
International Airline Quality Measurement

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ABSTRACT

Historically, airline quality has been measured through the use of surveys that ask the consumers to make a comparison between expectations and outcomes. This method was informative but very cumbersome in a rapidly changing environment. This paper outlines the efforts of the consumer researchers to develop a weighted, consumer oriented rating scale for the U.S.A. domestic airline industry as an alternative to survey-based rating scales. The Airline Quality Rating (AQR) approach has been successfully employed in the United States by the major airlines and by the general public. Development considerations are offered for facilitating the adaptation of the AQR's weighted average approach to the world airline industry.

INTRODUCTION

Service quality perceptions are often defined as the difference between what a consumer expects and what they actually perceive as outcome. It is difficult to measure service quality in a consistent and timely way. Being able to assess quality using several relevant factors, having this assessment of quality be comparable across several competitors, and having this quality rating available on a timely basis would be the best of all worlds. Historically differences between expectations and outcomes have been assessed using a survey based approach that asks the consumer to make a comparison between expectations and outcomes at some time during or after an encounter with a service. The SERVQUAL scale developed by Parasuraman, Zeithaml and Berry (1988) incorporates a measurement of consumer expectations before a service encounter with a measurement of that same consumer's perception of outcome after a service encounter. This specific matched response approach, using before and after experience measurements, offers a very rich glimpse into consumer attitudes and advances our thinking about service quality measurement. It is, how-

ever, very cumbersome to accomplish and often does not lend itself to the consumption situation at hand.

The bottom line is that with all of our efforts to measure service quality, we have progressed little beyond a survey of opinion approach. There is an alternative that has not been used frequently, but has distinct potential in certain situations: a weighted average. Since the world presents itself as a multivariate problem, we should accommodate this in our assessment efforts where possible. Various factors that a consumer might consider will inevitably have differing levels of importance for each consumer in any final judgement of quality. This suggests a multi-factor approach that must allow for differing importance (weights) for various factors. If constructed with consideration of comparability issues, a weighted average of multiple factors can produce a numerical rating that is comparable across competitors in an industry and across time. In order to achieve these two elusive aspects, however, conditions must be right. Similar data must be available for all those being assessed. Weights for each individual factor must be established and the nature of their impact whether positive or negative must be agreed upon.

The remainder of this paper outlines the efforts of the consumer researchers to develop a weighted, consumer oriented rating scale for the U.S.A. domestic airline industry as an alternative to survey-based rating scales. Development considerations are offered for facilitating the adaptation of the weighted average approach to the world airline industry.

THE NATURE OF AIRLINE SERVICE QUALITY

There are many possible aspects that could influence the airline consumer's perception of quality at different times in the consumption process. Generally, an airline passenger is concerned with two basic aspects of the airline service: 1) schedule and 2) price. There are other secondary, but important, aspects that a consumer may consider in the ultimate choice of an airline. The basic factors can be used to explain a large majority of consumer use of airline services. At the same time, once the basic concerns are met, the larger, more complex set of concerns begin to dominate the consumer's perception regarding quality of and satisfaction with a particular service experience and ultimately, the choice of a particular airline. Such things as safety, comfort of the seats, in-flight amenities such as food and beverages, attitude of the ground and flight crew, financial stability of the airline, on-time performance of the flights, assurance that bags arrive with the passengers, crowded conditions of the flight, being bumped from the flight, and frequent flyer programs are important to consumers. Problems arise in a consumer's ability to make meaningful sense from the information available regarding these multiple and less obvious factors. Fortunately, the consumer of airline services in the U.S.A. has information available, via the U.S. Department of Transportation monthly Air Travel Consumer Report, regarding service performance on many of these factors for most U.S.A. airlines. Unfortu-

nately, the average consumer is most likely unaware of, or uninterested in this detail of performance and it goes unused in consumer decision making and quality judgements.

All air carriers recognize that customer satisfaction and the perception of quality is important to the consumer that has a choice of air carriers in any market. With multiple carriers providing the same basic service (transportation from point A to point B) the perception of quality held by a consumer has become an important competitive point. To monitor this rather fluid consumer opinion, quality assessment efforts are made periodically by individual airlines and by other consumer interest groups. Generally, these survey based efforts concern themselves with qualitative factors such as comfort, pleasurable, taste of food, and employee attitude. These are certainly important areas of consumer satisfaction. Subjective opinions are assessed by direct inquiry of the consumer via survey processes, and represent individual and group sample expressions of consumer perceptions regarding the outcome of a service encounter. These are the traditional types of opinion gathering that have proven to be very useful to the airline industry. Elaborate surveying efforts necessary to monitor this type of consumer opinion are cumbersome, but none the less, important. Most of the major airlines operating in the world today already do this type of quality assessment and use the results to effectively manage the quality of service they offer the consumer. This information is most often proprietary and not available to the public or the broader industry for their use in making better choices regarding airline quality.

While information gained by proprietary and industry assessment efforts is invaluable, the predominantly survey-based nature of the efforts causes some concerns as to timeliness and reliability of the results. Survey based opinion gathering as a technique requires accurate questions, unbiased sampling technique, and sizeable amounts of time and money resources to accomplish. In addition, the sheer size of the surveying efforts preclude them from being accomplished on anything but a lengthy repeat-time schedule. Something is needed that allows a glimpse of quality on a regular and timely basis, without sacrificing reliability and validity. The weighted average offers this by combining comparable data with a recognized method for comparing data across industry competitors and across time.

AN EXAMPLE: THE AIRLINE QUALITY RATING (AQR)

Often, an innovative approach is the result of combining basic ideas and existing raw materials with a specific purpose in mind. This is exactly the case with the Airline Quality Rating (AQR). The objective in developing the AQR was to better organize readily available data for the consumer and offer it in a more useful, understandable, and objective form. Developmental procedures involved identifying a substantial list of potential quality factors through extensive literature search; discussions with experts from airline associations, gov-

ernment agencies and U.S.A.-based major airlines; and using a variety of other expert sources. These efforts were aimed at discovering relevant, quantifiable, reliable factors of importance to consumers commonly used in rating the quality of airline service. Factors considered for inclusion had to be quantifiable, to better achieve an objective approach; to be regularly available, to achieve a timely result; and to be commonly available for all airlines, to insure maximum compatibility. In developing the AQR, only the major airlines operating in the U.S.A. were used. A major airline, as defined by the U.S. Department of Transportation, is an airline whose operating revenues for a twelve-month period are \$1 billion or more.

The weighted average approach of the AQR allows level ground comparison of quality for the major domestic airlines operating in the U.S.A. The AQR is not consumer opinion based in a traditional sense, but rather it includes distinct performance characteristics that are specifically reflective of the consumers' points of view. The Airline Quality Rating approach focuses on quantitative factors rather than qualitative factors in order to provide a more objective result in assessing service quality levels across all major domestic airlines. The use of quantifiable, readily available data provides an objective starting point for monitoring the quality of service an individual airline might be providing and allows it to be directly compared with other competitors.

The AQR scale is a weighted average of 19 factors that have relevance to consumers when judging the quality of airline services (see Table 1). The factors represent a select group of concerns that were identified through a combination of research and opinion polling. Originally, over 80 factors were identified as potentially relevant for the AQR (Bowen, Headley, & Luedtke, 1991). This initial list was pared down using two criteria: 1) a factor had to be readily obtainable from published data for all airlines being rated; and 2) a factor had to have relevance to consumer concerns regarding quality. Methods used to achieve a reduction in the number of factors included record searches to determine the availability of the data, discussions with experts in the airline industry regarding relevance to consumers, and expert judgement of the research team. In arriving at the final 19 items, a specific opinion survey was made to a group of 65 experts in the field. These experts included representatives of most major airlines, air travel experts, FAA representatives, academic researchers, airline manufacturing and support firms, and individual consumers. The result of this inquiry allowed a final list of critical factors to be identified. During the gathering of opinion from this diverse group, each expert was asked to rate the importance that each individual factor might have to a consumer of airline services using a scale of 0 (no importance) to 10 (great importance). As a result of these opinions and ratings, some factors were excluded from further consideration. The average importance ratings resulting from this process were used as the weights for the various factors in the AQR. Due to the metric nature of the rating scale, the reliability (Cronbach's Alpha) of the scale was found to be 0.87 for the sample of 65 experts surveyed. This suggests that the AQR is reliable as an initial measure-

Table 1
Airline Quality Rating
Factors, Weights, and Impact

<i>Factor</i>	<i>Weight</i>	<i>Impact</i>
1. Average Age of Fleet	5.85	-
2. Number of Aircraft	4.54	+
3. On-Time	8.63	+
4. Load Factor	6.98	-
5. Pilot Deviations	8.03	-
6. Number of Accidents	8.38	-
7. Frequent Flier Awards	7.35	-
8. Flight Problems*	8.05	-
9. Oversales*	8.03	-
10. Mishandled Baggage*	7.92	-
11. Fares*	7.60	-
12. Customer Service*	7.20	-
13. Refunds*	7.32	-
14. Ticketing/Boarding*	7.08	-
15. Advertising*	6.82	-
16. Credit*	5.94	-
17. Other*	7.34	-
18. Financial Stability	6.52	+
19. Average Seat-Mile Cost	4.49	-

*Data for these factors is drawn from consumer complaints registered with the U.S.A. Department of Transportation and are published monthly in the Air Travel Consumer Report.

ment scale (Headley, Bowen, Lutte 1993). The basic weighted average formula for calculating the Airline Quality Rating is:

$$AQR = \frac{w1F1 + w2F2 - w3F3 + \dots w19F19}{w1 + w2 + w3 + \dots w19}$$

Each factor (F) has a weight (w), ranging from 0 (no importance) to 10 (great importance), that reflects the importance of that factor in the overall AQR. Also, each weight and factor has an associated positive or negative impact in the formula. For instance, the factor includes on-time performance as a positive impact because it is reported in terms of on-time success, suggesting that a higher number is favorable to consumers. The weight for this factor is high (8.63) due to the importance most consumers place on the on-time aspect of airline service. Conversely, the factor that includes number of accidents has a negative impact because it is reported in terms of accidents per hours flown suggesting that a higher number is unfavorable to consumers. The weight for this factor is also high (8.38) since safety is important to all consumers. It is important to remember that weight and impact are independent of each other. Weight reflects importance of the factor in consumer decision-making, while impact reflects whether the factor has a positive or negative influence on the consumer's rating of airline

quality. Taken as a whole, the AQR is reflective of critical quality aspects that a consumer of airline services might consider and the impact and weight attached to each factor reflects consumer attitudes.

When all of the factor values and their associated weights are combined for an airline, a single value for each airline is obtained. Due to the use of comparable data, an AQR value can be directly compared among airline competitors for any designated reporting period and across reporting periods. Since factors, weights, and impacts are the same for all, differences in rating scores are attributable to performance difference among airlines across the various factors. As a result, we have an assessment tool that gives accurate comparative readings based on performance rather than subjective opinion.

INTERNATIONAL PERSPECTIVE

The Airline Quality Rating methodology focuses on quantitative factors rather than qualitative factors in order to provide a more objective result in assessing service quality levels across major U.S.A. domestic airlines. The use of quantifiable, readily available performance data provides an objective starting point for monitoring the quality of service that an individual airline might be providing and allows it to be directly compared with other competitors. This same approach can be applied to international airlines provided that comparable data are available.

Europe has its own special problems with consumer airline quality. The European community's top transport official has urged the twelve-member countries to build a single air-traffic control network to replace the strained and outdated patchwork of national systems presently monitoring European skies. European air traffic control snarls and airport capacity restraints have increasingly caused flight departure delays. The Association of European Airlines (AEA) has called for a single, unified air traffic control for Europe. According to the AEA, delays caused by air traffic control problems have cost the European economy as much as \$4.2 billion annually (Industry Trends and Statistics, 1990). More landing sites and/or slots are needed. With the opening of eastern Europe, there has already been new cooperative agreements between different countries' carriers.

There has been increased cooperation among European airlines in order to compete more effectively in this fiercely competitive industry. For example, Austrian Airlines, Scandinavian Airlines, and Swissair formed the European Quality Alliance to facilitate efforts in combining handling and ticket operations and in coordinating product development and marketing. These international airlines, especially new entrants and expanding firms, must realize that they must provide quality service to their customers in order to survive in today's market.

In addition, the Asia/Pacific region is one of the fastest growing areas of the world in scheduled air traffic. Although the European share of total world traffic

is expected to decline by the year 2000, the Asia/Pacific region is projected to increase substantially by then, with overall growth in world-wide scheduled passenger traffic anticipated as air travel becomes more accessible worldwide (Forecast of Commercial Aviation Activity, 1996). African and South American markets are also seeing rapid growth opportunities emerge. Middle and Near East markets are growing as well and Central American air traffic is maintaining growth similar to North America. This signifies the growing importance of the world aviation community and a growing competitive environment. With all of the competitive forces at play in the global airline industry some basic common quality assessment tool would be very useful to the various governments, competitors, and international airline travelers.

RECOMMENDATIONS FOR A GLOBAL QUALITY ASSESSMENT SYSTEM

It would seem in the best interests of all global competitors and consumers to identify some common, basic performance factors that could be tracked internationally. In today's competitive international airline environment it is imperative that a company does all it can to attract and retain customers. Companies are learning that it is important to monitor customers' needs and wants and then strive to meet them. If an airline fails to provide quality and satisfaction in its services (i.e., passenger satisfaction), it will lose customers to its competitors.

In order to assess quality in the airline industry, there are two types of measurement factors: qualitative and quantitative. The qualitative factors are difficult to measure and are, more or less, how customers "perceive" quality to be. These perceptions can be determined by surveys, focus groups, interviews, etc., but these opinions are difficult to establish on a comparative basis. The weighted average approach offers an alternative way to compare the quality of airlines by using quantitative, regularly available, performance data.

Perhaps the single biggest plus for the weighted average is the ability to efficiently assess quality on a timely basis across competitors. Quality is best understood over time. Consistent performance in a service environment is a valuable asset that can pay dividends in customer satisfaction and customer loyalty. The biggest roadblock to measuring the consistency of quality is the lack of a tool that allows comparable measurements to be taken at reasonable periods. Surveys do this very well in a longer time frame for the more qualitative aspects of the service encounter. We feel that opinion-based approaches and the more objective weighted average approach complement each other and offer alternatives to those interested in assessing airline quality. The weighted average can supply a more regular assessment of the status of an airline's service quality and track the movement of that quality over time on a level playing field for any number of competitors.

Global application of a weighted average quality assessment tool should be given serious consideration as the industry truly becomes a global marketplace.

Basic data that might be useful in an international assessment tool could include on-time performance, denied boardings, canceled flights, schedule frequency, load factor, and safety. The weighted average of relevant quality factors can be easily adapted for use in any setting as long as some basic conditions exist. These conditions are as follows:

Any data that are to be used in the weighted average must be available for all competitors on a regular basis. This establishes the basis for comparison between players and across time intervals. Data must also be reliable in its development. If the data are not a true reflection of the marketplace, then weighting, or any analysis tool, is manipulating and extending false impressions.

The weights that are attached to factors must be reflective of the actual importance that they have in the competitive environment involved. These weights must be defensible as to their importance and consistent across some specified period of time to insure accurate comparisons.

Impact (+/-) of the various factors must be determined from a consistent perspective. Whether a factor has positive or negative impact can be relative to whether it is taken from a consumer or industry perspective.

The method has its best return when there are numerous factors to be considered. There is a point at which the effort is not worth the return (i.e., too few factors) and also a point where the effort is too complex to have meaning (i.e., many factors). The exact point for either of these circumstances is situationally determined by available data and resources.

CONCLUSION

Because airline operations are similar throughout the world, the weighted average assessment tool is a good fit for rating the airline industry worldwide, as long as certain data are available for each airline. If these data are available, a comprehensive quality-tracking system can be developed for airlines worldwide. The Airline Quality Rating developed in the U.S.A. is a model that can be adapted to a global airline system. Unfortunately, most countries do not have a central reporting agency for airline performance data as in the U.S.A. In order to utilize the weighted average approach on a worldwide basis, several things must happen: (1) there must be standardized data collected and made available for each airline; (2) an information-sharing vehicle must be established to disseminate these data to an interested public; (3) some organization must identify critical data, calculate a quality rating formula and publish the results to an international audience; and (4) the airlines must cooperate with each other, as well as with the agency collecting and publishing the quality rating scores.

With the dynamic environment of today's competitive airline market worldwide, it is vital to utilize every available means to keep flying and flying profitably, while keeping passengers happy. The weighted average quality assessment tool is a comprehensive quality-tracking system that can show airlines how to achieve this goal by better identifying strengths and weaknesses. The Airline

Quality Rating has been successfully employed in the United States by the major airlines and by the general public. Because airline operations are similar throughout the world, this approach can also be used in many countries to enhance the quality of their airlines. The AQR offers a readily available blueprint which is adaptable to a global industry.

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