

**NIAR Report 92-11**

**The Airline Quality Report 1992**

**Brent D. Bowen  
Dean E. Headley**

**March 1992**

**NIAR**

**National Institute for Aviation Research**

**The Wichita State University**

**Wichita, Kansas 67208-1595**

## ABOUT THE AUTHORS

**Brent Bowen is the Director of the Aviation Management Program, W. Frank Barton School of Business, and Director of the Center for Aviation Management Research at the National Institute for Aviation Research at Wichita State University. He holds a Doctorate in Aviation Sciences from Oklahoma State University and a Master of Business Administration degree from Oklahoma City University. His FAA certifications include Airline Transport Pilot, Certified Flight Instructor, and Designated Examiner. Dr. Bowen's research interests include measurement of service quality in aviation service firms, faculty demographics in collegiate aviation programs, aviation education at the university level and other aspects of aviation. Dr. Bowen has in excess of 100 publications and presentations in these areas. His professional affiliations include the Aerospace Education Association, Air Transportation Research International Forum, American Institute of Aeronautics/Astronautics, Clearinghouse for Research on Faculty, Kansas Commission on Aerospace Education, Midwest Society for Case Research, National Intercollegiate Flying Association, Transportation Research Board of the National Academy of Science, and the University Aviation Association.**

**Dean Headley is Assistant Professor of Marketing, W. Frank Barton School of Business, and Faculty Associate of the National Institute for Aviation Research at Wichita State University. He holds a Doctorate in Marketing from Oklahoma State University, a Master of Business Administration from Wichita State University, and a Master of Public Health from the University of Oklahoma. Dr. Headley's research interests include quality and its implications for consumers and providers of services, consumer choice processes in service settings, and effects of marketing activities on consumers and providers of services. Dr. Headley's memberships include the American Marketing Association, Academy for Health Services Marketing, Southern Marketing Association, Midwest Business Administration Association, and the Midwest Society for Case Research.**

## Abstract

The Airline Quality Rating 1992 is a summary of month-by-month quality ratings for major domestic U.S. airlines operating during 1991. Using the Airline Quality Rating (AQR) system and performance data for each airline for the calendar year of 1991, ratings and rankings are reported. The Airline Quality Rating was developed and announced in early 1991 as an objective method of comparing airline performance on multiple factors important to consumers. Compiled industry results that yield average rankings for all airlines are included in this Airline Quality Report 1992. The AQR rating system is detailed in NIAR Report 91-11, The Airline Quality Rating, issued in April, 1991, by the National Institute for Aviation Research at The Wichita State University.

This current research monograph, NIAR Report 92-11 contains a brief summary of the AQR methodology, comments and strategic observations about the airline industry that grow from analysis of the ratings and from the authors perceptions regarding industry trends and events over the past years, and detailed data and charts that track comparative quality for major domestic airlines across the 12 month period.

## Introduction

The Airline Quality Report 1992 represents a continuation of research which stood the test of scrutiny by industry watchers over the past year. The Airline Quality Rating found a receptive audience eager to embrace an objective measurement system with which to track overall quality of U.S. major air carriers. Aggregate and individual factor results from the AQR can and have been used by the airline industry and observers to cite performance and competitive advantages. Success of the AQR can be traced to the public's desire for an inclusive evaluation of complex, multifaceted quality aspects reported in a concise, timely and useful manner.

At the time of the AQR's initial introduction, there was only one other widely circulated quality rating of the airline industry. This rating, the Zagat<sup>1</sup> rating of U.S. air carriers, was the result of a cumbersome and costly consumer survey. Soon after the release of the AQR, Consumer Reports<sup>2</sup> released an even larger consumer survey which, at the time of release, relied on data which was almost one and one-half years past dated. The AQR is based on recent data (six weeks lag time) and is updated and calculated monthly. The fact that the AQR method and its results have a high degree of agreement with most consumer survey findings has undoubtedly contributed to its wide acceptance as a timely and useful method of measuring and monitoring the overall quality of the airline industry carriers.

This research concept originated at a time of critical need in the changing airline industry of the world. Quality performance is of crucial concern to all consumers of air transportation regardless of national boundaries. For a global industry which is at it's most difficult stage of development since inception, the AQR provides an important gauge from which to measure performance and respond to consumer needs. Application of the Airline

Quality Rating concept to other of the world's airlines should be given serious consideration as the industry truly becomes a global marketplace.

### History of The Airline Quality Rating in 1991

The Airline Quality Rating report was initially released during April 1991, by The Wichita State University's National Institute for Aviation Research. National release of the AQR report was accomplished using electronic and news press media. Exclusive release was made on *Good Morning America* by consumer editor Paula Lyons. Other local television and radio stories also aired around the country in the days that followed. The news press picked up the AQR story due to its announcement on *Associated Press* and *Knigh-Ridder* news wires. News stories were developed by several large metropolitan newspapers, *The Wall Street Journal*, National Public Radio, as well as aviation trade publications.

The Airline Quality Rating was generally well received by the U.S.-based major airlines. Most of the airlines viewed the AQR as an objective study that offered a new perspective for measuring quality. Even the airlines that ranked at the bottom of the scale in January, 1991, believed it was a worthwhile study. In light of the positive response to the Airline Quality Rating, the research team made plan to monitor each major airline's performance monthly and release overall ratings and comparisons on an annual basis.

The response to the original announcement of the AQR has been overwhelming. More than 200 media and business agencies, locally, nationally, and internationally, have contacted the NIAR at Wichita State regarding the AQR since the rating was released. Most of the major airlines, some government agencies, and private citizens have contacted the research team with favorable comments. Most of the callers were supportive, suggesting that the AQR is something that was needed and timely.

In a related vein, Representative John Hammerschmidt (R., Ark.) has proposed the "Airline Competition and Passenger Protection Act" (H.R. 2037). This bill, among other things, calls for regular monitoring of airline service quality and proposes that the Department of Transportation develop a method for ranking or rating airlines based on quality of service. A member of Congressman Hammerschmidt's staff indicated that the AQR influenced the design of this legislation and is specifically cited as one of two prototype methods in the legislation. Congressman Dan Glickman (D., KS) has applauded the AQR in the Congressional Record as a service to the nation's air travel consumers. This adds additional credibility and visibility to the AQR as a new measure of airline quality.

In light of the public interest in the AQR and airline quality issues in general exhibited during early 1991, the NIAR convened an International Forum on Airline Quality on March 6 and 7, 1992 in Washington, D.C. The Forum provided an opportunity to gather together leaders in the area of airline quality from around the world for an open discussion on the issues surrounding this important topic. This unique opportunity arose at a perfect time in the tumultuous airline industry. Quality enhancement will be a central factor in

determining which airline will survive the next few years of global expansion, intensified competition and economic uncertainty.

### The Airline Quality Rating (AQR)

The majority of quality ratings available rely on subjective surveys of consumer opinion that are infrequently done (Consumer Reports Travel Letter, August, 1991<sup>3</sup>). This subjective approach yields a quality rating that is essentially noncomparable from survey to survey for any specific airline. Timeliness of survey based results can be a problem as well in the fast changing airline industry. Before the Airline Quality Rating, there was effectively no consistent method for monitoring the quality of airlines on a timely, objective and comparable basis. With the introduction of the AQR, a multi-factor, weighted average approach became available. This approach had not been used before in the airline industry. The method relies on taking published, publicly available data that characterizes airline performance on critical quality factors important to consumers and combines them into a rating system. The final result is a rating for individual airlines with ratio scale properties that is comparable across airlines and across time.

The Airline Quality Rating (AQR) (NIAR Report 91-11<sup>4</sup>, April, 1991) is a weighted average of 19 factors (see TABLE 1) that have importance to consumers when judging the quality of airline services. Factors included in the rating scale are taken from an initial list of over 80 factors. Factors were screened to meet two basic criteria; 1) a factor must be readily obtainable from published data sources for each airline; and 2) a factor must have relevance to consumer concerns regarding airline quality. Data used in calculating ratings generally represent performance aspects (i.e. safety, on-time performance, financial stability, lost baggage, denied boardings) of airlines that are important to consumers. Many of the factors used are part of the Air Travel Report maintained by the Department of Transportation.

Final factors and weights were established by surveying 65 airline industry experts regarding their opinion as to what consumers would rate as important (on a scale of 0 to 10) in judging airline quality. Also, each weight and factor was assigned a plus or minus sign to reflect the nature of impact for that factor on a consumer's perception of quality. For instance, the factor that includes on-time performance is included as a positive factor because it is reported in terms of on-time successes, suggesting that a higher number is favorable to consumers. The weight for this factor is high due to the importance most consumers place on this aspect of airline service. Conversely, the factor that includes accidents is included as a negative factor because it is reported in terms of accidents per hours flown, suggesting that a higher number is unfavorable to consumers. Because safety is important to most consumers the weight for this factor is also high. Weights and positive/negative signs are independent of each other. Weights reflect importance of the factor in consumer decision making, while signs reflect the direction of impact that the factor should have on the consumer's rating of airline quality. When all factors, weights and impacts are combined for an airline and averaged, a single continuously scaled value is obtained. This value is comparable across airlines and across time periods.

The Airline Quality Rating methodology allows comparison of major domestic airlines on a regular basis (as often as monthly) using a standard set of quality factors. Unlike other consumer opinion approaches which rely on consumer surveys and subjective opinion, the AQR uses a mathematical formula that takes multiple weighted objective factors into account in arriving at a single numerical rating for an airline. The rating scale is useful because it provides consumers and industry watchers a means for looking at comparative quality for each airline on a timely basis using objective, performance-based data.

TABLE 1

AIRLINE QUALITY RATING FACTORS, WEIGHTS AND IMPACT

	FACTOR	WEIGHT	IMPACT (+/-)
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	Denied Boardings*	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 as registered with the Department of Transportation and published monthly in the Air Travel Report.

The basic formula for calculating the AQR is:

$$AQR = \frac{-w_1F1 + w_2F2 + w_3F3 +/- \dots w_{19}F19}{w_1 + w_2 + w_3 + \dots w_{19}}$$

## The U.S. Airline Industry in 1991

The past year in the U.S. airline industry can be characterized as one of the most financially turbulent, unprofitable, and exciting ever experienced. It is clear that the economic recession coupled with increasing domestic and global competitiveness impacted the financial performance of all airlines. Recessionary times and a general maturing of consumer demand have contributed to a slowing of the growth curve in domestic passenger miles. While this may inhibit domestic opportunities, international markets are opening in unexpected ways. The trend domestically seems to be toward higher fares while moving toward parity among carriers. This suggests that other factors such as routes served, schedules, quality of service, and frequent flyer perks will be the competitive basis for the future. Both individuals and corporations are looking for ways to use air travel more effectively and efficiently. The market would seem to still hold potential opportunities for those carriers with financial stability and those that offer value to the consumer.

Some of the factors that have had an impact and would seem to be with us for the future in the airline industry are:

- Congressional activity that clarifies and/or legislates allowable foreign ownership/involvement with U.S. domestic operations is being discussed. With the opening of the EC and the dramatic changes in eastern Europe, new opportunities exist for U.S. and foreign airlines to form agreements that could markedly change the nature of global air travel.
- More involvement by the government in the way airlines do business (i.e. sale of assets; reservation systems; gate ownership/use; aircraft noise abatement; airport design; passenger use taxation; consumer protection) seems in the offing. Much of this reinvolvement by government will have direct impact on the competitive advantages that airlines operating in this country have relied upon in the past for success.
- Clearly, a limited number of airlines will survive the globalization activities and emerge as principle players in the international market. At this time it seems as though American, United, and Delta are the best positioned U.S. carriers to make a move as global airlines. Northwest should be considered an aggressive player with potential as well.
- It should be noted that the labor contracts for the most well positioned and financially viable global players (American, United and Delta) are in a period of stability for the near term (next 3 to 4 years).
- An international focus for our largest air carriers could mean some renewed opportunity for point-to-point domestic traffic development. If globalization draws the attention of the largest and most stable airlines, domestic niche based, point-to-point, non-hub service could see a resurgence. At this time, Southwest and Alaska must be seen as successful prototypes for this type of niched airline service offering.

- Fare parity and leveling of passenger miles served both contribute to a more competitive market domestically. This does not preclude the inevitable fact that fares will rise through the next several years as competition intensifies and the supply shrinks.
- Domestic carriers will have an estimated combined loss of \$2 billion for 1991. Traffic on U.S. carriers decreased by 2% for 1990, with estimates of little recovery reflected in final figures for 1991. Should economic conditions turn around, predictions are for a modest increase in air traffic volume in 1992.
- U.S. airlines that control gates in the major international markets (i.e. Chicago, New York, Los Angeles, Tokyo, London, Paris, Hong Kong, and Taipei) will enjoy a competitive advantage that other carriers will find difficult to overcome. This access to gates, coupled with dramatically larger fleet size, indicates real opportunity for some domestic carriers as they move to the international scene.
- The hub-and-spoke system familiar in the U.S. domestic market will become the standard development strategy in foreign markets as well. Experience gained in the U.S. will be extremely valuable as competitive and bargaining collateral in the international markets. International market players will certainly encounter some protectionism from foreign governments.
- Quality of airline service will become a necessary, but not sufficient condition, for effectively competing in the global marketplace. A lack of quality will be noticed, but given the industry's ability to match quality service across carriers, quality will be more noticed in its absence than in its presence. Value to the customer will be a key concern. This includes quality, but begins to address the broader issues of customer loyalty.
- In the global market, frequent flyer programs will hold limited advantage due to their duplicability. They will, however, continue to be an integral part of the value perception that a consumer uses to make consumption decisions.
- Reservation systems will become a focal point for the industry and regulators alike. Exclusivity of current systems and fees for use will be scrutinized regarding fair trade practice implications.
- In the recent past, Eastern, Midway, and Pan American ceased operations and closed. Continental, America West, and Trans World are all in bankruptcy proceedings. The carrier pool is in a definite downsizing mode.
- Approximately 50,000 airline related workers lost their jobs in 1991. This economic impact is a result of airline actions to reduce employee numbers, as well as the ripple effect of changing plans that affect suppliers and manufacturing subcontractors. The airline industry has a big impact on the economy via direct industry jobs, equipment manufacturing, and service suppliers.

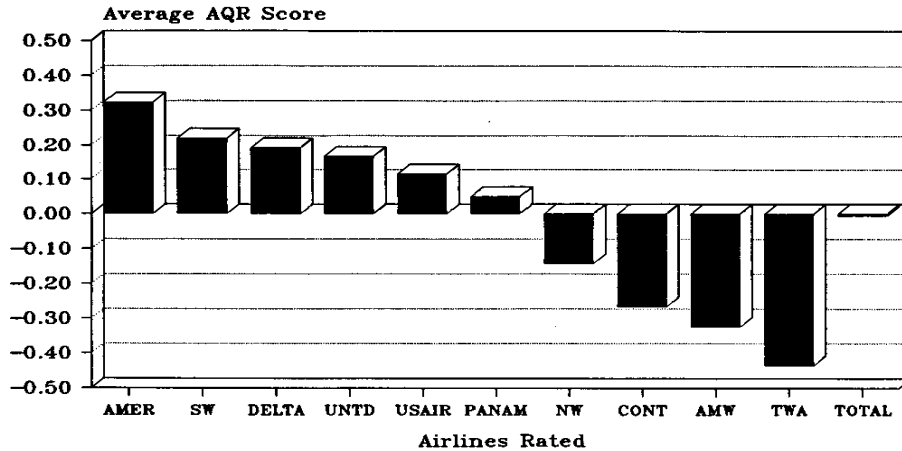
## What the Airline Quality Rating Tells us for 1991

Since the Airline Quality Rating (AQR) is comparable across airlines and across time, monthly rating results can be examined both individually and collectively. The following tables and charts outline the AQR scores by airline, by month, with a brief comment made about each airline's AQR score performance. Also included is a composite analysis that combines the ten airlines tracked for 1991. The AQR results for 1991 indicate that:

- The highest rated airline (and highest ranked) was consistently American.
- The lowest rated airline (and lowest ranked) was consistently TWA.
- Continental, America West, and United show the most consistent improvement in AQR scores across the twelve month period.
- Northwest showed the most decline in AQR score for the period.
- Before it's demise in early December, Pan Am was showing an increase in AQR scores.
- Southwest's AQR scores took a dip in mid-year that were never recovered.
- USAir started the year with inconsistent AQR scores, but by April established and maintained a consistent rating score that kept them in a fifth place ranking for most of the year.
- A third place average ranking over the year was achieved by Delta due to it's consistent AQR score for the entire year.
- The mean AQR score for all airlines for 1991 was slightly negative, with six carriers maintaining a positive rating and four maintaining a negative rating. Three of the four negatively rated airlines (based on yearly average) are in bankruptcy.

# AIRLINE QUALITY RATINGS

## MEAN AQR SCORES - 1991



### Average AQR Scores - 1991

	AQR Score	1991 Score Range	
	Mean	High	Low
American	0.323	0.346	0.289
Southwest	0.220	0.254	0.179
Delta	0.193	0.222	0.149
United	0.168	0.219	0.083
USAir	0.115	0.150	0.015
Pan Am	0.050	0.118	-0.021
Northwest	-0.143	-0.062	-0.213
Continental	-0.266	-0.221	-0.353
America West	-0.325	-0.251	-0.401
Trans World	-0.435	-0.373	-0.481
<b>Total Average</b>	<b>-0.006</b>	<b>0.012</b>	<b>-0.038</b>

## APPENDIX

### Individual Factor Detail

The following charts present graphically the impact that average individual factor performance had on the average AQR score for each airline over the course of 1991. It should be noted that the values represented by the bars are average values for the factor for the year. These individual factor average values are useful in better understanding the yearly average AQR value shown at the bottom of the chart.

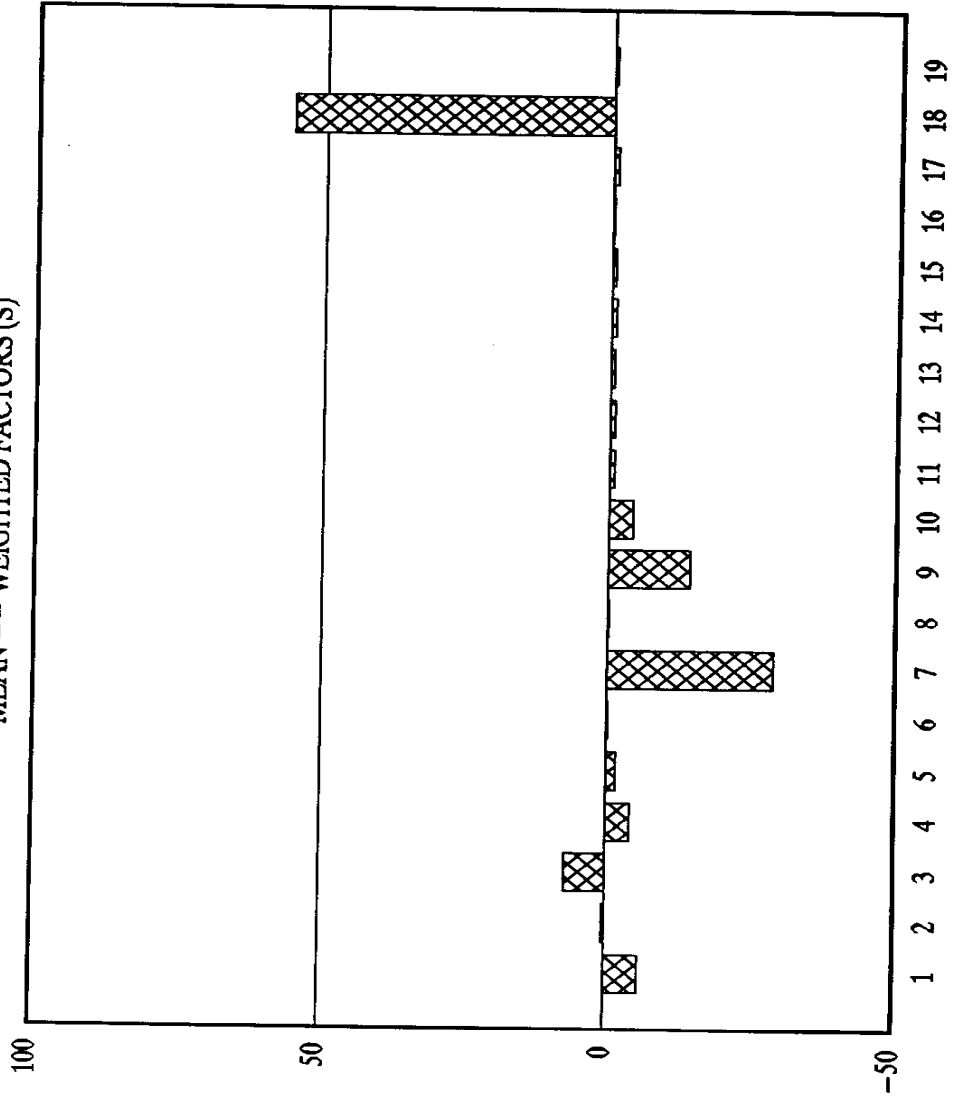
The numbers along the horizontal axis represent the 19 individual factors. Table 1, in the body of the report, outlines the corresponding labels for the factors. Table 1 also outlines the formula for calculating AQR scores reported in earlier pages of this report.

The values shown along the vertical axis represent a 12 month average calculated value for a particular factor. This average is arrived at by taking the actual factor scores for each month and averaging them over the 12 month period. First, a monthly factor value is calculated using the actual airline data for the period multiplied by the weight and impact sign shown in Table 1 for that particular factor. The monthly scores for each of the 19 factors are combined to arrive at the AQR score for the monthly periods. Only after all 19 weighted factor values are combined using the AQR formula is the final AQR score achieved for any period. While some of the factors appear to have either great or small influence on the AQR score, it must be kept in mind that each individual factor is relative to the actual performance of the airline on that factor and that all airlines are on the same footing within each factor. The factors may have differential influence on the final AQR score, but only to the extent that they reflect the actual average performance by the airline for the year. A large or small average value is best compared to other airline values for the same factor. Since the airlines are on the same footing, this comparison best identifies the differential influence that performance might have had on that factor for that airline over the course of 1991.

These average values are presented as additional information to help in better identifying what combination of factors might have impacted the various individual AQR scores for various airlines. Comparison should also be made between airlines as to the difference in average individual factor score values so that differences in overall AQR scores for 1991 can be better understood.

# ALL AIRLINES 1991

MEAN -- WEIGHTED FACTORS (S)



## FOOTNOTES

<sup>1</sup>McKenna, James T. (1990), "Frequent Flyers Rate Top Carriers But Lament Decline of Quality Service", *Aviation Week and Space Technology*, September 24, 1990. p. 64.

<sup>2</sup>"The Best (and Worst) Airlines" (1991), *Consumer Reports*, Irwin Landau, ed., July, 1991, p. 462-469.

<sup>3</sup>"Which U.S. Airlines are Best?" (1991), *Consumer Reports Travel Letter*, Ed Perkins, ed., Yonkers, New York, August, 1991. p. 87-88, 94.

<sup>4</sup>Bowen, Brent D., Dean E. Headley and Jacqueline R. Luedtke (1991) *Airline Quality Rating*, National Institute for Aviation Research Report 91-11, Wichita, Kansas.

## BIBLIOGRAPHY

Bowen, Brent D., Dean E. Headley and Jacqueline R. Luedtke (1992), "A Quantitative Methodology for Measuring Airline Quality", *The Journal of Aviation/Aerospace Education and Research*, Spring (forthcoming).

Coleman, Brian and Asra Q. Nomani (1991), "Lufthansa Eyes USAir in Effort to Find Partner", *The Wall Street Journal*, November 7, 1991.

"Proceeding of the International Forum on Airline Quality", (1992), National Institute for Aviation Research, Dean E. Headley and Brent D. Bowen eds., *NIAR Report 92-10*, Wichita, Kansas.

Nomani, Asra Q. (1992), "Global Dogfight: World's Major Airlines Scramble to Get Ready for Competitive Battle", *The Wall Street Journal*, January 14, 1992.

Nomani, Asra Q. (1992), "Airlines Post 6% Traffic Gain for December", *The Wall Street Journal*, January 7, 1992.

O'Brien, Bridget (1991), "Spreading Sickness: Airlines' Ailments Give Most of Their Suppliers Big Headaches as Well", *The Wall Street Journal*, December 31, 1991.

Woods, Wilton (1991), "Misery in the Air", *Fortune*, December 16, 1991. p.88-89.