20120725 - Prediction of Skytrax airline rankings, short formula (2e) - 2010

[Data] [<Normal page] [**PEREZGONZALEZ Jose D (2010).** *Prediction of Skytrax airline rankings, short formula (2e)*[3]. Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2012, pages 222-227.]

Prediction of airline rankings

Perezgonzalez and Gilbey *(2010*[2]*)* obtained a regression formula for predicting Skytrax's 2010 airline rankings from customer reviews. The research behind the study attempted to predict Skytrax Global Airline Ranking[4] from average ratings that passengers had given to those airlines, independently, on Skytrax's website. The regression formula was based on a single variable (the average 'Customer review scoring').

The short regression formula for predicting Skytrax's 2010 ranking was:

Predicted Skytrax Ranking = 1.675 + (0.291 * Customer review scoring)
(F = 87.302, $p < 0.01$; R = 0.688; R^2 = 0.473; Adj.R = 0.684; Adj.R^2 = 0.468)

Table 1 shows the actual ranking given by Skytrax, the predicted 'ranking' obtained from above formula, as well as the customer average rating used as predictor. Overall, 69% of the research airlines could be ranked in approximately the same hierarchy than the one provided by Skytrax. Furthermore, it may be possible to also rank correctly 68% of the remaining airlines not ranked by Skytrax (adj.R).

Although an accuracy of 68%-69% is probably too low for dependable predictions (after all, the ranking of 1/3 of the airlines will not be predicted well), these results suggest the possibility of using customer reviews as proxies for estimating the quality of those airlines not "officially" ranked by Skytrax.

Table 1. Predicted and actual scores				
Airline	**Customer**	**Customer (adj)**	**Predicted**	**Skytrax**
Asiana Airlines	9.00	4.60	4.29	5.00
Qatar Airways	8.80	4.52	4.24	5.00
Hainan Airlines	8.60	4.44	4.18	4.00
Bangkok Airways	8.50	4.40	4.15	4.00
Aegean Airlines	8.50	4.40	4.15	3.00
Kingfisher Airlines	8.40	4.36	4.12	5.00
Qantas Airways	8.40	4.36	4.12	4.00
Singapore Airlines	8.20	4.28	4.06	5.00
Southwest Airlines	8.20	4.28	4.06	3.00

Garuda Indonesia	8.10	4.24	4.03	4.00
Porter Airlines	8.00	4.20	4.00	4.00
Silk Air	8.00	4.20	4.00	4.00
Air New Zealand	7.70	4.08	3.92	4.00
ANA	7.60	4.04	3.89	4.00
Virgin Blue	7.60	4.04	3.89	4.00
CityJet	7.60	4.04	3.89	3.00
JetBlue Airways	7.50	4.00	3.86	4.00
TACA International	7.50	4.00	3.86	3.00
Thai Airways	7.30	3.92	3.80	4.00
Malaysia Airlines	7.20	3.88	3.77	5.00
Dragonair	7.20	3.88	3.77	4.00
Air Berlin	7.00	3.80	3.71	4.00
British Airways	6.90	3.76	3.68	4.00
China Airlines	6.90	3.76	3.68	4.00
Aer Lingus	6.90	3.76	3.68	3.00
Oman Air	6.90	3.76	3.68	3.00
Cathay Pacific	6.80	3.72	3.65	5.00
EVA Air	6.80	3.72	3.65	4.00
Austrian Airlines	6.70	3.68	3.62	4.00
LAN Airlines	6.70	3.68	3.62	3.00
Lufthansa	6.60	3.64	3.60	4.00
Air France	6.50	3.60	3.57	4.00
Japan Airlines	6.50	3.60	3.57	4.00
South African Airways	6.50	3.60	3.57	4.00
Swiss Int'l Air Lines	6.50	3.60	3.57	4.00
Alaska Airlines	6.50	3.60	3.57	3.00
Avianca	6.50	3.60	3.57	3.00
Thomson Airways	6.50	3.60	3.57	3.00
Philipines Airlines	6.40	3.56	3.54	3.00
bmi British Midland	6.30	3.52	3.51	3.00
Turkish Airlines	6.20	3.48	3.48	4.00
Korean Air	6.10	3.44	3.45	4.00
Royal Brunei Airlines	6.10	3.44	3.45	3.00
Air Asia	6.00	3.40	3.42	3.00
Air Asia X	6.00	3.40	3.42	3.00
Malev Hungarian Airlines	6.00	3.40	3.42	3.00
Frontier Airlines	5.90	3.36	3.39	3.00
Onur Air	5.80	3.32	3.36	2.00

Finnair	5.70	3.28	3.33	4.00
Air Canada	5.70	3.28	3.33	3.00
Etihad Airways	5.60	3.24	3.30	4.00
Brussels Airlines	5.50	3.20	3.28	3.00
Icelandair	5.50	3.20	3.28	3.00
LOT Polish Airlines	5.50	3.20	3.28	3.00
Vietnam Airlines	5.50	3.20	3.28	3.00
KLM	5.40	3.16	3.25	3.00
Jet Airways	5.20	3.08	3.19	3.00
Royal Jordanian Airlines	5.20	3.08	3.19	3.00
SriLankan Airlines	5.20	3.08	3.19	3.00
Virgin Atlantic	5.10	3.04	3.16	4.00
Continental Airlines	5.10	3.04	3.16	3.00
CSA Czech Airlines	5.10	3.04	3.16	3.00
SAS Scandinavian Airlines	5.10	3.04	3.16	3.00
TAP Air Portugal	5.00	3.00	3.13	3.00
Aeroflot	4.90	2.96	3.10	3.00
Pegasus Airlines	4.80	2.92	3.07	2.00
Emirates Airlines	4.70	2.88	3.04	4.00
El Al Israel Airlines	4.70	2.88	3.04	3.00
Air India	4.60	2.84	3.01	3.00
China Southern Airlines	4.60	2.84	3.01	3.00
Meridiana	4.60	2.84	3.01	3.00
United Airlines	4.60	2.84	3.01	3.00
Air China	4.50	2.80	2.98	3.00
Air Mauritius	4.50	2.80	2.98	3.00
Spanair	4.50	2.80	2.98	3.00
TAM Airlines	4.50	2.80	2.98	3.00
Egyptair	4.40	2.76	2.96	3.00
Delta Airlines	4.10	2.64	2.87	3.00
Tiger Airways	4.10	2.64	2.87	3.00
Ethiopian Airlines	4.00	2.60	2.84	3.00
Gulf Air	4.00	2.60	2.84	3.00
Iberia	4.00	2.60	2.84	3.00
Kuwait Airways	4.00	2.60	2.84	3.00
Alitalia	3.90	2.56	2.81	3.00
flyBe	3.90	2.56	2.81	3.00
Saudi Arabian Airlines	3.90	2.56	2.81	3.00
Spirit Airlines	3.90	2.56	2.81	3.00

American Airlines	3.80	2.52	2.78	3.00
China Eastern Airlines	3.80	2.52	2.78	3.00
Kenya Airways	3.80	2.52	2.78	3.00
Aerolineas Argentinas	3.70	2.48	2.75	3.00
Air Europa	3.60	2.44	2.72	3.00
Cubana Airlines	3.60	2.44	2.72	2.00
Aerosvit Airlines	3.50	2.40	2.69	2.00
US Airways	3.40	2.36	2.66	3.00
Air Seychelles	3.20	2.28	2.61	3.00
EasyJet	3.10	2.24	2.58	3.00
Ryanair	2.00	1.80	2.26	2.00
Royal Air Maroc	1.90	1.76	2.23	2.00

(The 'Customer (adj)' column shows customer scores on a 1-5 scale in order to facilitate comparisons)

Methods

Research approach

Exploratory study seeking to predict Skytrax's 2010 airline ranking, from independent customer reviews. This particular article deals with a 'short' regression formula which uses a readily available average (thus, not needing further data computation) as single predictor.

Population

The 99 airlines which obtained a Skytrax ranking in 2010, had received a minimum of 10 customer reviews during the year and had a 'Customer review scoring'.

Variables

Criterion (dependent) variable: Skytrax Global Airline Ranking[4].

- 'Official' rankings are given by Skytrax after auditing airlines that pertain to the Star ranking program. Because of the need for airlines to join the program, the auditing involved, and other variables, Skytrax rankings are applied to a rather limited number of, possibly, self-selected airlines (ie, those that can afford the costs, value Skytrax's ranking system, and expect a good ranking).
- This variable is measured on an ordinal scale ranging from 1 star (very poor quality performance) to 5 stars (highest quality standards).

Predictor (independent) variable: average 'Customer review scoring'.

- The average customer review scoring is calculated by Skytrax, possibly based on averaging customer ratings given by passengers when independently reviewing those airlines on Skytrax's website on an ad-hoc basis. This variable may, in principle, be of low reliability as a source of information, as passengers are self-selected (ie, reviews are given by those passengers who know about the website and are motivated to provide a review), it is not known whether Skytrax 'filters' reviews, and the average rating seems to cover all reviews, not just those of discrete years. Notwithstanding this, Skytrax assures on its website that customer reviews are not used for and are independent of 'star rankings'. In any case, the variable did not show any non-normal tendency towards negative or positive values, extreme responses or other statistical biases.

- This variable is measured on an interval scale ranging from 0 to 10 points, a higher value representing a greater level of customer overall satisfaction with the airline over the years (thus, not limited to 2010).

Procedure

The corresponding data was mined from information readily available online on Skytrax's website at the end of 2010.

Data analysis

The data matrix was assessed as per normality and linearity. Results were adequate for continuing with parametric data analyses.

The main analysis carried out was a regression analysis, with its corresponding statistical significance assessed following (Fisher-Perez's approach) with threshold at sig ≤ 0.05 (ie, results with 5% or more extreme probabilities), 2-tailed.

Generalization potential

Airlines with independent customer reviews on Skytrax's website but not "officially" ranked by it. It is estimated that 68% of those airlines (adj.R) could be ranked correctly (thus, implying that the remaining 32% of airlines would be erroneously ranked).

References

1. **PEREZGONZALEZ Jose D (2010).** *Prediction of Skytrax airline rankings, short formula.* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 154-159.
2. **PEREZGONZALEZ Jose D & Andrew GILBEY (2010).** *Predicting Skytrax's Official Airline Star ratings from customer reviews.* Aviation Education and Research Proceedings (ISSN 1176-0729), 2011, pages 48-50.
+++ **Notes** +++

3. This second edition updates the previous edition[1] by re-editing the table and making it more reader-friendly.
4. Previously known as Skytrax's Official World Airline Star Ranking.

Want to know more?

Skytrax's website
    Skytrax offers the latest rankings for airports and airlines, as well as independent reviews of those by passengers.
Wiki of Science - Prediction of Skytrax 2011 airline rankings
    This Wiki of Science page describes a similar research done in 2011.
Wiki of Science - Prediction of Skytrax airport rankings
    Wiki of Science offers access to both 2010's and 2011's predictions for airports.

Outdated versions

PEREZGONZALEZ Jose D (2010). *Prediction of Skytrax airline rankings, short formula.* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 154-159.

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page revision: 4, last edited: 24 Jul 2012, 14:31 GMT+12 (10 seconds ago)