20120721 - Prediction of Skytrax airport rankings, short formula (2e) - 2010

[Data] [<Normal page] [**PEREZGONZALEZ Jose D (2010).** *Prediction of Skytrax airport rankings, short formula (2e)*[4]. Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2012, pages 200-203.]

Prediction of airport rankings

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Table of Contents

Perezgonzalez & Gilbey *(2010a*[2]*)* obtained a regression formula for predicting Skytrax's 2010 airport rankings from customer reviews. The research behind the study attempted to predict Skytrax's Official World Airport Star rankings from average ratings that passengers had given to those airports, independently, on Skytrax's website. The regression formula was based on a single variable (the average 'Customer review scoring'), which is a simpler formula to calculate but also less contemporary than that described in Perezgonzalez & Gilbey *(2010b*[3]*)*.

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

Predicted Skytrax Ranking = 0.686 + (0.417 * Customer review scoring)
($F = 13.140$, $p < 0.01$; $R = 0.672$; $R^2 = 0.451$; Adj.$R = 0.646$; Adj.$R^2 = 0.417$)

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, 67% of the research airports could be ranked in approximately the same hierarchy than the one provided by Skytrax. Furthermore, it may be possible to also rank correctly 65% of the remaining airports not ranked by Skytrax (adj.R).

Although an accuracy of 65%-67% is probably too low for dependable predictions (after all, the ranking of 33%-35% of airports will not be predicted well), these results suggest the possibility of using customer reviews as proxies for estimating the quality of those airports not "officially" ranked by Skytrax.

Table 1. Predicted and actual scores

Airport	Customer	Customer (adj)	Predicted	Skytrax
Seoul Incheon	9.20	4.68	4.52	5.00
Singapore Changi	8.30	4.32	4.15	5.00
Hong Kong	8.70	4.48	4.31	5.00
Zurich	8.10	4.24	4.06	4.00
Kuala Lumpur	6.80	3.72	3.52	4.00
Amsterdam	7.10	3.84	3.65	4.00
Beijing	7.70	4.08	3.90	4.00
Frankfurt	6.20	3.48	3.27	4.00
London Heathrow	7.70	4.08	3.90	3.00

Bangkok Suvarnabhumi	7.30	3.92	3.73	3.00
Johannesburg	7.20	3.88	3.69	3.00
Doha	7.50	4.00	3.81	3.00
Abu Dhabi	5.70	3.28	3.06	3.00
Sydney	5.60	3.24	3.02	3.00
Madrid Barajas	6.70	3.68	3.48	3.00
Bahrain	7.00	3.80	3.61	3.00
Dubai	5.00	3.00	2.77	3.00
Kuwait	4.50	2.80	2.56	3.00
(The 'Customer (adj)' column shows customer scores on a 1-5 scale, thus facilitating comparisons with the other variables)				

Methods

Research approach

Exploratory study seeking to predict Skytrax's 2010 airport 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 (for an alternative formula see Perezgonzalez & Gilbey, *2010b*[3]).

Population

The 18 airports which obtained a Skytrax ranking in 2010 and customer reviews.

Variables

Criterion (dependent) variable: Skytrax's Official World Airport Star ranking.

- 'Official' rankings are given by Skytrax after auditing airports that pertain to the Star ranking program. Because of the need for airports to join the program, the auditing involved, and other variables, Skytrax rankings are applied to a rather limited number of, possibly, self-selected airports (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 airports 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 that 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 airport 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

Airports with independent customer reviews in Skytrax's website but not "officially" ranked by it. It is estimated that 65% of those airports (adj.R) could be ranked correctly (thus, implying that the remaining 35% of airports would be erroneously ranked).

References

1. **PEREZGONZALEZ Jose D (2010).** *Prediction of Skytrax airport rankings, short formula.* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 133-135.
2. **PEREZGONZALEZ Jose D & Andrew GILBEY (2010a).** *A convenient regression formula for predicting Skytrax's Official World Airport Star ratings.* Aviation Education and Research Proceedings (ISSN 1176-0729), 2011, pages 45-47.
3. **PEREZGONZALEZ Jose D & Andrew GILBEY (2010b).** *Predicting Skytrax's airport rankings from customer reviews.* Journal of Airport Management (ISSN 1750-1938), 2011, volume 5, number 4, pages 335-339.

+++ **Notes** +++

4. This second edition updates the original edition[1] by re-editing table 1 and making it more reader-friendly).

Want to know more?

Perezgonzalez et al's (2010) article
: This article describes an alternative regression formula which predicts Skytrax's airport ranking using three 2010-based variables as predictors. The article is, PEREZGONZALEZ Jose D & Andrew GILBEY (2010). *Predicting Skytrax's airport rankings from customer reviews.* Journal of Airport Management (ISSN 1750-1938), 2011, volume 5, number 4, pages 335-339.

Skytrax's website
: Skytrax offers the latest rankings for airports and airlines, as well as independent reviews of those by passengers.

Wiki of Science - Skytrax's 2011 airport rankings
: This Wiki of Science page offers information about a similar study done in 2011.

Outdated versions

PEREZGONZALEZ Jose D (2010). *Prediction of Skytrax airport rankings, short formula.* Journal of Knowledge Advancement & Integration (ISSN 1177-4576), 2011, pages 133-135.

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