SERVICE QUALITY IN THE U.S. AIRLINE INDUSTRY: VARIATIONS IN PERFORMANCE WITHIN AIRLINES AND BETWEEN AIRLINES AND THE INDUSTRY

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ABSTRACT

This study examined the service quality of 25 U.S. airlines (1987-1996) using data from the Department of Transportation's Air Travel Consumer Report. After a total quality and total complaint rate was calculated for these airlines, a 95 percent confidence interval was placed around the yearly and company means calculated to examine those cases that were significantly different from the mean. Results indicate that while the major carriers are converging toward a higher level of quality, there continues to be significant yearly variation. The service quality of regional carriers was much lower than major carriers and showed much greater variation.

INTRODUCTION

In a 1991 survey by Towers and Perrin, almost 90 percent of U.S. airline executives listed establishing their carrier as a leader in service quality as a

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top priority. One reason for the emphasis on service quality is a growing concern that air travel in the U.S. "will be reduced to a commodity status, and that the individual choice of airlines will be factored out of the buying decision" (Fraser, 1996, p. 61). To combat this prospect, airlines are seeking to establish brand identity and personality through focusing on quality strategies designed to create customer loyalty and to separate themselves from their generic competitors (Fraser, 1996; Nelms, 1997). Finishing first in the growing number of reports on airline quality has taken on new meaning for airlines and consumers as has the debate about which of these reports accurately reflects airline quality-the traditional consumer surveys or the weighted average that is the basis of the Airline Quality Rating approach (Johnson, 1998; Perkins, 1998).

There are at least two other issues that we believe should be considered. First, it is not clear whether these yearly quality rankings represent statistically significant differences in service quality within and between U.S. airlines. Is American Airlines' quality ranking in 1997 significantly different from their ranking in 1996 or merely a function of random error? If the industry's mean score for 1996 is calculated, how many airlines are significantly different from that mean?

Second, these quality studies have focused only on the major U.S. carriers even though regional carriers have doubled their number of enplaned passengers in the last ten years and many airports are served largely or exclusively by regional carriers (AvStat Associates, 1998). Given the concerns raised about the safety quality of regional carriers following the Valujet crash, it seems appropriate to examine service quality of regional carriers as well. Research on safety also suggests that differences in quality may be more pronounced between industry segments than within comparable groups (Rose, 1990, 1992).

The purpose of this study was to address these two issues. Unfortunately, it is not possible to recreate the different quality surveys or to test the significance of their findings based on published data. However, the Air Travel Consumer Report data which are used by the Airline Quality Rating Survey are publicly available beginning in 1987. For this reason, we have chosen to use this data to examine the variations within and between U.S. air carriers overall service quality.

BACKGROUND

The U.S. airline industry was deregulated in 1978 based on a series of studies that concluded that regulation forced carriers to accept uneconomical load factors on many long-haul flights, prevented the establishment of economies of scale, and created fares on regulated routes that were in many cases

50 percent higher than unregulated intrastate routes. Unable to compete on price, carriers were believed to base competition on service quality (Caves, 1962; Jordon, 1970). If government policy forced prederegulation airlines to compete on the quality of their services rather than price, then Woerth (1995) has suggested that policy now focuses almost solely on creating cheap, below-cost air fares for consumers. To meet this challenge, U.S. carriers have engaged in a long, painful process of restructuring and consolidation. The result, at least for the major carriers that survived, is a cost competitive position that is well below their international rivals (Oum & Yu, 1998). This focus on cost-cutting has carried a price—increased customer complaints and a conspicuous absence from the service rankings of the top-ten international carriers (Zagat, 1992; Zellner, 1997).

Service Quality

Berry, Parasuraman, and Zeithaml (1994) have described service quality as

> a profit strategy because it results in more new customers, more business from existing customers, fewer lost customers, more insulation from price competition, and fewer mistakes requiring the reperformance of service (p. 32).

According to them, service quality is a function of ten elements: listening to customers, providing reliable service, paying attention to basic service, understanding service design, surprising customers, recovering from service problems, practicing fair play, encouraging teamwork, listening to employees, and creating servant leaders. Four of these elements—listening to customers, surprising customers, recovering from service problems, and practicing fair play— involve understanding customer expectations and perceptions and then meeting or exceeding them. These areas are typically the focus of consumer surveys of quality. Respondents are asked the importance of various aspects of airline service—food, comfort, entertainment, carry on space—and then are asked to rank airlines. Three of the elements—encouraging teamwork, listening to employees, and creating servant leaders—are activities that can only be indirectly observed by customers. These activities are assumed to improve employee morale and contribute to a total quality culture. The remaining three elements—providing reliable service, paying attention to basic service, and understanding service design—relate to the reliability and consistency of service provision and can be examined using the data in the Air Travel Consumer Report. It should be noted that in the 1997 Frequent Flyer Survey the top three factors driving overall airline satisfaction were on-time performance, schedule/flight accommodation, and airport check-in, which are issues of basic service and service design (Frequent Flyer, 1997, p. 25).

Air Travel Consumer Report

The Air Travel Consumer Report is published quarterly by the Office of Aviation Enforcement and Proceedings, U.S. Department of Transportation (DOT). There are two parts to the Report. For the major U.S. carriers, the DOT gives information on the on-time percentage, number of mishandled baggage reports filed, and passengers denied boarding. The second part of the report is consumer complaints by category which includes such categories as flight problems, fares, refunds, customer service, and advertising. Complaints are reported for all carriers with more than ten total complaints in a calendar year. There are no complaint categories for issues such as food, comfort, in-flight entertainment, etc.

METHODS

This study included data on 25 U.S. airlines in operation during the period 1987 to 1996. Of these airlines, twelve can be classified as major carriers (gross revenues over $1 billion) and thirteen as regional carriers (gross revenues less than $100 million). Fourteen airlines were not in operation during the entire period due to failure, consolidation or startup.

Data were collected from the Department of Transportation's Air Travel Consumer Report on the following measures: on-time performance, flight problems, denied boardings, fare complaints, mishandled baggage, ticketing complaints, refund complaints, advertising complaints, customer service complaints, credit complaints, and other complaints which include frequent flyer and cargo problems. Complaint data were available for all airlines with ten or more total complaints in a single year. For several years during this period, data for regional airlines were not available by category but only as total complaints. Generally, data on on-time performance, denied boardings, and mishandled baggage were available only for major carriers. Data on departures were collected from the Bureau of Transportation Statistics. These data were used to normalize the quality measures.

Rates were calculated overall and by category for all airlines. The total service quality rate represents the sum of the following data: number of late flights, total consumer complaints, total involuntary denied boardings, and total mishandled baggage reports. This number was then divided by the total departures for that airline in the given year. The total complaint rate represents the sum of all complaints divided by the total yearly departures. In a real sense, the derived rates are a measure of disquality and can be interpreted as the number of service quality problems per departure, i.e. a total quality rate of .353231 would translate into 35 quality problems per 100 departures. Means, standard deviations, and correlations were computed.

The calculated means represent the best estimate of the true mean for each airline and the industry as a whole for each year of the study. Due to sampling error, random variation, and small sample size, the calculated mean is expected to vary from the true mean. To examine the variation within airlines, a 95 percent confidence interval was calculated around each airline's mean quality performance for the years of operation. Variations between airlines and the industry were examined by calculating a 95 percent confidence interval around the mean industry performance for a given year. Thus, it can be said that there is a 95 percent chance that the calculated mean will fall within these boundaries. Means that fall outside this interval could be said to be statistically different from the true mean.

RESULTS

Table 1 reports the calculated total service quality rates by firms and for the industry between airlines and the mean for the major U.S. carriers. Overall, total service quality improved from 1987 to 1996 with the industry mean dropping from 0.643809 to 0.428864, indicating that the industry as a whole had 64 quality problems per 100 departures in 1987 compared to only 42 quality problems per 100 departures in 1996. However, most of this improvement occurred during the early years of this study. Numbers with an asterisk represent airlines falling outside the 95 percent confidence interval for that year.

For 1987, the confidence interval was 0.5238 and 0.7638. Three firms (Eastern, TWA, United) fell below the lower limit, meaning that their service quality rates were significantly above the industry average. Three firms (American, Southwest, USAir) fell above the upper limit with service quality rates lower than the industry average. The confidence interval for 1988 was 0.4638 and 0.6388. Again, three firms (Eastern, Pan Am, TWA) fell below the lower limit while three firms (America West, American, USAir) fell above the upper limit. In 1989, only three firms fell outside the 95 percent confidence interval (0.4655, 0.6237)—two (Pan Am, Southwest) below the lower limit and one (Eastern) above the upper limit. There were six firms outside the 95 percent confidence interval (0.4059, 0.5917) in 1990. Pan Am, Southwest, and USAir were below the industry average service rate lower limit. America West, Eastern, and TWA were higher than the industry average service rate higher limit. Six firms also fell outside the 95 percent confidence interval (0.3504, 0.4636) in 1991. Pan Am, Southwest, and USAir were below the industry average lower limit. America West, TWA, and United were above the industry average upper limit.

In 1992, four firms fell outside the 95 percent confidence interval (0.3789,0.4957). America West and Southwest had service quality rates

Table 1. Variations in Total Service Quality Rates Between Major U.S. Airlines and the Industry, 1987-1996

Airlines	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*Airline Average Total Quality*
America West	.6631	.6654*	.5399	.6910*	.5035*	.3549*	.3693	.3991	.4296	.4148	.5031
American	.8078*	.6497*	.5851	.5444	.3799	.4424	.4149	.3664*	.3965	.4330	.5020
Continental	.6017	.4785	.4945	.4192	.3905	.4781	.4482	.4649*	.3320*	.2949*	.4403
Delta	.6252	.5970	.5710	.5007	.4435	.4858	.4634	.4364	.4657*	.5235*	.5112
Eastern	.3662*	.4255*	.7659*	.6588*							.5541
Northwest	.6457	.6240	.5509	.5281	.4072	.4157	.4072	.4239	.4637*	.4034	.4869
Pan Am	.5312	.3783*	.3364*	.2711*	.2950*						.3624
Southwest	.8211*	.4943	.3621*	.3030*	.3070*	.3063*	.3003*	.3395*	.3362*	.3110*	.3881
TWA	.5218*	.4374*	.6046	.6177*	.4927*	.5427*	.3353*	.4134	.4703*	.4674	.4903
United	.4928*	.4990	.6029	.5605	.5095*	.5097*	.5241*	.4881*	.4650*	.6169*	.5268
US Airways	1.0052*	.8152*	.5770	.3924*	.3414*	.4003	.3596	.4057	.3520*	.3949	.5044
Industry Average Total Quality By Year	.6438	.5513	.5446	.4988	.4070	.4373	.4025	.4153	.4124	.4289	.4742
Confidence Interval											
Upper Limit	.7623	.6388	.6237	.5917	.4636	.4957	.4559	.4505	.4579	.5056	
Lower Limit	.5238	.4638	.4655	.4059	.3504	.3789	.3490	.3800	.3668	.3522	

* - Rate falls outside the 95 percent confidence interval of the industry for the year

lower than industry's average lower limit competitors. TWA and United had rates above the upper limits. Two firms (Southwest, TWA) fell below the lower limit of the 95 percent confidence interval (0.3490,0.4559) in 1993. One firm (United) fell above the upper limit. There were four firms outside the 95 percent confidence interval (0.3800,0.4505) in 1994. The service quality of American and Southwest were below the lower limits of the industry average. Continental and United were above the upper limits of the industry average. A total of seven firms fell outside the 95 percent confidence interval (0.3668, 0.4579) in 1995. Three firms (Continental, Southwest, USAir) fell below the lower limit. Four firms (Delta, Northwest, TWA, United) fell above the upper limit, but only by a relatively small margin. Four firms fell outside the 95 percent confidence interval (0.3522, 0.5056) in 1996—two firms (Continental, Southwest) were below the lower limit, two firms (Delta, United) were above the upper limit. Figure 1 graphically displays the results of Table 1 for the years 1987 to 1991. As it shows, the industry is increasingly converging on a standard quality level. Figure 2 increases the scale and examines service quality rates for the years 1991 to 1996. While Figure 1 clearly shows a convergence of service quality levels, Figure 2 shows that there does continue to be some variation between the major carriers within a narrowing range.

Table 2 reports the variation in service quality within the firms themselves. Asterisk numbers indicate years in which the firm fell outside the 95 percent confidence interval surrounding their mean service quality performance for the period. The most consistent performer of the major airlines was Southwest who fell outside the 95 percent confidence interval only once during this period. Southwest also had the lowest level of service problems of any of the major airlines in operation during the entire period of this study with only 39 service problems per 100 departures. America West was the least consistent performer, although in four of the seven years, they performed better than their average.

Table 3 reports the calculated total complaint rates by firm and for the industry and between airlines and the industry. The complaint rate considers only those complaints filed with the Department of Transportation. It excludes the number of late flights, mishandled baggage reports, and denied boardings that were included in the total service quality rate. Asterisk numbers indicate airlines falling outside the 95 percent confidence interval surrounding the industry mean for that year. For 1987, eight airlines fell outside the 95 percent confidence interval (0.0025, 0.0079). All but three (Continental, Eastern, Northwest) fell below the lower limit. The 95 percent confidence interval for 1988 was 0.0015, 0.0044. Nine airlines fell outside the interval. Continental, Eastern, Pan Am, and TWA had complaint rates above the industry average upper limit. Four carriers (America West, American, Delta,

Figure 1
Total Service Quality Rates Between Major U.S. Airlines and the Industry 1987 – 1991

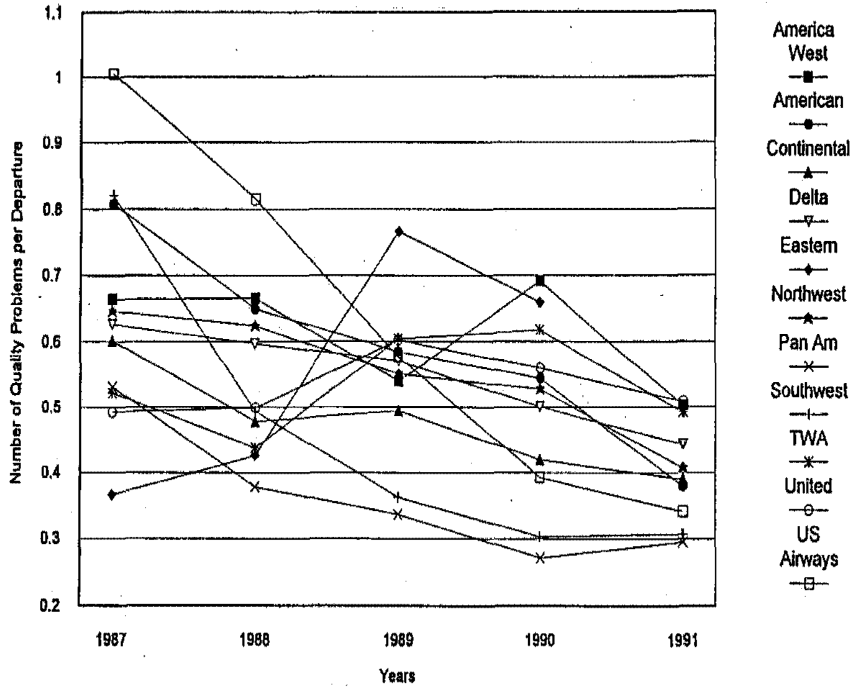

Figure 2
Total Service Quality Rates Between Major U.S. Airlines and the Industry 1992 – 1996

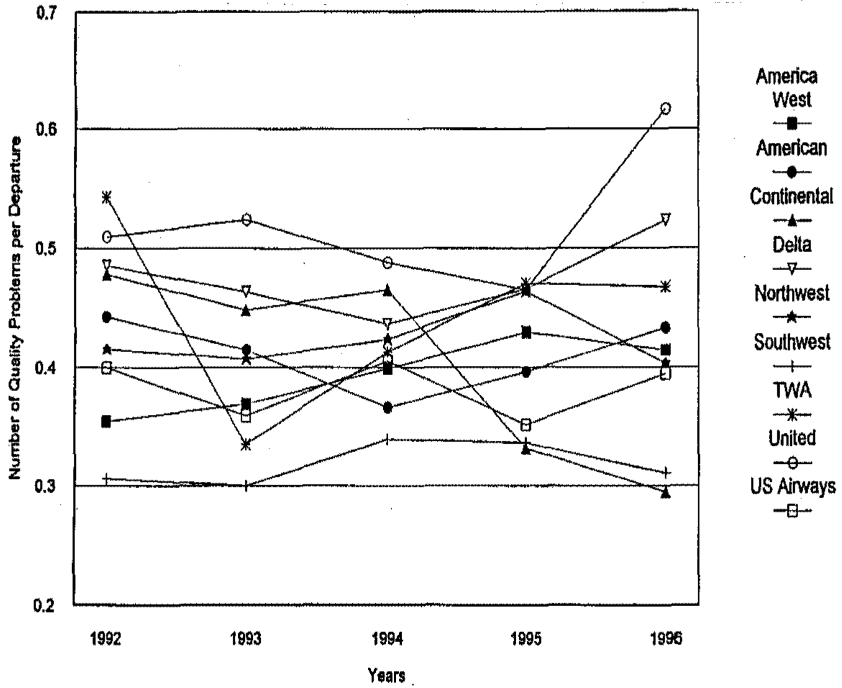

Table 2. Variations in Total Service Quality Rates Within Major U.S. Airlines, 1987-1996

Airlines	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*Airline Average Total Quality*	*Confidence Interval Upper Limit*	*Confidence Interval Lower Limit*
America West	.6631*	.6654*	.5399	.6910*	.5035	.3549*	.3693*	.3991*	.4296	.4148	.5031	.5962	.4100
American	.8078*	.6497*	.5851	.5444	.3799*	.4424	.4148	.3664*	.3965*	.4330	.5020	.6044	.3996
Continental	.6017*	.4785	.4945	.4192	.3905	.4781	.4482	.4649	.3320*	.2949*	.4403	.5026	.3779
Delta	.6252*	.5970*	.5710*	.5007	.4435*	.4858	.4634*	.4364*	.4657	.5235	.5112	.5585	.4639
Eastern	.3662	.4255	.7659	.6588							.5541	.8556	.2526
Northwest	.6457*	.6240*	.5509	.5281	.4072*	.4157*	.4072*	.4239	.4637	.4034*	.4869	.5440	.4199
Pan Am	.5312*	.3783	.3364	.2711	.2950						.3624	.4901	.2347
Southwest	.8211*	.4943	.3621	.3030	.3070	.3063	.3003	.3395	.3362	.3110	.3881	.5046	.2716
TWA	.5218	.4374	.6046*	.6177*	.4927	.5427	.3353*	.4134*	.4703	.4674	.4903	.5519	.4287
United	.4928	.4990	.6029*	.5605	.5095	.5097	.5241	.4881*	.4650*	.6169*	.5268	.5629	.4908
US Airways	1.0052*	.8152*	.5770	.3924	.3414	.4003	.3596	.4057	.3520	.3949	.5044	.6676	.3411
Industry Average Total Quality by Year	.6438	.5513	.5446	.4988	.4070	.4373	.4025	.4153	.4124	.4288	.4742		

* - Rate falls outside the 95 percent confidence interval of the airline for the period

Table 3. Variation in Total Complaint Rates Between Major U.S. Airlines and the Industry, 1987-1996

Airlines	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*Airline Average Total Complaint Rate*
America West	.00147*	.00082*	.00055*	.00077	.00103	.00087	.00065	.00084	.00060	.00085*	.00084
American	.00238*	.00124*	.00083*	.00074	.00103	.00107	.00074	.00050	.00047	.00071	.00097
Braniff	.00268	.00277	.00255								.00267
Continental	.01318*	.00649*	.00178*	.00114	.00073	.00077	.00112*	.00134*	.00068	.00039*	.00276
Delta	.00175*	.00076*	.00045*	.00033*	.00031*	.00041	.00035	.00033	.00044	.00057	.00057
Eastern	.00884*	.00604*	.00413*	.00139							.00510
Northwest	.01078*	.00371	.00123	.00088	.00066	.00050	.00043	.00044	.00037*	.00063	.00196
Pan Am	.00793*	.00573*	.00401*	.00263*	.00295*						.00465
Southwest	.00062*	.00045*	.00039*	.00024*	.00025*	.00011*	.00009*	.00012*	.00011*	.00012*	.00025
TWA	.00716	.00487*	.00312*	.00331*	.00259*	.00175*	.00102*	.00095*	.00086*	.00086*	.00265
United	.00371	.00198	.00143	.00100	.00196*	.00082	.00064	.00058	.00065	.00062	.00134
US Airways	.00168*	.00108*	.00104	.00055	.00029*	.00043	.00034	.00044	.00063	.00044	.00069
Industry Average Total Complaint Rate	.00518	.00300	.00179	.00118	.00118	.00075	.00060	.00061	.00053	.00057	.00154
Confidence Interval											
Upper Limit	.0079	.0044	.0026	.0018	.0019	.0011	.0009	.0009	.0007	.0008	
Lower Limit	.0025	.0015	.0009	.0005	.0005	.0004	.0003	.0003	.0004	.0004	

* - Rate falls outside of the 95 percent confidence interval of the industry for the year

Southwest) posted complaint rates that fell below the lower limit of the 95 percent confidence interval (0.0009, 0.0026) in 1989. In 1990, four carriers fell outside the 95 percent confidence interval (0.0005, 0.0018). Two fell above the upper limit—Pan Am and TWA. Two carriers fell below the lower limit—Delta and Southwest. Six carriers fell outside the 95 percent confidence interval (0.0005, 0.0019) in 1991. Delta, Southwest, and USAir had complaint rates that were below the industry average lower limit.

Only two firms fell outside the 95 percent confidence interval (0.0004, 0.0011) in 1992. Southwest fell below the lower limit. TWA posted a complaint rate above the industry average upper limit. Three firms fell outside the 95 percent confidence interval in 1993. Again, Southwest fell below the lower limit. Continental and TWA fell above the upper limit. The same three airlines fell outside the 95 percent confidence interval (0.0003, 0.0009) in 1994. Three airlines fell outside the 95 percent confidence interval (0.0004, 0.0007) in 1995. Southwest and Northwest posted complaint rates below the lower limit. TWA continued to fall above the upper limit. The 95 percent confidence interval for 1996 was 0.0004, 0.0008. Two firms (Continental, Southwest) fell below the lower limit. America West and TWA had rates above the industry average upper limit.

The asterisk numbers in Table 4 indicate the years in which the major carriers fell outside the 95 percent confidence interval surrounding their mean complaint rate for the period from 1987 to 1996. Overall, Southwest had the lowest complaint rate with only three complaints per 10,000 departures. The most consistent performer was Northwest, however, whose complaint rate was considerably higher than Southwest at 20 complaints per 10,000 departures.

Table 5 reports the calculated total complaint rates between the airlines and the industry for the regional carriers in this study. Overall, the complaint rates for this group are substantially higher than for the major carriers. In 1994 regional carriers reported 32 service quality problems per 10,000 departures compared to six per 10,000 departures for the major airlines. However, at least one of these carriers, Atlantic Southeast, has consistently posted complaint rates below the lower limits of the major carriers industry average. It has averaged only two complaints per 10,000 departures. Reno Air also compares favorably to the major carriers with an average of only seven complaints per 10,000 departures over the reported period. Tower Air posted the worst overall performance with an average of 31 complaints per 10,000 departures as compared to 40 per 10,000 departures for all regional carriers and six per 10,000 for the major carriers over the period from 1994 to 1996.

Numbers with asterisks indicate regional carriers falling outside the 95 percent confidence interval surrounding the industry mean for that year. In

Table 4. Variations in Total Complaint Rates Within Major U.S. Airlines and the Industry, 1987-1996

Airlines	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*Airline Average Total Complaint Rate*	*Confidence Interval Upper Limit*	*Confidence Interval Lower Limit*
America West	.00147*	.00082	.00055*	.00077	.00103*	.00087	.00065*	.00084	.00060*	.00085	.00084	.0010	.0007
American	.00238*	.00124	.00083	.00074	.00103	.00107	.00074	.00050*	.00047*	.00071	.00097	.0014	.0006
Braniff	.00268	.00277	.00255								.00267	.0029	.0024
Continental	.01318*	.00649*	.00178	.00114	.00073	.00077	.00112	.00134	.00068	.00039	.00276	.0057	-.0001
Delta	.00175*	.00076	.00045	.00033	.00031	.00041	.00035	.00033	.00044	.00057	.00057	.0009	.0003
Eastern	.00884	.00604	.00413	.00139							.00510	.0101	.0001
Northwest	.01078*	.00371	.00123	.00088	.00066	.00050	.00043	.00044	.00037	.00063	.00196	.0043	-.0004
Pan Am	.00793*	.00573	.00401	.00263	.00295						.00465	.0074	.0019
Southwest	.00062*	.00045*	.00039	.00024	.00025	.00011	.00009*	.00012	.00011	.00012	.00025	.0004	.0001
TWA	.00716*	.00487*	.00312	.00331	.00259	.00175	.00102*	.00095*	.00086*	.00084*	.00265	.0041	.0012
United	.00371*	.00198	.00143	.00100	.00196	.00082	.00064	.00058*	.00065	.00062	.00134	.0020	.0006
US Airways	.00168*	.00108*	.00104*	.00055	.00029*	.00043	.00034*	.00044	.00063	.00044	.00069	.0010	.0004
Industry Average Total Complaint Rate	.00518	.00300	.00179	.00118	.00118	.00075	.00060	.00061	.00053	.00057	.00154		

* - Rate falls outside of the 95 percent confidence interval of the airline for the period

Table 5. Variations in Total Complaint Rates Between U.S. Regional Airlines and the Industry, 1994-1996

Airline	*1994*	*1995*	*1996*	*Airline Average Total Complaint Rate*
Air South		.00101	.00392	.00246
AirTrans	.00297	.00059	.00149*	.00168
Atlantic SE	.00004	.00006	.00022*	.00011
Carnival	.00244	.00249	.01038*	.00510
Kiwi	.00060	.00074	.00519	.00217
Markair	.00101	.01811*	.01067*	.00993
Mesa			.00011*	.00011
Midway	.00135	.00049	.00190	.00125
Reno	.00021	.00037	.00041*	.00033
Tower	.01990*	.00872*	.01359*	.01407
Valujet	.00055	.00101	.00303	.00153
Vanguard			.00249	.00249
WestPac			.00099*	.00099
Regional Airlines Average Complaint Rate	.00323	.00336	.00418	
Major Airlines Average Complaint Rate	.00061	.00053	.00057	
Regional Airlines Confidence Interval				
Upper Limit	.0081	.0075	.0069	
Lower Limit	-.0016	-.0008	.0015	

* - Rate falls outside the 95 percent confidence interval of the industry for the year

1994, three carriers fell outside the 95 percent confidence interval (0.0016, 0.0081). Atlantic Southeast and Reno Air recorded complaint rates significantly below the average regional carrier industry lower limit. Tower Air fell above the upper limit. For 1995, there were three carriers (Atlantic Southeast, Midway, Reno) below the regional lower limit and two carriers (Markair, Tower) above the regional upper limit of the 95 percent confidence interval (0.0008, 0.0075). Seven carriers recorded complaint rates outside the 95 percent confidence interval (0.0015, 0.0069) in 1996. Atlantic Southeast, Mesa, Reno, and WestPac posted complaint rates below the lower limits for regional carriers. Carnival, Markair, and Tower posted complaint rates above the upper limits.

DISCUSSION

Two general conclusions are apparent from this study. First, airline quality has improved for the major carriers since 1987. In fact, the major airlines appear to be converging on a quality standard well below the 1987 industry average. Problems related to overcapacity plagued the industry in the early eighties leading to industry consolidation beginning in the late eighties. Several of the carriers in this study were attempting to integrate purchased operations (Delta-Western, TWA-Ozark Air, Northwest-Republic Continental-Eastern). It should also be remembered that the U.S. airline industry lost in excess of $10 billion in the period from 1990 to 1993. A number of the carriers in this study were either in bankruptcy or experiencing severe financial difficulties (America West in 1991, TWA in 1992, Continental in 1990, Eastern in 1989). This is not to say that there is not room for improvement, but given the conditions that prevailed, it is fortunate that service quality did not decline.

A second conclusion of this study is that service quality as measured by total complaints is far worse for regional carriers and the variation in performance is greater. There are several explanations for this difference. If firms learn by doing, then most of the regional carriers have not been in business long enough to get the basics of service quality down. Unfortunately, many will not have the time. Since deregulation more than 200 new entrants have come and gone (Rosen, 1995). A further problem for these carriers is the tendency for consumers to judge safety quality by service quality which is more easily observed by the average consumer (Rose, 1992). While no study has yet been done examining the relationship between service quality and safety quality in the airline industry, the perception of such a link could effect even the economy-minded consumers who often choose regional carriers for their low cost, low fare offerings.

This study did not specifically address the controversy over which type of quality measure is better, the opinion survey or the Airline Quality Rating (AQR) system. The data in this report are a subset of the data used in the Airline Quality Rating system. The AQR includes safety quality data such as the age of the fleet, the number of accidents, pilot deviations, and financial information such as load factors, average seat/mile cost, and financial stability (bond rating). Given these differences, those results are not directly comparable, but can be examined in general. The AQR 1996 rankings were as follows: Southwest, American, United, Delta, Continental, Northwest, USAir, America West, and TWA. The 1996 rankings for the Total Service Quality were Continental, Southwest, USAir, Northwest, America West, American, TWA, Delta, and United. It should be remembered, however, that only Continental and Southwest fell below the 95 percent confidence interval lower limits with service quality rates significantly better than their competitors while Delta and United posted rates above the upper limits for major carriers. The remaining five carriers, while listed in rank order, were not significantly different from one another. Their ranking can be attributed to random chance.

Consumer expectations are important in any industry. For airlines, the two most important issues are 1) the reason for travel (business or leisure) and 2) the class of preferred travel (first, business, economy). According to Airline Marketing News (1997), the business traveler whose higher fares create higher yields for the airlines have been the main beneficiary of most quality improvements. Unfortunately, it was not possible to examine complaint rates by class of preferred travel to determine if different classes experienced higher or lower levels of service quality. It should be noted, however, that both business and leisure consumers listed on-time performance, schedule/flight accommodation, and airport check-in as the most important factors in overall airline satisfaction (1997 Frequent Flyer survey).

There were additional limitations on this study. First, the DOT practice of reporting only airlines with ten or more complaints in a single year made it difficult to assess the quality performance of regional carriers. Data on mishandled baggage and on-time performance were also not available for regional carriers. A second limitation is the fact that complaint data probably seriously underestimate the level of consumer concern with quality. For example, there were 482,004 mishandled baggage claims filed with Delta during 1996 but only 127 actual baggage complaints were filed with the DOT (Air Travel Consumer Report, February 1996). Even assuming that the airline was able to quickly and satisfactorily resolve most of these reports, there remain a number of dissatisfied consumers who either did not trouble to file a DOT complaint or were unaware that they could do so.

CONCLUSION

The service quality of the major U.S. carriers has improved over the last ten years and is considerably higher than that of regional carriers. More attention should be paid to the issue of statistically significant differences in rankings by all quality instruments. There is still a good deal of work to be done in this area, especially in regard to the service quality of regional carriers and in the differences between classes of passengers.

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