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# Trend Analysis and Operational Performance Indicators in the U.S. Airline Industry

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Trend Analysis and Operational Performance Indicators  
In the U.S. Airline Industry

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### Abstract

Operational performance of the U.S. airline industry has been monitored for the past 25 years by a unique quantitative model of key metrics. As the nation's most comprehensive study of airline performance and quality in existence, the National Airline Quality Rating (<http://airlinequalityrating.com>) sets the industry standard, providing consumers and industry watchers a means to compare performance quality among airlines using objective performance-based data. No other airline study in the country is based on performance measures. Criteria included in the Airline Quality Rating (AQR) report are screened to meet two basic elements: (1) they must be readily obtainable from published data sources for each airline, and (2) they must be important to consumers regarding airline quality. The resulting criteria include areas such as baggage handling, customer complaints, denied boardings and on-time arrivals. This research utilizes the application of a trend analysis methodology resulting in both industry-wide and airline specific benchmarks. Specific and unique time periods can be accessed for the comprehensive AQR database which has been maintained on each indicator, on a monthly basis, for more than two decades.

## Trend Analysis and Operational Performance Indicators

### In the U.S. Airline Industry

#### Prelude to Measuring Airline Performance

Since 1991, Airline Quality Rating reports have successfully contributed insightful measurements to the air transportation industry, and their influence with the aviation business has continuously grown (Goodman, 1992; Mann, 2000). To date, the AQR reports have been widely recognized and are available for airlines to promote service quality and attract potential passengers (Spencer, 1999). Statistically speaking, most air carriers are seeking to better control their service quality by quantitative methods (Bowen, Headley, & Luedtke, 1992), and the results of the annual AQR are convenient to the airline industry to better approach their business goals. Through further benchmarking airline service quality, air carriers can use benchmarked findings to reveal the existing weaknesses of their past and current services. In so doing, airlines are able to compare their service with business rivals and, therefore, wisely prepare to bolster future performance. The benchmarked findings are also useful to the flying public for reviewing airlines who could not satisfy passengers' needs and interests.

The AQR is a methodology of combining multiple elements important to consumers when judging the quality of airline services (Goodman, 1992; Bowen, Headley, & Lutte, 1993; Mann, 2000). The calculating formula takes multiple weighted objective factors into consideration in arriving at a single rating for an airline (Bowen, Headley, & Luedtke, 1992).

Table 1

*Airline Quality Rating Criteria, Weight, and Impact*

	Criteria	Weight	(+/-)	Impact
OT	On-Time	8.63	+	Positive
DB	Denied Boardings	8.03	-	Negative
MB	Mishandled Baggage	7.92	-	Negative
CC	Customer Complaints	7.17	-	Negative

The formula for calculating the AQR score is posed as the following:

$$\text{AQR} = \frac{(+8.63 * \text{OT}) - (8.03 * \text{DB}) - (7.92 * \text{MB}) - (7.17 * \text{CC})}{(8.63 + 8.03 + 7.92 + 7.17)}$$

When raw data of all selected factors (e.g., On-Time, Denied Boardings, Mishandled Baggage, and Customer Complaints), weights (e.g., 8.63 for OT), and impacts (e.g., “+” for OT and “-” for DB, MB, and CC) are combined for calculation, it yields a single-interval scaled value for an airline’s level of quality. The value of the AQR is comparable across airlines and time periods as well (Headley & Bowen, 1997). Before the AQR, there was effectively no consistent method for monitoring the quality of airlines on a timely, objective, and comparable basis (Headley & Bowen, 1997). With the introduction of the AQR, a multi-factor, weighted-average approach became available for the public regarding “how well airlines meet consumer concerns” (Spencer, 1999, p. 49).

### **Benchmarking Techniques and Comparative Analysis**

It is crucial for commercial industry to make progress, meet customer requirements, become more competitive, and generate profits. The benchmarking technique is one of the prevailing aids for achieving desired business goals (Camp, 1989; Patterson, 1996). For example, in order to improve productivity and enhance service quality, many airlines (such as American Airlines and Southwest Airlines) conducted benchmarking analysis with success (Camp, 1989; Fitz-enz, 1993; Patterson, 1996; Tucker, 1996). Southwest Airlines used benchmarking to accelerate both its aircraft refueling process and the turnaround time of its ground luggage cars; this helped to shorten the carrier's ground operating time and improve its on-time performance (Fitz-enz, 1993). Conversely, a lack of benchmarking was among a laundry list of problems plaguing Trans World Airlines (TWA). Focusing on price wars instead of its customer service, financial, or management performance, TWA had been operating in the red for five years without the company making any increase in market share in late 1980s (Fitz-enz, 1993). An independent benchmarking evaluation revealed that customer satisfaction in TWA's service had declined dramatically during that period, which led to a loss of customers as well as skilled employees between 1988 and 1991 and to its bankruptcy in 1992 (Fitz-enz, 1993). TWA's case highlights the importance of accurately targeting and benchmarking business performance.

Planning operational procedures plays an important role in benchmarking methodology (Camp, 1989). Many researchers provided various sets of benchmarking procedures based on their unique disciplines and research purposes. Remarks contributed by quantitative researchers like Camp, Tucker and Patterson had synthesized a workable set of benchmarking processes used in this paper, as outlined in the following steps: (a) calculate AQR scores from 2000 to 2003 reports and display general findings, (b) decide specific elements to be benchmarked, (c) identify

benchmarking criteria, (d) conduct data analysis and compare results, and (e) find the problems (Fitz-enz, 1993; Tucker, 1996; Patterson, 1996; Neufville & Guzmán, 1998). The benchmarking technique is useful to target the performance difference among units of analysis. Consequently, an enhancement program tailored to bridge a specific performance gap can thus be framed (Keehley, Longmire, Medlin, & MacBride, 1997). Airline operators should proactively and continuously search for the best practices for promoting customer service through the usage of benchmarking skills (Bowen, Headley, & Kane, 1998).

To this end, the criteria of benchmarking should be defined beforehand and then compared with the variance among performances. In this project, the benchmarking criterion was defined as the annual industry average performance followed by a cross-section and horizontal analysis. Researchers can easily observe the difference between airlines, as well as the deviation compared to the industry average, thus enabling a detailed analysis. By following the benchmarked analysis of annual AQR scores, readers could also identify specific airlines that either performed well or needed to reform their poor service practices.

Benchmarking has evolved dramatically over the past few years. Also known as comparative analysis, benchmarking, in its external form, entails looking to other firms in the industry or other industries to identify strategies and best practices and implement them onto their own company. Benchmarking once was about comparing results with other competing firms, but it has become more about developing best practices and focusing on what *causes* better results. It is important to look at *why* the company is outperforming others. Practicing benchmarking must go beyond beating the standard by improving the firm or organization from the roots through best practices to improve the overall performance (R. Sobotta, personal communication, 2014).

### **Previous AQR Benchmarking and Trend Analysis**

Bowen, Headley, and Kane (1998) first applied benchmarking techniques in evaluating annual AQR reports between 1991 and 1997. They stated that benchmarking airline performance was a functional way to monitor “overall industry performance and the resulting effects of situational environment changes” for regulatory officials, financial investors, and interest groups (p. 9). By benchmarking service, airlines can locate specific service indicators that need to be enhanced. Although benchmarking airline quality does not provide solutions for the airlines, benchmarked airline service can identify critical issues for airline operators, who can then seek remedies for these deficiencies (Bowen, Headley, & Kane, 1998). Bowen, Headley, and Lu (2003) conducted another review regarding major airlines’ AQR scores between 1998 and 2001. They further suggested that airlines should apply benchmarking techniques to continuously oversee their operational performance and promptly resolve abnormalities by providing corrective actions. Over the years, the AQR has provided objective measurements in airline service quality for the public, government, and airline industry. In the meantime, the project of benchmarking the AQR has helped to promote airline quality (Bowen, Headley, & Kane, 1998; Bowen, Headley & Lu, 2003).

### **Plan for Future Research**

According to Chen (2008), there is a distinct connection in service quality of airline performance and the perceptions of the traveling public in value and satisfaction. This suggests that in comparative analysis of airline performance over time, a connection to monitor consumer satisfaction should be included in a model of overall changes in quality. (Chen, 2008).



This research prospectus will add to previous benchmarking works following the post-September 11<sup>th</sup> recovery period, 2004-2014. An in-depth analysis should be conducted to locate the causes behind the overall performance. Other correlated facts uncovered by the benchmarking analysis should also interest passengers, airlines, and to some extent, the government authorities. The AQR research team invites scholars interested in accessing the 23 year database open access for comparative and correlational research.

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