Transport Association, Giovanni Bisignani, stated that “The last decade was the most difficult that we have ever faced. Airlines lost an average of US\$5 billion per year” (Bisignani, 2010).

According to Bisignani, the airline business is challenged by a number of external factors: oil prices, the danger of over-capacity, strikes, strike threats, restrictive government regulations, as well as natural disasters, such as the 2010 volcano eruption in Iceland.

While having to manage all these challenges, airlines are always facing strong competition, more so since the appearance of low cost carriers.

One way to strengthen an airline’s competitive position is to retain passengers as loyal users of their airline, meaning that they will choose the airline not once, but repeatedly.

Loyal customers are highly attractive to businesses because they are less price sensitive and require a lower effort to communicate with (Gomez, Arranz and Cillan, 2006). Yet, very little is known about what makes an airline passenger loyal to an airline. Most previous investigations focus on airline choice. Given that loyalty is repeated choice, we view airline choice literature as crucial in informing our study.

A number of studies have been conducted in the past attempting to better understand people’s airline choices. Suzuki (2007) concludes that airline choice is a two-step process, where consumers first select a subset of airlines into their choice set and then determine the winning airline in a second step. Specifically, Suzuki finds that customers use a conjunctive decision rule in the first phase, meaning that airlines are included in the choice set if they have acceptable standards on the largest number of attributes. In terms of the factors that

play a significant role in airline choice, Suzuki identifies the price of the airfare, frequency of flight services provided to the required destination and frequent flyer membership status.

Most other studies focus on identifying the factors that are most influential in people's airline choice. Hess, Adler and Polak (2007) investigate these factors separately for a number of segments, concluding that access time, flight time and airfare were important both for business and holiday makers. Membership in frequent flyer programs was also significant for both groups, but much less important for holiday makers. Among holiday makers, fare sensitivity was higher for longer flights and lower with higher incomes. In a study of 497 actual business flights taken by employees of three medium-sized companies, Nako (1992) found the number of flights to have the biggest impact on airline choice, followed by the percent of direct flights to the destination, the total travel time, frequent flyer programs, fares and arrival on time.

A number of other studies were based on research designs which included only a subset of criteria typically used when choosing an airline. For example Espino, Martin and Roman (2008) set a choice task for respondents, including the following characteristics to describe each airline: price, penalty for ticket changes, free food, comfort, frequency and reliability. All of these factors (each measured using multiple items) had a significant impact on airline choice. One study interviewed travel agents in their role as experts on travellers' airline choices (Etherington and Var, 1984). Again, only a subset of criteria was presented to the experts, namely convenience of schedules, handling at the airport, in-flight service, price and airline employees. Results indicate that for vacation travellers the two most important factors within this subset are ticket price and availability of discounts. For business

travellers, on the other hand, the availability of non-stop flights and time of arrival were most important. Ostrowski, O'Brien and Gordon (1993) find generally low satisfaction levels and low levels of intentions to stay loyal to one airline among airline customers.

Finally, a significant number of studies have investigated stated importance of a range of factors to passengers in general (Tsaur, Chang and Yen, 2002) as well as segments of passengers (Gilbert and Wong, 2003) without attempting to link these importance ratings directly to behavioural outcomes, such as airline choice or airline loyalty. Such studies are of particular value when airline managers aim at increasing perceived satisfaction of passengers once they have chosen their airline.

The present study contributes to this field in a number of ways:

- (1) We investigate airline loyalty, as opposed to airline choice (Espino et al., 2008; Hess et al., 2007; Nako, 1992; Suzuki, 2007). To the best of our knowledge only one study (Ostrowski et al., 1993) includes a measure for airline loyalty in their study. They ask respondents which airline they would choose for their next flight, assuming identical departure and arrival dates.
- (2) We acknowledge that different segments of the market exist (Dolnicar, 2008) and hypothesize that segments will differ with respect to key factors determining behavioural loyalty to an airline. We therefore go beyond the scope of previous investigations of heterogeneity, which are basically limited to the study of business versus vacation travellers, and investigate differences for a number of a priori segments identified by airline management as structurally different.

(3) In view of Suzuki's (2007) findings that airline choice is a multi-step process we use models for data analysis which inherently assume a multi-step process and are able to identify for each step which the key drivers of behavioural loyalty are.

Please note that the scope of this study is limited to airline loyalty, as opposed to airport loyalty or airport choice. Results contribute to our knowledge about airline loyalty, an area of research largely neglected to date and of practical value to the aviation industry because key factors of airline loyalty are identified which airlines can choose to focus on in an attempt to increase their base of loyal customers.

2 Methodology

2.1 Data / fieldwork administration

The airline under study is a national carrier which offers scheduled services within Central and Eastern Europe, to destinations in the Middle East as well as intercontinental flights between Europe and North America. Therefore the main focus of this regular airline lies on short haul flights and is supplemented by a number of long haul destinations.

Data was collected between December 2008 and February 2009 on a range of both short and long haul flights offered by the airline under study. The sample of the selected routes was not representative for the total flight plan of the airline but included routes which are exposed to competition by other carriers. On some flights an extra staff member of the airline invited every single passenger to complete the survey. In other cases the flight attendants randomly distributed questionnaires to passengers. The questionnaire was

provided with an envelope to ensure that respondents were able to hand it in anonymously. Each respondent was given a questionnaire in two languages (the native language of the country of the airline and English) to ensure that most passengers would be able to complete it in their native language. In total, responses from 890 customers were collected. For analysis, all those respondents who did not respond to the behavioural loyalty question were omitted. As a consequence the usable sample size was 687 respondents. A large part of the sample consists of the airline's home country nationals. The rest of the sample includes international passengers, which was assured by the translated questionnaire.

2.2 Variables

The questionnaire has been developed based on prior literature in the area and in close collaboration with the market research manager of the airline under study who has many years of experience with survey studies of airline passengers, especially satisfaction studies.

The dependent variable is stated behavioural loyalty with the airline under study. Loyalty, as opposed to single choice of an airline for one trip, requires the measurement of a sequence of choices. We have measured this by asking respondents the following question: "How often do you fly each year? What percentage of this is with [the airline]?". The behavioural loyalty measure can therefore be described as a self-assessed measure of the proportion of flights taken with the airline under study, thus measuring a sequence of choice rather than the choice of an airline on one single occasion.

The explanatory constructs included in the analysis were the customers' satisfaction with the airline ("Provided that you experienced the following services, please rate them", measured on a six-point scale with only the endpoints verbally anchored), their image perception of the airline ("What impression do you have of [the airline]?", measured on a six-point scale with only the endpoints verbally anchored), their general booking criteria ("Thinking about the decisions you make yourself, which of the following criteria generally influence your choice of airline?", point allocation task), and their frequent flyer program membership ("Are you a member of a frequent flyer program?", respondents answered with "yes, with the program of the airline under study ", and/or "yes, with _____ " where they filled in the name of the frequent flyer program, or "no"). Please note that only membership of the frequent flyer program attached to the airline under study was used as an explanatory variable. All memberships with other frequent flyer programs have been put into one group, because the incidence of memberships with other individual frequent flyer programs was too low to allow for statistical testing.

Variables used to measure satisfaction included overall satisfaction, satisfaction with reservation, staff, suitability of planes, modernity of planes, seat comfort, cleanliness of plane interior, attractiveness of plane interior, catering on board, entertainment on board, sales on board, punctuality, handling of baggage, available rates, flight schedule, handling of complaints, frequent flyer program, tolerance, and handling of requests. The following variables were excluded prior to the analysis because of the extremely high proportion of non-responses (more than 40 percent of the respondents): satisfaction with sales on board, handling of complaints, frequent flyer program, tolerance and the handling of requests.

Variables used to measure perceptions included overall image, consumer perceptions relating to service-orientation, reliability, flexibility, reputation, how sympathetic the airline is, airline safety, comfort, trustworthiness, competence, importance of individual needs, helpfulness, quickness of response to requests/problems, accuracy, reputation among the consumer's friends, ownership (status of national carrier), national identity.

Variables used to measure which criteria consumers use to make the airline choice included availability of flight connections, frequent flyer program, reputation, price, availability, time schedule and ownership (national carrier).

Please note that the frequent flyer program occurs both in the satisfaction measurement and in the factors listed as potentially contributing to people's airline choice. These are not the same constructs and it does not automatically follow from being satisfied with the frequent flyer program that one will choose it, nor does it follow that being unsatisfied with the frequent flyer program will mean that frequent flyer member airlines will not be chosen. For example, a passenger can be very unhappy with the frequent flyer program because miles expire and too many miles are charged for an upgrade to business class (low satisfaction), but may still always choose an airline that has a frequent flyer program because the passenger can accumulate miles for private trips. This represents a rational decision, driven by benefit maximization rather than being driven by the satisfaction with the program, and demonstrates that satisfaction with a frequent flyer program and choice of an airline because of its operation of a frequent flyer program are not necessarily associated.

2.3 Analysis

The aim of the analysis is to identify factors which determine or are associated with behavioural loyalty. The range of potential explanatory variables includes booking criteria, satisfaction with the airline, image of the airline and frequent flyer program membership. These variables are assumed not to influence behavioural loyalty separately, but that strong interaction effects exist. Because airline choice has been shown to be a multi-step procedure behavioural loyalty can also be assumed to follow from a set of decisions. Based on these assumptions regarding the relationship between explanatory and dependent variables, decision trees (Breiman et al. 1984) are fitted to the data. This is preferred to other methods for describing the relationship between a dependent and explanatory variables such as linear regression because decision trees (1) allow accounting for complicated interacting of variables, (2) are easily interpretable and (3) inherently perform variable selection. In addition the decision trees might be able to reflect the sequence of criteria which need to be fulfilled by an airline in order to elicit loyalty from customers. For example, customers may only be loyal if they are a member of the frequent flyer program operating at the minimum satisfaction level of a customer. This would imply that satisfaction is not the key criterion and only plays a role if the first requirement – member of the frequent flyer program – is fulfilled. A regression model which accounts for such an interaction would be complicated and hard to interpret while a decision tree describing such a relationship is simple and straight-forward to interpret.

The method used to fit the decision trees is unbiased recursive partitioning (Hothorn, Hornik and Zeileis, 2006). By recursively partitioning the data into two subsets using

binary splits according to one explanatory variable, subgroups of the data are constructed with similar behavioural loyalty. This method therefore can be interpreted as aiming at a data-driven segmentation of the airline customers. Recursive partitioning is an iterative method consisting of the following steps: (1) determination of whether or not a splitting variable exists which can improve model fit and, if it does, (2) splitting of respondents into sub-groups using the variable which differentiates best between respondents with respect to the dependent variable. Different recursive partitioning procedures vary in the way they measure the dependency between each explanatory variable and the dependent variable as well as how the split is made. Unbiased recursive partitioning applies conditional inference procedures for selecting the splitting variable which gives unbiased variable selection results. Alternative procedures have the drawback that variables with many possible splits, or variables with many missing values are systematically favoured (Breiman et al. 1984). In addition, in unbiased recursive partitioning, a natural stopping criterion for the procedure exists: the iterative process stops if the null hypothesis that all explanatory variables are independent of the dependent variable cannot be rejected at the pre-specified significance level of five percent. The considered splits are binary splits, that is in each step one subgroup of respondents is divided into two new sub-groups.

The satisfaction and image variables were measured using a six point scale in the survey. These variables were binarised prior to the analysis (the three positive options were recoded to a 1 and the three negative options were recoded to a 0). This was done because using the original six point scale would make the algorithm split respondents anywhere along the response continuum, possible at different locations for each split, which would (1) make

interpretation very difficult, and (2) capture difference in response styles rather than opinions.

The booking criteria variables were measured in percent and added up to 100 percent over all criteria. These variables hence indicate to which extent each criterion influences the decision process. The variable on the membership in a frequent flyer program was coded with four categories indicating if the respondent was not a member of a frequent flyer program (“No”), a member of only the frequent flyer program of the airline (“Own”), a member of only another airline frequent flyer program (“Other”) or a member of the frequent flyer program of the airline and another airline (“Own+Other”).

Behavioural loyalty was measured by asking respondents to state approximately the percentage of flights they take with the airline under study each year. In the questionnaire respondents filled in this number on a line ending with a percentage sign. The answers were checked for plausibility and directly used without further pre-processing otherwise.

Note that no distinction was made for similar variables in different constructs. All variables were included in the analysis as potential explanatory variables. Similar variables could certainly mask each other such that the recursive partitioning procedure would only select one of these variables. However, in contrast to methods such as linear regression where similar variables might lead to not selecting any of them this drawback is avoided by using recursive partitioning. An a-posteriori screening of the selected variables allows checking if potential masking problems are present, because this can only be the case if a variable is selected where a very similar variable is also included in another construct. For our present analysis this check indicated that no potential masking occurred in our analysis.

All computations and graphics for the empirical analysis have been made using the statistical computing environment R (R Development Core Team, 2009) using the add-on package party (Hothorn et al. 2006).

2.4 *Sample characteristics*

Respondents were asked to state their gender, age and nationality. The majority of the respondents were male with 421 (62%) male and 261 (38%) female. Half of the respondents were between 31 and 50 years old and about a quarter were younger than 31 and the remaining quarter older than 50. 28 (4%) were younger than 21 years, 137 (20%) between 21 and 30 years, 172 (25%) between 31 and 40 years, 188 (28%) between 41 and 50 years, 90 (13%) between 51 and 60 years and 68 (10%) older than 60 years. For 301 (44%) of the respondents the nationality was the same as for the airline carrier.

The fact that respondent data was collected on flights operated by the airline under study is not expected to effect findings negatively because 38 percent of the respondents indicated that they make less than 20 percent of their flights with the airline under study and for 56 percent of the respondents the majority of their flights are not made with the airline under study. Consequently, sufficient loyal and non-loyal respondents are included in the data to allow for the analysis undertaken to render valid results.

3 Results

3.1 Analysis for the entire market

Aggregate market results are presented in Figure 1. As can be seen being a member of a frequent flyer program is the single piece of information that best discriminates between respondents with high and low behavioural loyalty. Those who are members of another frequent flyer program (right most segment, Node 9) have a very low behavioural loyalty as opposed to those who are either only members of the frequent flyer program offered by the airline or not members of any frequent flyer program (left four segments, Nodes 4, 5, 7 and 8).

For those respondents who are either only members of the frequent flyer program of the airline under study or not members of any frequent flyer program the next best splitting criterion is whether or not they care about the airline being nationally owned. Those who do not care (two left segments, Nodes 4 and 5) have lower levels of behavioural loyalty than those who do. Among those respondents for whom the ownership is not important the reputation of the airline among their friends is the next best splitting criterion. Friends believing that the airline has a good reputation increases behavioural loyalty. Among those who care about the ownership the price is the next most discriminating criterion. People who state that price contributes at least 11 percent to their choice of airline have lower levels of behavioural loyalty to the airline. People whose airline choice depends on price less than 11 percent are more behaviourally loyal to the airline under study.

----- Please insert Figure 1 here -----

3.2 Analysis for a priori market segments

Based on the input from airline management, we repeated the computation for three a priori (Mazanec, 2000) or commonsense (Dolnicar, 2004) segments: business versus leisure travellers (purpose of the majority of flights, Figure 2), people who book themselves versus people who have someone else book the flight for them (booking of the majority of flights, Figure 3), and frequent versus casual flyers (separated at approximately 10 flights a year which corresponds to the median, Figure 4)

As can be seen in Figure 2, no significant variable could be identified that can split the leisure traveller segment into sub-segments which would significantly differ in their behavioural loyalty to the airline. This means that we cannot find any single variable that can explain – for leisure travellers – why some people have higher or lower behavioural loyalty.

For business travellers, however, membership in frequent flyer programs is the most discriminating factor, followed by the ownership of the airline. Highest behavioural loyalty can be achieved when people are members of only the frequent flyer program of the airline and value that the airline is nationally owned.

----- Please insert Figure 2 here -----

Figure 3 indicates that if somebody else books the flight, none of the attitudes the traveller was asked to provide in the questionnaire contributes to our understanding of behavioural loyalty, which is plausible. For those who book themselves the same key variables emerge as in the aggregate model, but the explained variance increases to 19 percent, indicating that including those who do not book themselves dilutes the aggregate results slightly.

----- *Please insert Figure 3 here* -----

The results depicted in Figure 4 show that frequent travellers' behavioural loyalty can best be explained by their membership in a frequent flyer program. This single variable explains 15% of the variance in behavioural loyalty.

For those who do not fly frequently, price is the most discriminating factor: those travellers whose airline choice hardly depends on price (less or equal to 3 percent) have high behavioural loyalty to the airline. If price contributes more than 3 percent to airline choice the level of behavioural loyalty is lower. In this latter group caring about the airline being nationally owned, and if this is not the case, friends perceiving the airline as having a good reputation, leads to the relatively highest behavioural loyalty for the airline.

----- *Please insert Figure 4 here* -----

Given that the frequency of flying appears to have a major impact on behavioural loyalty, we further investigate the differences between customers who are members of different frequent flyer programs (Figure 5). For this purpose respondents were split into three segments: (1) holders of only a frequent flyer membership of the airline under study, (2) holders of at least a frequent flyer membership of another airline, and (3) respondents who are not members of any frequent flyer program. As can be seen, for those who are members of the frequent flyer program of the airline under study only, the two most important factors are that the airline is nationally owned and that price does not contribute more than 15% to the overall airline choice decision (price insensitivity).

No discriminating variables can be identified for the segment of consumers who are members of multiple frequent flyer programs.

For the group of consumers who are not members of any frequent flyer program, loyalty is higher if recommendations (e.g. “I like this airline because I have heard good / read good things about it”) contribute to the airline choice by a degree of twelve percent or more.

----- *Please insert Figure 5 here* -----

4 Discussion and conclusions

The aim of the present study was to gain insight into reasons for consumers’ behavioural loyalty to airlines. The study contributes to the body of knowledge (1) by investigating airline loyalty rather than airline choice, (2) by investigating loyalty not only for the market

as a whole, but separately for a number of a priori segments which are perceived by airline management to differ in what drives their behavioural loyalty, and (3) by using a method which inherently accounts for the fact that airline choice is a multi-step process and that each decision in the process is potentially one that is made conditionally upon previous decisions.

The following key findings resulted from the analysis of 687 passengers' responses:

- ❑ At the level of the entire market, differences in behavioural loyalty between consumers can best be explained by being a member of a frequent flyer program, price, the fact that the airline is the national carrier and the reputation of the airline as perceived by friends. Price and frequent flyer programs have been identified as key factors in most studies investigating airline choice or loyalty (Espino et al., 2008; Hess et al., 2007; Nako, 1992; Suzuki, 2007).
- ❑ Drivers of behavioural airline loyalty are different for different market segments. Airlines therefore need to make use of methodologically valid segmentation approaches (Dolnicar, 2003) in developing and implementing customized measures aimed at increasing loyalty.
- ❑ Loyalty programs are strongly associated with behavioural loyalty for business travellers and for frequent travellers, but not for casual and leisure travellers. This finding is in line with previous studies into airline choice. Most previous studies identify a significant effect from frequent flyer programs (Espino et al., 2008; Hess et al., 2007; Nako, 1992; Suzuki, 2007). Hess et al.'s study also identified that frequent flyer programs mattered less to holiday makers. The findings relating to frequent flyer

programs are also supported by more general findings in the consumer behaviour literature on loyalty programs, namely that their “main role is retaining customers already showing loyalty to the company” (Gomez et al., 2006). These findings indicate that while being a member of the airline’s frequent flyer program is the reason for behaving loyally the more important causal relationship may be that of airline loyalty having led to signing up with the frequent flyer program. Conclusions about the direction of causality cannot be drawn based on the present study. It is likely that the effect of loyalty programs observed in this data, which is different for regular and less regular travellers, is what is referred to as “deal loyalty” by Rothschild and Gaidis (cited in Dowling and Uncles, 1997). Deal loyalty implies that loyalty is motivated by the type of incentive offered. For infrequent travellers membership in a frequent flyer program hardly leads to any benefits. For frequent flyers, however, the payoff is very attractive, leading to a range of privileges as well as free miles that can be redeemed. Based on our data, for members of the loyalty program of the airline, the nationality of the airline and price are the next two relevant criteria determining behavioural loyalty.

- ❑ Leisure travellers are strongly influenced by price.
- ❑ Factors of satisfaction have not emerged as drivers of behavioural loyalty. Some reputation factors have been identified as contributing, but only at later stages of the splitting process and for the travellers who were not members of any frequent flyer program. This appears to be in contradiction with the mainstream understanding of the relationship between satisfaction and loyalty, assuming that satisfaction has a positive effect on retention (Anderson and Sullivan, 1993). We can provide two possible

explanations for this discrepancy, but our data does not permit testing of these explanations: (1) the differences in dependent variables. Retention is often measured using stated intentions to repurchase (Anderson and Sullivan, 1993). We, however, use reports on past behaviour. It may be that stated intentions are more affected by wishful thinking regarding repurchasing with a provider that offered a highly satisfactory service, whereas past behavioural loyalty may be affected by other factors, as described in this article. Bolton, Kannan and Bramlett (2000, p. 96) provide some support for this explanation by stating the following: “there are numerous studies on repurchase intentions. However, these studies must be interpreted with caution because the predictive validity of intention measures varies depending on the product, the measurement scale, the time frame, and the nature of the respondents”. (2) It is possible that behavioural loyalty by frequent flyers is actually deal loyalty, which is motivated by high payoff rather than an emotional bond with an airline.

The following implications can be derived for airline managers: First of all, there clearly are factors that are significantly associated with higher passenger loyalty. It is therefore viable to increase passenger loyalty by managing those factors pro-actively. Secondly, these factors are not the same across the entire market, thus requiring different loyalty incentives for different segments of the market. For example, for business travellers one of the key avenues of loyalty management is a frequent flyer program. For leisure travellers price plays the biggest role currently. The lack of interest from leisure travellers in the frequent flyer programs may be due to the fact that frequent flyer privileges can generally only be achieved by people who also fly for business, thus making it an unattractive

proposition for leisure travellers. Novel ways of making loyalty programs more attractive for less regular flyers may have to be investigated to reduce the heavy dependency of leisure passenger loyalty on price. Finally, the focus on improving customers' satisfaction has not proven to have a major impact on loyalty. This is a key finding which, if replicated, leads to the conclusions that intense efforts to increase customer satisfaction may better be invested elsewhere, maybe in the development of attractive loyalty programs.

All findings need to be interpreted in the context of the study as it was conducted. For example, people were asked to complete the questionnaire on a flight with the airline under study. This could be the reason – and this would require further investigation using a different research design – for the fact that satisfaction does not discriminate much between people with high and low behavioural loyalty because presumably, if they did not have a base level of satisfaction with the airline under study they would not be sitting on that particular airplane when surveyed. This would imply a two stage process, similar to that suggested by Suzuki (2007), where satisfaction or general reputation of the airline form first order knock-out criteria. Alternatively, or additionally, it may be that satisfaction plays a role for attitudinal loyalty but not behavioural loyalty; this may be the case as there are inherent difficulties in defining a valid loyalty measure in this context because not all airlines are available at all times and for all destinations. So a traveller may wish to always fly with airline A (very high attitudinal loyalty), but airline A does not fly to any of the destinations the traveller needs to reach (very low behavioural loyalty). Future research using diary studies may be necessary to assess the extent to which the unavailability of the favourite airline distorts commonly used airline loyalty measures.

The study is also limited by the fact that the percentage of explained variance for all models is relatively low. This is due to the fact that airline loyalty is a very complex phenomenon and factors like availability of the flight to reach certain destinations obviously play a major role. We believe that in order to increase the percentage of explained variance it would be necessary to capture to a larger extent the situational factors driving the people's airline choice process. This may not be achievable through survey research and is likely to require a large scale qualitative study.

Furthermore, the validity of findings could be increased by using an actual behavioural measure, rather than a stated measure, of behavioural loyalty. This, however, would currently be impossible to achieve. It would require access to actual flight data for each individual. Such data could only partially be provided by airline alliances given that not all airlines are members of an alliance. Finally, given the importance of membership in a frequent flyer program for airline loyalty among business travellers, it will be of great interest to investigate in future how passengers can be attracted to join a frequent flyer program and how they can best be kept as members over an extended period of time.

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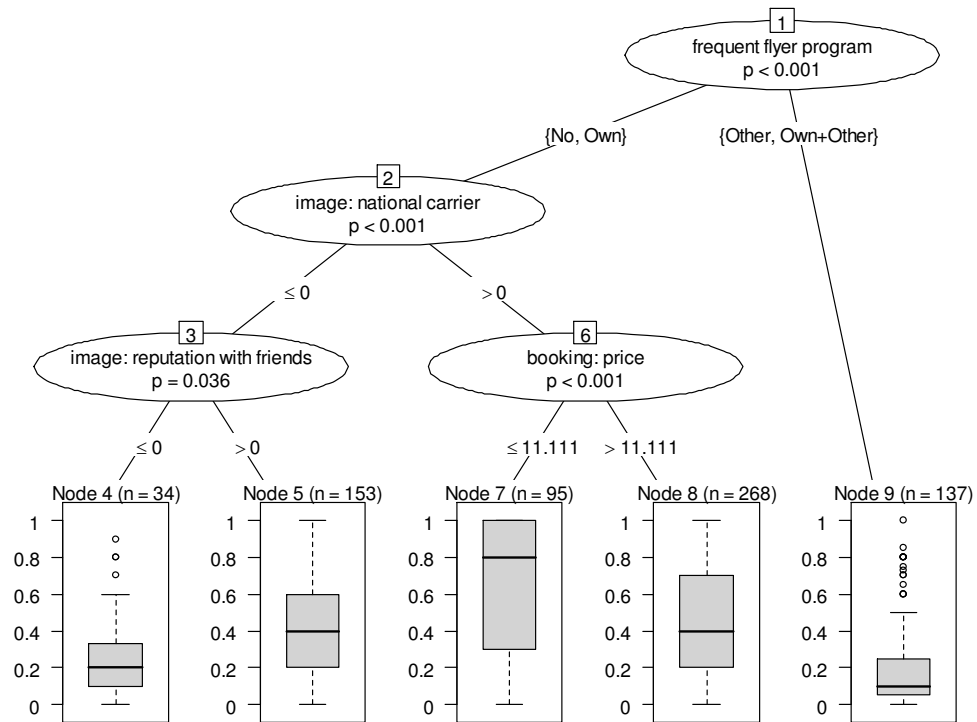
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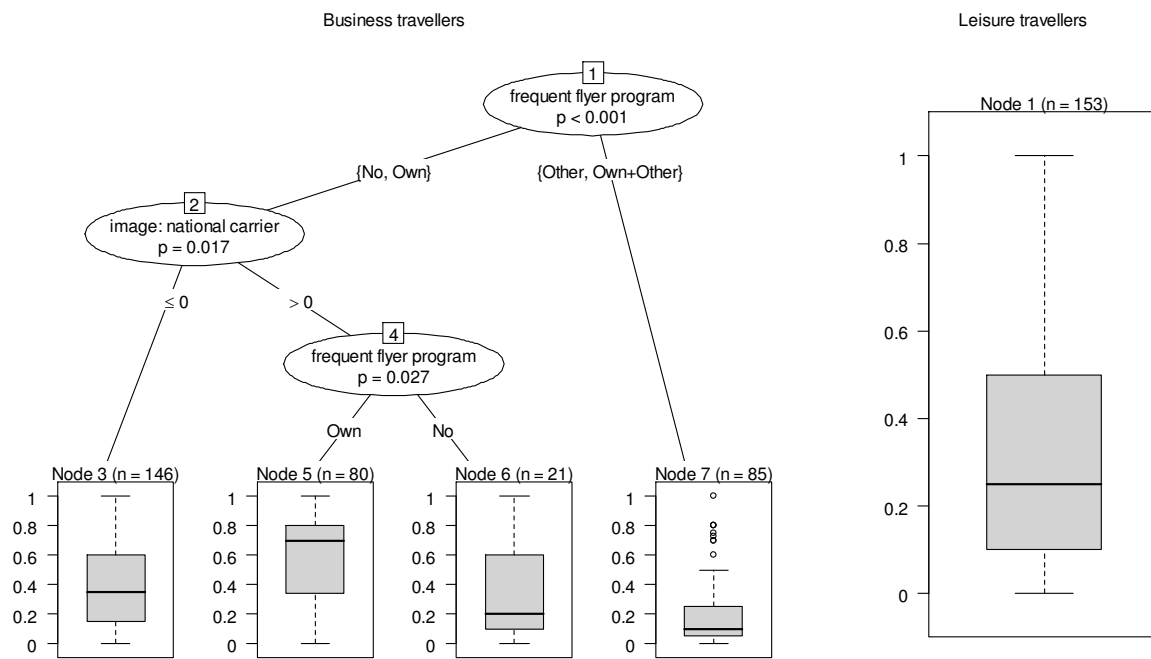
Figures

Figure 1: Recursive partitioning results explaining the proportion of flights with the airline
(entire market)



Percent variance explained: 16%.

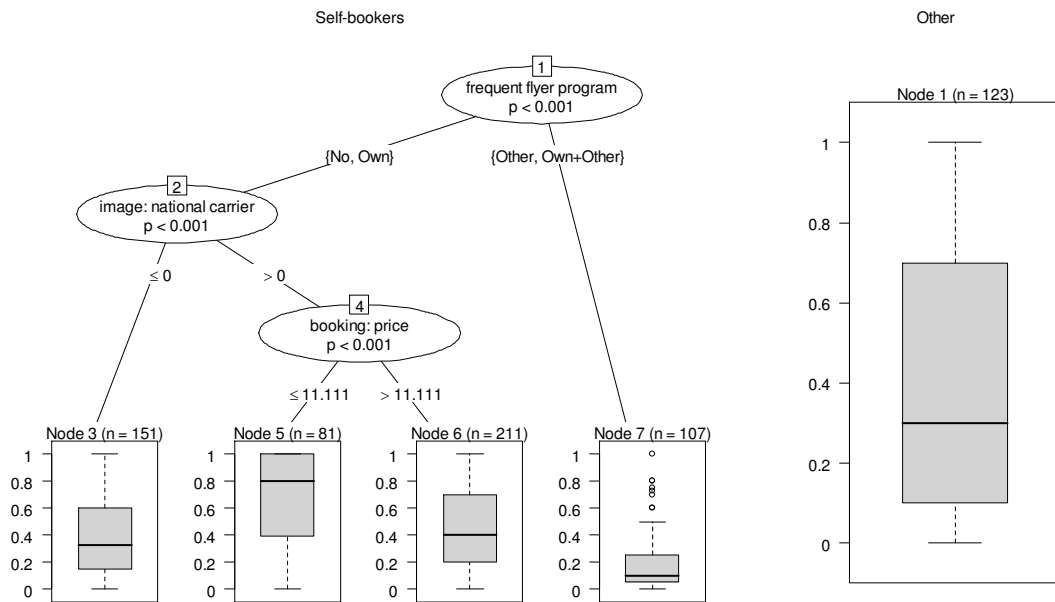
Figure 2: Recursive partitioning results explaining the proportion of flights with the airline
(business vs leisure)



Percent variance explained for Business travellers: 18%.

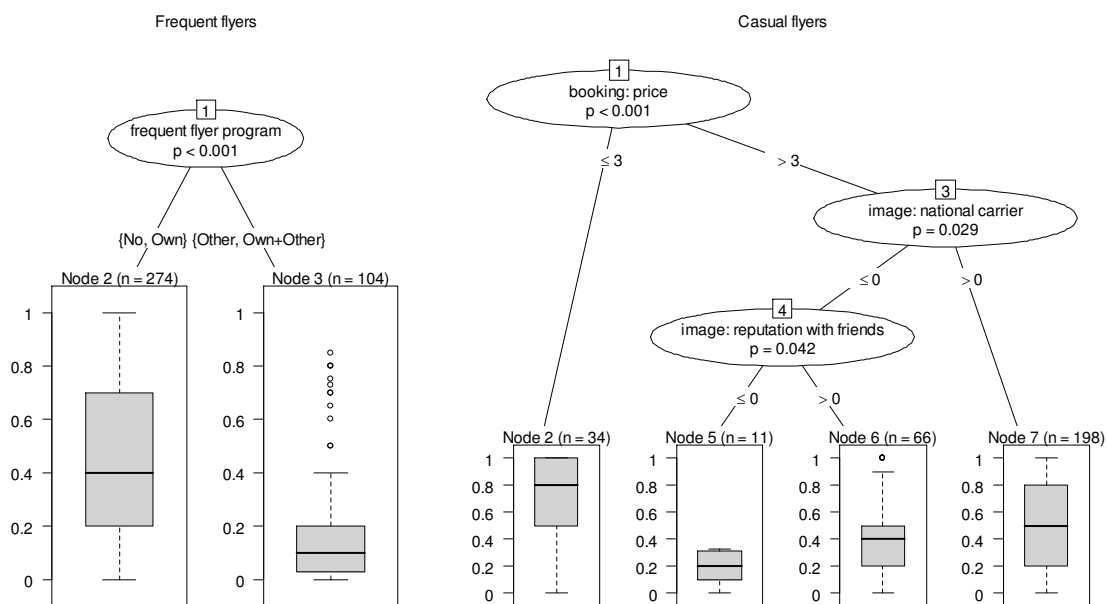
Figure 3: Recursive partitioning results explaining the proportion of flights with the airline

(booker)



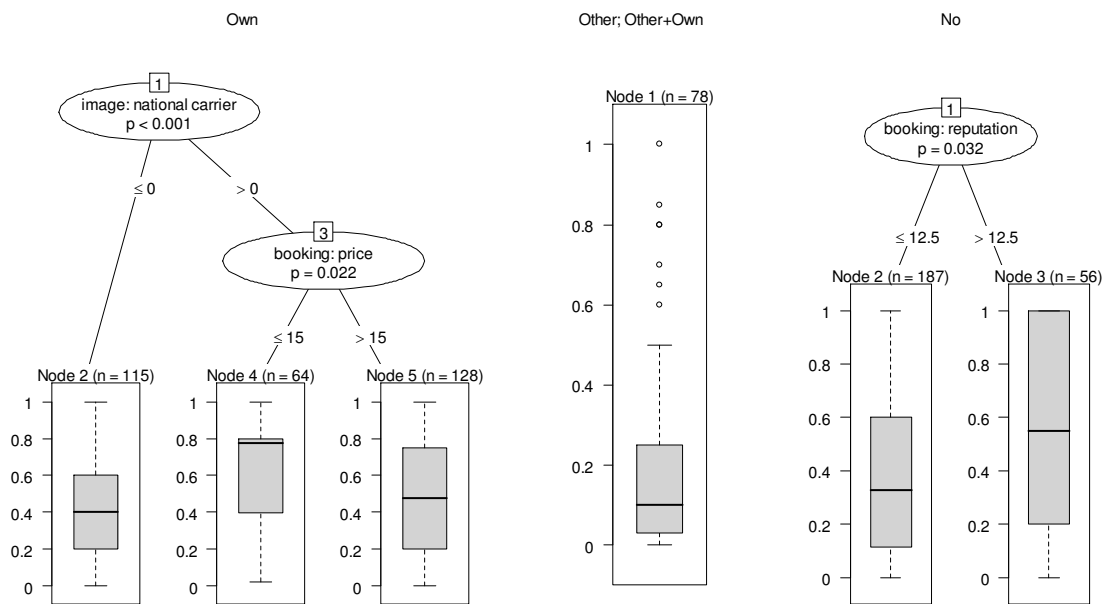
Percent variance explained for customers booking themselves: 19%.

Figure 4: Recursive partitioning results explaining the proportion of flights with the airline
(frequency of flying)



Percent variance explained for frequent flyers: 15%, for casual flyers: 11%

Figure 5: Recursive partitioning results explaining the proportion of flights with the airline
(frequent flyer program)



Percent variance explained for holders of only a frequent flyer membership of the air line under study

("Own"): 8%, for holders of no frequent flyer membership ("No"): 3%