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ASSESSING THE STRATEGIC EVOLUTION OF U. S. LOW COST AIRLINES IN THE POST - 9/11 ENVIRONMENT

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ABSTRACT

It has been suggested in the literature that low-cost airlines have, in varying degrees, departed from the original low-cost model introduced by Southwest Airlines. This study provides a multi-year analysis in the post-9/11 time period, for the years 2004-2009, of the demonstrated strategic positioning choices of U. S. low-cost airlines. The sample utilized is restricted to U. S. low-cost carriers so as not to conflate operating environments. Furthermore, a quantitative methodology is employed to measure effectively these choices and to facilitate inter-airline comparisons. Airlines, as part of their strategic planning process, articulate positions with regard to cost leadership, product differentiation, and growth. Decisions implemented are dynamic and inter-temporal in nature. Managers thus need a multi-period methodology to evaluate the implementation of strategic positions. One such approach is the strategic analysis of operating income utilized in this study.

INTRODUCTION

Michael Porter in his seminal work *Competitive Strategy* (1980) outlines three generic strategies that a firm can pursue in the building of a competitive advantage vis-a-vis its competitors. These three strategies are: cost leadership, product differentiation, and a focused niche that eschews an industry-wide strategy for a narrow market segment. The emergence of the low cost model in the commerical airline industry represents a movement from the predominant product differentiation strategies of U. S. trunk carriers to the low cost model as introduced by Southwest Airlines.

The goal of a differentiation strategy is the creation of a product or service that is perceived industrywide as being unique. This uniqueness allows the firm to command a premium price and therefore higher profit margins. Differentiation can occur along such lines as brand or image, technological innovation, quality of product or service, or customer service, among others. The goal of a cost leadership strategy is the aggressive pursuit of efficient scale facilities, cost reductions from accumulated operational experience and control of overhead, the avoidance of marginal contribution customers, and the minimization of expenditures on research and development, service, sales force, and advertising (Porter, 1980). Thus, the model introduced by Southwest Airlines (see Alamdari and Fagan, 2005) was characterized by fares that were low and unrestricted, high frequency point-to-point flights with no interlining. Flights were single-class with high density unassigned seating without meals or free (alcoholic) beverages or snacks, and purchasable light drinks. Travel agents and call centers (later the Internet) operated with a ticketless format. A single type of aircraft was intensively utilized with flights into and from secondary and uncongested airports in order to facilitate quick turnaround time. Human resource cost effectiveness and productivity was achieved through competive wage rates and profit sharing.

Two points need to be noted here. The focus strategy may be implemented either on the basis of cost leadership or product differentiation in a narrow market segment. As suggested by Alamdari and Fagan (2005), such a strategy would not seem to apply to low cost commercial airlines in the United States. (They note that corporate jet service providers might fall into

this strategic group.) However, there is a second, critically important issue. Porter (1980) notes that a firm that does not develop a viable strategy is "stuck in the middle." While it takes time and effort for a firm to extracate itself from such a situation, it is not uncommon for firms that are stuck in the middle to move back and forth among the generic strategies in an inconsistent manner. Frequently, such behavior leads to failure.

Evolution of the Cost Leadership Model by Airlines and Strategic Groups:The U. S. Case

Strategies chosen by firms are dynamic and evolutionary by the nature of competition. This notion is illustrated in Porter's (1980) admonition as to the risks or vulnerabilites of the cost leadership strategy. Competitors may learn how to implement the low cost model through imitation or investment in state-of-the-art facilities. Carey and Nicas (2011) indicate that this has happened to Southwest Airlines, as other low cost carriers, such as JetBlue Airways and Spirit Airlines have cut into Southwest's competitive advantage. Technological changes or innovations may nullify the advantages that had accrued to the low cost leader through prior learning and investments. The low cost leader may become so preoccupied with cost that necessary product and marketing changes are overlooked. Finally, inflation in costs may erode the profit margins enjoyed by the low cost leader relative to firms pursuing a differentiation strategy.

Button (2009) offers a critical view of the efficacy of the implementation of the low cost model in the commercial airline industry, in a combined analysis of U. S. and European low cost carriers. He suggests that "there are, in addition, reasons to suspect that the model as we have seen it in the past, will need to change to succeed in a dynamic market and, in the short term, to function well in the depressed macro-economic environments..."(pg. 2). Furthermore, he also suggests that where low cost carriers have enjoyed financial success it may be because of the particular markets they have chosen rather than their particular implementation of the low cost model. Specifically, such markets may be chosen to avoid competition (pg. 16).

Thus, there are two important empirical questions to be investigated. The first is whether the low cost model in the commercial airline industry has indeed evolved over time in the context outlined by Porter (1980). The second is how well has the low cost model been implemented.

To date, only Alamdari and Fagan (2005) have undertaken an empirical examination of the evolution of the cost leadership model on the part of commercial airlines designated as low cost carriers. However, their study compared airline low cost strategic models at a single point in time – the year 2001. In correlating model choice to performance this is problematic not only because of the issue of the single year utilized but also because of the extremely confounding event of 9/11. Additionally, similar to Button (2009), their study groups U. S. low cost airlines with European low cost airlines. This makes it very difficult to isolate the endogenous effects of management's strategic choices from the exogenous effects of the operating environment in which airlines conduct business.

Evaluating the evolution of a low cost airline's strategy requires a methodology for classifying carriers using Porter's (1980) generic strategies. Kling and Smith (1995) present a methodology for identifying strategic groups amongst U. S. trunk carriers, Southwest, and the then low cost carrier America West. Their study covered the time period 1991-1993. Airline membership in particular strategic groups was done utilizing the two variables of cost per seat mile and the Airline Quality Rating index calculated by the National Institute for Aviation Research.

The current study focuses on the evolution of the low cost model by U. S. carriers in the post 9/11 timeframe. The period examined is 2004 to 2009. A methodology called strategic variance analysis is used for decomposing operating income into three components: (1) growth, (2)

price recovery, and (3) productivity. The price recovery component assesses a firm's *product differentiation strategy* and the productivity component assesses a firm's *low-cost strategy*. Thus, this framework is very much in the spirit of Porter's (1980) seminal work. Furthermore, the framework allows for the separation of the impacts of endogenous managerial decisions and exogenous industry-wide effects.

STRATEGIC VARIANCE ANALYSIS

Strategic variance analysis combines Porter's (1980) strategies with traditional accounting variance analysis. An accounting variance is the difference between an expected amount and an actual result. Shank and Churchill (1977) illustrate how variance analysis is used to break down net income into revenue and cost components in order to gain further insights into the underlying factors that affected profitability. Shank and Govindarajan (1993) advanced this analysis by tying the accounting variances to Porter's low cost leadership and product differentiation strategies. Then, by examining an organization's mission and strategy, the variances are used to determine the extent to which the organization is fulfilling its mission, or where improvements are needed.

Horngren, et al. (2000, 2006, and 2012) illustrate the use of strategic variance analysis for a fictitious manufacturer of computer chips. In their example, management chooses a cost leadership strategy and the company experiences an increase in profits. Strategic variance analysis is used to determine how much of the increased profitability was due to management's choice of strategy. As explained in Horngren (2012), the growth component measures the change in revenues minus the change in costs due solely to a change in the quantity of output sold. The price-recovery component is based on both changes in selling prices and changes in the cost of inputs. It relates to a company's product differentiation strategy and essentially measures the effectiveness of such a strategy. That is, if management is successful in implementing a product differentiation strategy, they can charge higher prices to compensate for the higher costs associated with such a strategy. The productivity component is directly related to the low cost strategy. It measures the change in profitability by operating the business more efficiently, by either using fewer inputs or by using a less expensive mix of inputs. The variances associated with each component are measured while holding all else equal, thereby isolating the impact of that particular factor. Formulas for each variance are in Appendix A. Also, see Caster and Scheraga (2011) for a more detailed explanation of each component.

Caster and Scheraga (2011) and Mudde and Sopariwala (2008) apply strategic variance analysis to companies in the airline industry. The framework provided by Horngren, et al. (2000, 2006, and 2012) was adapted by Sopariwala (2003) to include the impact of underutilization of capacity. Capacity utilization is particularly important in the airline industry, since management makes changes to the fleet, or may simply ground airplanes, thereby affecting capacity utilization. The framework was also modified due to differences between a service industry and a manufacturer.

Mudde and Sopariwala (2008) use strategic variance analysis to examine the performance of Southwest Airlines for the year ending in 2005. They adapted the Horngren, et al. (2000, 2006, 2012) framework by using cost drivers more appropriate for an airline, such as revenue passenger miles (RPMs) and available seat miles (ASMs). They found that Southwest Airlines continued its success pursuing a cost leadership strategy.

Caster and Scheraga (2011) examine the performance of all of the U.S. network air carriers over two, three-year periods: 2004 through 2006 and 2007 through 2009. They found that each of the network air carriers had significant productivity gains in both periods, as they engaged in major cost cutting to deal first with the tragedy of 9/11 and its severe impact on the airline industry, and later, with the economic

TABLE 1
EXAMPLE: SOUTHWEST – FINANCIAL DATA ($)

	12/31/2003	12/31/2006	12/31/2009
Operating Revenues	5,936,696,000	9,086,299,000	10,350,338,000
Operating Expenses	5,454,620,000	8,152,040,000	10,088,296,000
Flying Operations	1,849,777,000	3,628,760,000	4,573,216,000
Maintenance	671,590,000	767,040,000	1,068,072,000
Depreciation and amortization	385,815,000	514,209,000	617,685,000
User charges	168,467,000	220,567,000	308,705,000
Station expenses	937,762,000	1,261,348,000	1,411,332,000
Aircraft and traffic servicing	1,106,229,000	1,481,915,000	1,720,037,000
Passenger services	451,714,000	605,226,000	738,475,000
Promotion and sales	589,271,000	664,733,000	727,645,000
General & Administrative	386,176,000	475,880,000	626,607,000
Transport related expenses	14,048,000	14,277,000	16,559,000
Operating profit	482,076,000	934,259,000	262,042,000

Data Source: International Civil Aviation Organization, *Financial Data: Commercial Air Carriers, Series F*, Montreal, Quebec, Canada, 2003, 2006, and 2009

TABLE 2
EXAMPLE: SOUTHWEST AIRLINES OPERATIONAL DATA

	12/31/2003	12/31/2006	12/31/2009
Revenue passenger enplanements	74,719,340	96,276,907	101,338,228
Revenue passenger miles	47,929,656,245	67,676,690,192	74,442,676,271
Available seat miles	71,775,738,997	92,642,334,641	97,982,778,511

Data Source: International Civil Aviation Organization, *Traffic: Commercial Air Carriers, Series T*, Montreal, Quebec, Canada, 2003, 2006, and 2009

TABLE 3
EXAMPLE: SOUTHWEST AIRLINES – FUEL DATA

	12/31/2003	12/31/2006	12/31/2009
Total gallons used	1,142,651,100	1,389,937,539	1,427,868,309
Total fuel costs	828,356,287	2,133,012,395	2,891,970,226
Average fuel cost per gallon ($)	0.72	1.53	2.03

Data Source: U. S. Department of Transportation, Research and Innovative Administration, Bureau of Transportation Statistics, *TranStats Database*, Washington, D. C., 2003, 2006, and 2009

recession that began in mid-2008. They also demonstrate how strategic variance analysis is used to rank the performance of companies within an industry segment, and thus how it may be used for benchmarking purposes. In addition, they demonstrate the use of strategic variance analysis over multiple time periods, an important extension given that managements' choice of strategies may take several years before tangible results are achieved.

THE DATA SET

Low cost carriers were identified using the U.S. Department of Transportation, Bureau of Transportation Statistics database. Data had to be available in each of the six years under study. With these criteria, five U.S. airlines remained in the sample: Airtran Airways, Frontier Airlines, JetBlue Airways, Southwest Airlines, and Spirit Airlines. Data for calculation of the variances are retrieved from: the International Civil Aviation Organization, *Financial Data: Commercial Air Carriers, Series F* and *Traffic: Commercial Air Carriers, Series T* and also the U.S. Department of Transportation, Bureau of Transportation Statistics, *Transtats Aviation Database*.

We chose two, three year time periods for the analysis, 2004 to 2006, and 2007 to 2009. We began the study with data from 2004 because it took the airline industry approximately 2 1/2 years for flight activity to recover to pre-9/11 levels (Bureau of Transportation Statistics, 2005). Similar to Caster and Scheraga (2011), we chose three-year timeframes to allow for an appropriate amount of time for managements' strategic decisions to impact profitability.

In addition to the five low-cost carriers, we also calculate composite figures for all five airlines combined, for each three-year period. The composite figures are used for benchmarking purposes and serve as a proxy for the relevant market. Market figures are used to adjust the growth component to separate out exogenous effects from endogenous effects.

RESULTS OF THE STRATEGIC VARIANCE ANALYSIS

First, we illustrate the calculation of variances using data for Southwest Airlines. Table 1 has financial results for Southwest Airlines for the years ending in 2003, 2006, and 2009. Southwest Airlines had operating profits of approximately $482 million in 2003, $934 million in 2006, and $262 million in 2009. Strategic variance analysis is used to determine why annual operating profits increased by $452 million in 2006, then decreased by $672 million in 2009.

Table 2 provides the revenue passenger enplanements, RPMs, and ASMs, used to calculate the variances and Table 3 provides the fuel data used in those calculations. Table 4 reclassifies the financial data into three cost categories used by Mudde and Sopariwala (2008) and by Caster and Scheraga (2011), namely, fuel costs, flight-related costs, and passenger-related costs. Finally, Table 5 provides the calculations, using the data from Tables 2, 3, and 4, from which the strategic variance analysis is performed.

The results of the strategic variance analysis for the three-year period ending in 2006 are presented in Table 6 for all five airlines. Continuing for the moment with the analysis of Southwest Airlines as an example, as stated earlier, the company's annual operating profit increased approximately $452 million in 2006 compared to 2003. Strategic variance analysis reveals that operating profit increased by approximately $600 million due to the growth component. Increased revenues from growth of $2.4 billion more than offset increased costs from growth. Operating profit decreased by approximately $626 million due to the price-recovery component, driven primarily by increased fuel costs. Southwest Airlines was not able to pass all of its increased costs on to its customers by charging higher fares. This result is expected for a company choosing to be a low cost leader. In contrast, operating profit increased approximately $549 million due to

TABLE 4
EXAMPLE: SOUTHWEST AIURLINES – RECLASSIFIED FINANCIAL DATA ($)

	12/31/2003	12/31/2006	12/31/2009
Total operating revenues	5,936,696,000	9,086,299,000	10,350,338,000
Less: Total operating expenses	5,454,620,000	8,152,040,000	10,088,296,000
Fuel costs	828,356,287	2,133,012,395	2,891,970,226
Flight-related costs	2,930,763,713	3,872,379,605	4,748,643,774
Passenger-related costs	1,695,500,000	2,146,648,000	2,447,682,000
Operating income/(loss)	482,076,000	934,259,000	262,042,000

FLIGHT RELATED COSTS

	12/31/2003	12/31/2006	12/31/2009
Flying operations	1,849,777,000	3,628,760,000	4,573,216,000
Less: Fuel cost	828,356,287	2,133,012,395	2,891,970,226
Flying operations (excluding fuel)	1,021,420,713	1,495,747,605	1,681,245,774
Maintenance	671,590,000	767,040,000	1,068,072,000
Passenger service	451,714,000	605,226,000	738,475,000
General and administrative	386,176,000	475,880,000	626,607,000
Depreciation and amortization	385,815,000	514,209,000	617,685,000
Transport related	14,048,000	14,277,000	16,559,000
Total flight-related costs	2,930,763,713	3,872,379,605	4,748,643,774

PASSENGER RELATED COSTS

	12/31/2003	12/31/2006	12/31/2009
Aircraft and traffic servicing	1,106,229,000	1,481,915,000	1,720,037,000
Promotion and sales	589,271,000	664,733,000	727,645,000
Total passenger-related costs	1,695,500,000	2,146,648,000	2,447,682,000

Data Sources: 1) Data Source: International Civil Aviation Organization, *Financial Data: Commercial Air Carriers, Series F*, Montreal, Quebec, Canada, 2003, 2006, and 2009 and 2) U. S. Department of Transportation, Research and Innovative Administration, Bureau of Transportation Statistics, *TranStats Database*, Washington, D. C., 2003, 2006, and 2009

TABLE 5[1]
SOUTHWEST AIRLINES–DATA USED IN STRATEGIC VARIANCE ANALYSIS

	12/31/2003	12/31/2006	12/31/2009
Total operating revenues ($)	5,936,696,000	9,086,299,000	10,350,338,000
Revenue passenger miles (RPMs)	47,929,656,24	67,676,690,192	74,442,676,271
Average revenue per RPM	0.124	0.134	0.139
Revenue passenger miles (RPMs)	47,929,656,24	67,676,690,192	74,442,676,271
Available seat miles (ASMs)	71,775,738,99	92,642,334,641	97,982,778,511
Passenger load factor (%)	66.78%	73.05%	75.98%
Hence, budgeted available seat miles		101,347,366,78	101,904,264,33
Revenue passenger miles (RPMs)	47,929,656,24	67,676,690,192	74,442,676,271
Revenue passenger enplanements	74,719,340	96,276,907	101,338,228
Average revenue passenger miles per passenger ($)	641.46	702.94	734.60
Hence, budgeted revenue passenger enplanements		105,503,732	105,902,204
Number of gallons used	1,142,651,100	1,389,937,539	1,427,868,309
Available seat miles (ASMs)	71,775,738,99	92,642,334,641	97,982,778,511
Average number of gallons per ASM	0.0159197	0.0150033	0.0145726
Total flight-related costs ($)	2,930,763,713	3,872,379,605	4,748,643,774
Available seat miles (ASMs)	71,775,738,99	92,642,334,641	97,982,778,511
Average flight-related cost per ASM ($)	0.041	0.042	0.048
Total passenger-related costs ($)	1,695,500,000	2,146,648,000	2,447,682,000
Revenue passenger enplanements	74,719,340	96,276,907	101,338,228
Average cost per revenue passenger ($)	22.69	22.30	24.15
Revenue passenger (RPMs)	47,929,656,24	67,676,690,192	74,442,676,271
Available seat miles (ASMs)	71,775,738,99	92,642,334,641	97,982,778,511
Idle or unused capacity (ASMs)	23,846,082,75	24,965,644,449	23,540,102,240
Hence, budgeted idle capacity (ASMs)		33,670,676,594	27,461,588,064

Data Sources: 1) International Civil Aviation Organization, *Financial Data: Commercial Air Carriers, Series F*, Montreal, Quebec, Canada, 2003, 2006, and 2009, 2) International Civil Aviation Organization, *Traffic: Commercial Air Carriers, Series T*, Montreal, Quebec, Canada, 2003, 2006, and 2009, and 3) U. S. Department of Transportation, Research and Innovative Administration, Bureau of Transportation Statistics, *TranStats Database*, Washington, D. C., 2003, 2006, and 2009

[1]Budgeted Available Seat Miles from year x to year y = Revenue Passenger Miles (year y) / Passenger Load Factor (year x), Budgeted Revenue Passengers Enplanements from year x to year y = Revenue Passenger Miles (year y) / Average Revenue Passenger Miles per Passenger (year x), and Budgeted Idle Capacity in year y = Budgeted Available Seat Miles (year y) – Revenue Passenger Miles (year y). [See Mudde and Sopariwala (2008).]

TABLE 6
STRATEGIC VARIANCE ANALYSIS 2004-2006

	Aitran	Frontier	JetBlue	Southwest	Spirit	Composite
GROWTH COMPONENT 2004-2006						
Revenue effect	851,316,759	461,813,711	1,021,875,724	2,445,920,681	-917,782	4,899,988,990
Fuel cost effect	-166,119,025	-68,644,066	-150,786,885	-341,283,059	364,527	-783,095,650
Flight-related cost effect	-288,577,893	-165,730,718	-368,595,259	-806,315,495	217,857	-1,639,026,992
Passenger-related effect	-198,212,989	-133,507,046	-259,944,207	-698,546,551	262,463	-1,356,789,039
TOTAL	**198,406,852**	**93,931,881**	**242,549,373**	**599,775,576**	**-72,935**	**1,121,077,310**
PRICE-RECOVERY COMPONENT 2004-2006						
Revenue effect	123,999,241	79,829,289	343,030,276	703,682,319	91,145,782	1,221,707,010
Fuel cost effect	-348,846,166	-204,027,775	-400,609,901	-1,306,337,240	-218,284,811	-2,568,641,310
Flight-related cost effect	-22,410,173	-45,576,335	-34,734,613	-65,444,130	-127,349,361	-267,598,334
Passenger-related effect	-14,147,151	33,986,897	-32,552,106	41,671,686	-823,498	-383,219
TOTAL	**-261,404,249**	**-135,787,923**	**-124,866,344**	**-626,427,364**	**-255,311,889**	**-1,614,915,854**
PRODUCTIVITY COMPONENT 2004-2006						
Fuel cost effect	63,743,117	-45,074,561	-29,832,448	142,538,095	213,057,383	449,393,257
Fuel (ASM) cost effect	15,321,629	55,966,507	-23,178,542	200,426,096	5,361,617	296,098,196
Passenger-related effect	45,974,140	3,815,149	-11,967,688	205,726,865	-11,975,965	326,932,258
TOTAL	**125,038,886**	**14,707,095**	**-64,978,678**	**548,691,056**	**206,443,036**	**1,072,423,710**
CAPACITY UNDERUTILIZATION COMPONENT 2004-2006						
Unused capacities	-8,423,510	-11,348,399	-7,854,281	-24,142,062	-29,245,462	-87,670,145
Available capacities	-386,381,872	-164,643,372	-465,557,329	-852,029,699	4,219,107	-1,885,653,014
Used capacities	288,577,893	165,730,718	368,595,259	806,315,495	-217,857	1,639,026,992
TOTAL	**-106,227,489**	**-10,261,053**	**-104,816,352**	**-69,856,267**	**-25,244,212**	**-334,296,167**

TABLE 7
STRATEGIC VARIANCE ANALYSIS 2007-2009

	Aitran	Frontier	JetBlue	Southwest	Spirit	Composite
GROWTH COMPONENT 2007-2009						
Revenue effect	642,535,846	46,557,147	267,533,937	908,403,948	162,150,926	2,016,041,529
Fuel cost effect	-208,721,910	-14,377,511	-85,099,299	-213,248,197	-53,498,622	-540,772,496
Flight-related cost effect	-211,146,407	-17,404,328	-86,425,648	-282,813,107	-70,216,640	-655,418,204
Passenger-related effect	-129,003,658	-10,954,797	-63,216,726	-214,611,419	-42,389,820	-468,967,575
TOTAL	**93,663,871**	**3,820,511**	**32,792,264**	**197,731,225**	**-3,954,155**	**350,883,253**
PRICE-RECOVERY COMPONENT 2007-2009						
Revenue effect	-194,448,846	-64,866,147	656,621,063	355,635,052	-3,479,926	760,601,471
Fuel cost effect	101,965,659	55,683,950	-7,920,717	-750,330,172	33,659,111	-603,673,984
Flight-related cost effect	-8,677,753	42,753,262	-210,904,708	-496,147,089	87,516,675	-595,981,059
Passenger-related effect	-24,026,889	-7,687,977	-92,396,793	-196,658,975	48,498,898	-293,074,871
TOTAL	**-125,187,828**	**25,883,088**	**345,398,845**	**-1,087,501,184**	**166,194,757**	**-732,128,442**
PRODUCTIVITY COMPONENT 2007-2009						
Fuel cost effect	34,648,449	42,044,792	-47,628,722	88,877,543	24,377,022	149,888,041
Fuel (ASM) cost effect	58,630,944	3,338,915	-21,494,913	115,742,995	-4,058,428	147,149,329
Passenger-related effect	56,899,547	-8,255,226	-61,559,481	110,236,394	-6,216,078	120,699,446
TOTAL	**150,178,940**	**37,128,481**	**-130,683,116**	**314,856,932**	**14,102,516**	**417,736,816**
CAPACITY UNDERUTILIZATION COMPONENT 2007-2009						
Unused capacities	-2,243,040	9,975,525	-53,919,202	-156,890,560	22,612,030	-172,070,803
Available capacities	-192,681,349	-14,835,933	-131,068,439	-223,226,520	-95,079,789	-654,765,028
Used capacities	211,146,407	17,404,328	86,425,648	282,813,107	70,216,640	655,418,204
TOTAL	**16,222,018**	**12,543,920**	**-98,561,993**	**-97,303,973**	**-2,251,119**	**-171,417,627**

gains in productivity. Again, this result is expected for a company choosing to be a low cost leader. Finally, the capacity underutilization component shows a decline in operating profit of approximately $70 million.

Table 7 shows the results of the strategic variance analysis for the three-year period ending in 2009. Southwest Airline's annual operating profit in 2009 was $262 million, a decline of $672 million from three years earlier. The four components of strategic variance analysis yield results similar to the prior three-year period. That is, Southwest Airlines operating profits increased due to growth of the market and due to productivity gains, and decreased due to the price-recovery effect and capacity underutilization. However, the decrease in operating profits due to the price-recovery component of almost $1.1 billion overwhelmed the increases due to the growth and productivity components. As seen in Table 7, prices of inputs, namely fuel costs, flight-related costs, and passenger-related costs all increased at rates much higher than Southwest's fare increases designed to help recover those costs.

Over the years, Southwest Airlines has seen an increase in competition from other airlines that identify themselves as low cost carriers. Strategic variance analysis can be used to rank the relative performance of each of these carriers, on each of the components. Table 8 has the results of the strategic variance analysis for all five airlines for the three-year period ending in 2006. The data are normalized by dividing by billions of RPMs. During this three-year period, all but Spirit Airways had an increase in operating profits due to growth. Airtran ranked first in the growth component, while Southwest Airlines ranked fourth. As expected, all five airlines saw decreases in operating profits due to price-recovery. The increased cost of fuel was especially significant for all five airlines, and increased fares were not sufficient to recover the increased costs. JetBlue Airways ranked first, and thus did the best job of recovering its increased fuel and other costs, while Spirit Airlines ranked fifth. Spirit Airlines had a much higher increase in fuel costs, and also had a very significant increase in flight-related costs compared to the competition. As low cost leaders, one would expect significant gains in operating profits from productivity. In fact, only Spirit Airlines had significant gains in productivity, while gains were more modest for Airtran, Southwest, and Frontier. Surprisingly, JetBlue Airways saw a decrease in operating profits due to productivity. Finally, capacity utilization was negative for all five airlines, but not a significant factor in the change in overall profitability.

Table 9 is similar to Table 8, but covers the three year period ending in 2009. The growth component results are very similar to the prior three year period. Airtran again ranked first and Spirit again ranked fifth, and was the only airline to see a decrease in operating profits due to growth. Table 9 reveals a significant change in price-recovery rankings compared to the prior period. In the prior period, all five airlines saw decreases in operating profits due primarily to increased fuel costs. In the latter period, Spirit Airlines, JetBlue Airways, and Frontier Airlines all experienced a positive impact from price-recovery. Most interesting is JetBlue Airways, which raised fares significantly during this period and more than covered the increased costs of inputs. Spirit Airlines and Frontier Airlines achieved the positive results by decreasing the cost of inputs, particularly fuel costs and flight-related costs. Spirit Airlines also reduced its passenger-related costs during this period. In contrast, Airtran Airways saw a decrease in operating profits due to the price-recovery component. It successfully reduced the price of fuel, but it lowered rather than raised its fares during this timeframe. Southwest Airlines ranked last in price-recovery. Its fare increases were unable to recover its increased cost of inputs, particularly fuel costs. For the productivity component, the rankings were somewhat different, in that Spirit Airlines dropped from first to fourth. JetBlue Airways continued to be a surprise as the only low cost

TABLE 8
NORMALIZED STRATEGIC VARIANCE ANALYSIS 2004-2006

	Aitran	Frontier	JetBlue	Southwest	Spirit	Composite
GROWTH COMPONENT 2004-2006	1	2	3	4	5	
Revenue effect	61,713,785	55,538,492	43,847,309	36,141,257	-200,918	41,592,065
Fuel cost effect	-12,042,326	-8,255,251	-6,470,062	-5,042,845	79,801	-6,647,069
Flight-related cost effect	-20,919,633	-19,931,054	-15,815,925	-11,914,228	47,692	-13,912,382
Passenger-related effect	-14,368,886	-16,055,781	-11,153,855	-10,321,819	57,457	-11,516,691
TOTAL	**14,382,940**	**11,296,406**	**10,407,466**	**8,862,366**	**-15,967**	**9,515,923**
PRICE-RECOVERY COMPONENT 2004-2006	4	3	1	2	5	
Revenue effect	8,988,972	9,600,404	14,718,966	10,397,706	19,953,318	10,370,088
Fuel cost effect	-25,288,610	-24,536,723	-17,189,630	-19,302,617	-47,786,153	-21,803,130
Flight-related cost effect	-1,624,562	-5,481,087	-1,490,415	-967,011	-27,878,880	-2,271,427
Passenger-related effect	-1,025,557	4,087,321	-1,396,767	615,747	-180,277	-3,253
TOTAL	**-18,949,757**	**-16,330,084**	**-5,357,846**	**-9,256,176**	**-55,891,992**	**-13,707,722**
PRODUCTIVITY COMPONENT 2004-2006	2	4	5	3	1	
Fuel cost effect	4,620,876	-5,420,742	-1,280,070	2,106,162	46,641,783	3,814,538
Fuel (ASM) cost effect	1,110,698	6,730,626	-994,560	2,961,523	1,173,747	2,513,339
Passenger-related effect	3,332,764	458,816	-513,517	3,039,848	-2,621,737	2,775,065
TOTAL	**9,064,338**	**1,768,700**	**-2,788,147**	**8,107,534**	**45,193,793**	**9,102,942**
CAPACITY UNDERUTILIZATION COMPONENT 2004-2006	5	2	3	1	4	
Unused capacities	-610,638	-1,364,778	-337,017	-356,726	-6,402,315	-744,161
Available capacities	-28,009,654	-19,800,288	-19,976,437	-12,589,707	923,632	-16,005,791
Used capacities	20,919,633	19,931,054	15,815,925	11,914,228	-47,692	13,912,382
TOTAL	**-7,700,659**	**-1,234,011**	**-4,497,528**	**-1,032,206**	**-5,526,375**	**-2,837,571**

Note: Numbers in shaded areas are rankings, from 1 to 5, of the effect of a component on operating income.

TABLE 9
NORMALIZED STRATEGIC VARIANCE ANALYSIS 2007-2009

	Aitran	Frontier	JetBlue	Southwest	Spirit	Composite
GROWTH COMPONENT 2007-2009	1	4	3	2	5	
Revenue effect	34,776,819	5,377,804	10,312,130	12,202,731	27,303,356	15,086,854
Fuel cost effect	-11,296,933	-1,660,742	-3,280,163	-2,864,596	-9,008,224	-4,046,819
Flight-related cost effect	-11,428,157	-2,010,369	-3,331,288	-3,799,072	-11,823,244	-4,904,759
Passenger-related effect	-6,982,236	-1,265,386	-2,436,697	-2,882,908	-7,137,698	-3,509,474
TOTAL	**5,069,494**	**441,306**	**1,263,982**	**2,656,154**	**-665,810**	**2,625,801**
PRICE-RECOVERY COMPONENT 2007-2009	4	3	2	5	1	
Revenue effect	-10,524,413	-7,492,671	25,309,542	4,777,301	-585,958	5,691,888
Fuel cost effect	5,518,823	6,432,038	-305,305	-10,079,301	5,667,601	-4,517,536
Flight-related cost effect	-469,678	4,938,418	-8,129,349	-6,664,821	14,736,265	-4,459,967
Passenger-related effect	-1,300,439	-888,036	-3,561,446	-2,641,750	8,166,359	-2,193,198
TOTAL	**-6,775,707**	**2,989,749**	**13,313,442**	**-14,608,572**	**27,984,266**	**-5,478,813**
PRODUCTIVITY COMPONENT 2007-2009	1	2	5	3	4	
Fuel cost effect	1,875,324	4,856,583	-1,835,855	1,193,906	4,104,661	1,121,673
Fuel (ASM) cost effect	3,173,360	385,677	-828,524	1,554,794	-683,368	1,101,178
Passenger-related effect	3,079,650	-953,559	-2,372,818	1,480,823	-1,046,678	903,243
TOTAL	**8,128,334**	**4,288,701**	**-5,037,197**	**4,229,522**	**2,374,615**	**3,126,093**
CAPACITY UNDERUTILIZATION COMPONENT 2007-2009	2	1	5	4	3	
Unused capacities	-121,403	1,152,270	-2,078,322	-2,107,535	3,807,467	-1,287,675
Available capacities	-10,428,748	-1,713,695	-5,052,050	-2,998,636	-16,009,760	-4,899,871
Used capacities	11,428,157	2,010,369	3,331,288	3,799,072	11,823,244	4,904,759
TOTAL	**878,006**	**1,448,945**	**-3,799,085**	**-1,307,099**	**-379,049**	**-1,282,787**

Note: Numbers in shaded areas are rankings, from 1 to 5, of the effect of a component on operating income.

carrier to experience a decline in operating profits due to productivity changes. The impact of capacity utilization was not very significant compared to the other components. Airtran Airways and Frontier Airlines experienced gains in operating profitability related to capacity, while the other three carriers experienced decreases similar to the earlier time period.

The growth component is impacted by exogenous changes in the market in addition to endogenous changes brought about by management's strategic decisions. Horngren, Datar and Rajan (2012) provide an adjustment to the growth component to estimate the percentage of change in profitability attributable to management's decisions. Following Caster and Scheraga (2011), we calculate a market adjustment and apply it only to the growth component, since management may choose a blended strategy rather than strictly following a product differentiation or cost leadership strategy. Table 10 provides the results of further analyzing the growth component.

Table 10a shows the calculations for each airline of the endogenous percentage of growth for the three-year period ending in 2006. Using Southwest Airlines as an example, their market grew by 41.2 percent, as measured by the change

TABLE 10a
IMPACT OF ENDOGENOUS STRATEGIES – GROWTH COMPONENT 2004-2006
(12/31/03 - 12/31/06)

	RPMs 2004	RPMs 2006	%Δ2004-	ENDOGENOUS
Airtran	7,157,394,690.01	13,794,596,431.84	92.73	40.58
Frontier	4,664,512,745.57	8,315,200,789.89	78.27	29.60
JetBlue	11,516,971,262.83	23,305,323,597.69	102.36	46.17
Southwest	47,929,656,245.03	67,676,690,191.78	41.20	-33.74
Spirit	4,577,285,154.70	4,567,951,103.06	-0.20	-27,650
Composite	75,958,831,424.48	117,810,669,689.02	55.10	

Endogenous Effect = [%ΔRPMs(2004-2006)$_{\text{Airline i}}$ - %ΔRPMs(2004-2006)$_{\text{Market}}$] / |%ΔRPMs(2004-2006)$_{\text{Airline i}}$|

TABLE 10b
IMPACT OF ENDOGENOUS STRATEGIES – GROWTH COMPONENT 2007-2009
(12/31/06 – 12/31/09)

	RPMs 2007	RPMs 2009	%Δ2007-	ENDOGENOUS
Airtran	13,794,596,431.84	18,475,980,896.56	33.94	60.43
Frontier	8,315,200,789.89	8,657,279,052.83	4.11	-226.38
JetBlue	23,305,323,597.69	25,943,616,840.15	11.32	-18.61
Southwest	67,676,690,191.78	74,442,676,270.58	10.00	-34.30
Spirit	4,567,951,103.06	5,938,864,220.45	30.01	55.26
Composite	117,810,669,689.02	133,629,024,310.53	13.43	

Endogenous Effect = [%ΔRPMs(2007-2009)$_{\text{Airline i}}$ - %ΔRPMs(2007-2009)$_{\text{Market}}$] / |%ΔRPMs(2007-2009)$_{\text{Airline i}}$|

in RPMs. On the surface, this appears to be a strong increase, which resulted in almost $600 million in additional operating profits as shown in Table 6. However, the relevant market as a whole, as measured by the change in RPMs for the composite, increased by 55.1 percent. Therefore, Southwest Airline's growth in this period actually fell short of the overall market growth by almost 13.9 percent. Thus, management's decisions resulted in a 33.74 percent decrease in operating profit due to the growth component. In contrast, JetBlue Airways experienced growth of 102.36 percent in this period, which is 47.26 percentage points better than the overall market, meaning that 46.17 percent of the increase is due to endogenous factors.

Table 10b shows similar adjustments for the three-year period ending in 2009. Table 7 shows that before adjustments, all but Spirit Airlines experienced positive changes in operating profits due to growth. However, after adjusting for exogenous factors, Table 10b shows very different results. Airtran Airways and Spirit Airlines had positive changes from endogenous factors, but Frontier Airlines, JetBlue Airways, and Southwest Airlines all experienced negative changes from endogenous factors. According to Horngren, Datar and Rajan(2012), companies following a cost leadership strategy should experience positive changes due to growth, so these results are somewhat unexpected.

Stage Length, and Domestic Compared to Foreign Operations

Stage length may have an influence on an airline's operating profit. Average stage length is defined as "the average distance between takeoffs and landings" (Caves, Christensen and Trethaway, 1984). As the average stage length increases, the cost per unit may decrease. Caves, Christensen and Trethaway, 1981 and Tretheway (1984) find, however, that the posited effect between average stage length and unit cost is ambiguous. Table 11 shows the average stage length for each airline for 2004, 2006, and 2009. Standard deviation calculations suggest that average stage length is not significant for these five airlines over the period in this study.

The extent to which an airline has international routes compared to domestic routes may have an impact on operating efficiency. Fethi, Jackson and Weyman-Jones (2002) suggest that spatial disparities in the operating environment result when an airline increases its international focus. Although it is difficult to predict the impact of differences in international focus, a priori, some arguments suggest the impact on operating profit may be negative. In structuring bilateral agreements, the international air transport system has tended to focus on small sets of routes, or even individual routes between countries thus hampering global efficiency. Legal, public policy, and tax differences with respect to air transport exist across countries, which may impede operating efficiency. In addition, the level of competition in certain global markets is impacted by airport infrastructure constraints.

The ratio of domestic scheduled RPMs to international scheduled RPMs captures the international focus of an airline. A simple analysis was performed to detect any outliers in the sample utilized in this study. A standard score, the number of standard deviations above or below the mean, was calculated with regard to the degree of dominance of domestic operations. Given the size of the sample, outliers were defined as those observations with standard scores of 2.5 or greater. As can be seen from Table 11, there are no such outliers, which suggests that the impact of an international focus, if any, is minimal for the airlines in the sample.

Fleet Standardization

Brüggen and Klose (2010) suggest various cost advantages to fleet standardization or commonality of aircraft on the part of an airline. Fewer aircraft types in an airline's fleet reduces the number of reserve crews that are needed and increases the carrier's ability to swap crews and reduce the required personnel training.

TABLE 11
AVERAGE STAGE LENGTH (MILES) AND DOMESTIC RPMs AS A PERCENTAGE OF TOTAL RPMs

	Average Stage Length	SDFM	Domestic/Total (%)	SDFM
Airtran 2004	626.97	-0.88	99.16	0.41
Frontier 2004	953.84	0.17	95.03	-1.73
JetBlue 2004	1338.01	1.41	98.93	0.29
Southwest 2004	576.23	-1.04	100.00	0.85
Spirit 2004	1006.95	0.34	98.69	0.17
Airtran 2006	651.95	-0.87	99.65	0.80
Frontier 2006	902.88	0.23	93.05	-0.67
JetBlue 2006	1185.01	1.47	97.83	0.40
Southwest 2006	621.70	-1.00	100.00	0.88
Spirit 2006	886.92	0.16	89.75	-1.41
Airtran 2009	737.25	-0.68	99.07	0.86
Frontier 2009	883.36	0.18	93.70	0.15
JetBlue 2009	1075.13	1.31	87.99	-0.61
Southwest 2009	638.70	-1.26	100.00	0.98
Spirit 2009	931.23	0.46	82.28	-1.38

SDFM = Standard Deviations from Mean

Data Source: International Civil Aviation Organization, *Traffic: Commercial Air Carriers, Series T*, Montreal, Quebec, Canada, 2004, 2006, and 2009

Standardized maintenance processes allow for fewer spare parts and reduced labor costs. Fleet commonality allows for the standardization of ground handling processes, economies of scale realized from the standardization of ground handling equipment, and lower labor costs. Finally, an airline ordering several planes of the same type will typically pay a lower per capita price than its counterpart, which orders a mixture of aircraft from various manufacturers.

This study utilizes the index of fleet standardization developed by De Borges Pan and Espirito Santo (2004) and modified by Brüggen and Klose (2010). This index, the *IPC*, is a composite of several partial indices. Thus:

(1) IPPCC = (no. of aircraft in the family) / (AMF x TFC) where AMF is the number of aircraft models/types in a family and TFC is the number of aircraft in the fleet. Each fleet family with more than one type is given a "bonus" of 0.1. This is necessary, as otherwise fleet families would count as diversified as totally different aircraft (Klose, 2009).
(2) IPPC = (ÓIPPCC) / (no. of families from the manufacturer)
(3) IPC = (ÓIPPC) / (no. of manufacturers)
This index ranges from zero to one. It is inversely proportional to the number of models, fleet families, and manufacturers in an airline's fleet.

The results displayed in Table 12 must be interpreted with care. While there appears to be a range in the levels of fleet standardization, scrutiny is required. Consider Southwest Airlines, whose indices range from 0.3500 to 0.4333. In fact, its fleet is composed of a single aircraft family, the Boeing 737, with the predominant utilization of the 300, 500, and 700 models. Airtran's fleet is, by and large, divided between two Boeing aircraft types, the 717-200 and the 737-700 families. Frontier, for the most part, has a fleet composed of a single Airbus family of aircraft with the A318, A319, and A320 models. Similarly, JetBlue has a fleet composed of two aircraft types, the Airbus A320 and Embraer ERJ190. These observations suggest that none of the low cost carriers in the sample utilized in this study indulged in a diversity of aircraft types. Table 13 presents the details of each carrier's fleet composition.

DISCUSSION AND CONCLUSIONS

Several interesting results were revealed in this study. First, although JetBlue Airways is a self-proclaimed low-cost carrier, it does not behave like one. Companies following the cost leadership strategy should experience greater profitability in the growth component and in the productivity component. Table 8 reveals that JetBlue Airways ranked third in profitability due to growth, while Table 10a reveals that 46.17 percent of that growth was endogenous. Table 9 reveals that JetBlue Airways again ranked third in profitability due to growth, while Table 10b shows that endogenous factors have a negative impact of 18.61 percent. In addition, and even more revealing, was JetBlue Airways ranking last place in productivity in both periods, as shown in Tables 8 and 9. Not only did JetBlue rank last, but also the productivity component was negative in both periods. These are not

TABLE 12
FLEET DIVERSIFICATION INDICES

Carrier	Year	IPC
Airtran	2004	0.3123
Airtran	2006	0.5000
Airtran	2009	0.5000
Frontier	2004	0.3556
Frontier	2006	0.6000
Frontier	2009	0.4333
JetBlue	2004	1.0000
JetBlue	2006	0.5000
JetBlue	2009	0.5000
Southwest	2004	0.3500
Southwest	2006	0.4333
Southwest	2009	0.4333
Spirit	2004	0.5000
Spirit	2006	0.3833
Spirit	2009	0.6000

Data Source: International Civil Aviation Organization, *Fleet – Personnel*, Montreal, Quebec, Canada, 2004, 2006, and 2009

TABLE 13
FLEET COMPOSITION

Carrier	Year	Model	Number	Carrier	Year	Model	Number
Airtran	**2004**	McDonnell Douglas DC9-30	1			Embraer ERJ190	38
		Boeing 717-200	76	**Southwest**	**2004**	Boeing 737-100	14
		Boeing 737-700	4			Boeing 737-300	195
Airtran	**2006**	Boeing 717-200	86			Boeing 737-500	25
		Boeing 737-700	30			Boeing 737-700	169
Airtran	**2009**	Boeing 717-200	86	**Southwest**	**2006**	Boeing 737-300	193
		Boeing 737-700	51			Boeing 737-500	25
Frontier	**2004**	Airbus A318	6			Boeing 737-700	245
		Airbus A319	29	**Southwest**	**2009**	Boeing 737-300	181
		Boeing 737-300	10			Boeing 737-500	25
Frontier	**2006**	Airbus A318	7			Boeing 737-700	303
		Airbus A319	45	**Spirit**	**2004**	Airbus A321	2
Frontier	**2009**	Airbus A318	10			McDonnell Douglas DC9-80	31
		Airbus A319	38	**Spirit**	**2006**	Airbus A319	18
		Airbus A320	3			Airbus A321	6
JetBlue	**2004**	Airbus A320	61			McDonnell Douglas DC9-80	12
JetBlue	**2006**	Airbus A320	91	**Spirit**	**2009**	Airbus A319	26
		Embraer ERJ190	15			Airbus A321	2
JetBlue	**2009**	Airbus A320	109				

Data Source: International Civil Aviation Organization, *Fleet – Personnel*, Montreal, Quebec, Canada, 2004, 2006, and 2009

results typical of a company following a cost leadership strategy.

In Table 8, it can be seen that JetBlue Airways ranked first in the price-recovery component for the three-year period ending in 2006. Although the overall impact on operating profits was negative, it was less negative than for the other airlines in the sample. In Table 9, JetBlue Airways ranked second in the price-recovery component, and the component had a positive effect on operating profits. Taken together, these results suggest that the management of JetBlue Airways is following a product differentiation strategy. A product differentiator is able to charge higher prices to more than recover the higher cost of inputs associated with such a strategy.

A second interesting finding relates to the overall viability of following a low cost strategy over the long term. For the three-year period ending in 2009, the airlines in the sample saw gains in annual operating profits of approximately $351 million due to growth and approximately $418 million due to productivity, as shown by the composite results in Table 7. However, those gains were not enough to cover decreases of approximately $732 million due to price-recovery and $171 million due to capacity underutilization. Increases in both the cost of fuel and in flight-related costs excluding fuel were not offset by increases in airfares. A further look reveals that the composite results were driven by Southwest Airlines, the allegedly low-cost leader of the industry. In fact, it is interesting to note that Southwest Airlines did not rank first for any component of profitability for either period except for capacity underutilization during the three-year period ending in 2006.

A third interesting result is support for the notion that management may not strictly adhere to one strategy over another. The results support the notion of a blended strategy. For example, Table 9 shows that Frontier Airlines, JetBlue Airways, and Spirit Airlines all saw increases in profitability from the price-recovery component for the three-year period ending in 2009. JetBlue achieved the result as a true product differentiator, charging higher fares to recover its higher cost of inputs. Frontier and Spirit actually lowered fares during this period, but they were also able to lower the cost of inputs to increase overall profitability.

Finally, this paper illustrates the usefulness of strategic variance analysis as a methodology for examining the determinants of profitability and tying those determinants to management's strategic decisions.

APPENDIX A
CALCULATION OF STRATEGIC VARIANCES FROM YEAR i TO Year j

The Growth Component

1. Airline Revenues

[*Revenue effect of the Growth Component (i.e., lower expected revenue due to lower RPM)*]

Variance = {Year i revenue/RPM} * {Year j RPMs – Year i RPMs}

2. Fuel Costs

[*Fuel cost effect of the Growth Component (i.e., lower expected fuel costs due to lower RPMs)*]

Variance = {Year i fuel cost/gallon} * {Year i gallons used per ASM} * {Year i actual ASMs – Year j budgeted ASMs}

3. Flight-related Costs

[*Flight-related cost effect of the Growth Component (i.e., lower expected flight-related costs due to lower RPMs)*]

Variance = {Year i cost/ASM} * {Year i passenger load factor} * {Year i actual ASMs – Year j budgeted ASMs}

4. Passenger-related Costs

[*Passenger-related cost effect of the Growth Component (i.e., lower expected passenger-related costs due to lower RPMs)*]

Variance = {Year i cost/passenger} * {Year i revenue passengers – Year j budgeted revenue passengers}

The Price-Recovery Component

1. Airline Revenues

[*Revenue effect of the Price-Recovery Component (i.e., higher revenue due to higher airfares)*]

Variance = {Year j RPMs} * {Year j revenue/RPM – Year i revenue/RPM}

2. Fuel Costs

[*Fuel cost effect of the Price-Recovery Component (i.e., higher costs due to higher fuel prices)*]

Variance = {Year j budgeted ASMs} * {Year i gallons used/ASM} * {Year i fuel cost/gallon – Year j fuel cost/gallon}

3. Flight-related Costs

[*Flight-related cost effect of the Price-Recovery Component (i.e., higher costs due to higher flight-related costs per ASM)*]

Variance = {Year j passenger load factor} * {Year j actual ASMs} * {Year i cost/ASM – Year j cost/ASM}

4. Passenger-related Costs

[*Passenger-related cost effect of the Price-Recovery Component (i.e., higher costs due to higher costs per passenger)*]

Variance = {Year j budgeted revenue passengers} * {Year i cost/passenger – Year j cost/passenger}

The Productivity Component

1. Fuel Costs (a)

[*Fuel cost effect of the Productivity Component (i.e., lower costs due to lower fuel usage per gallon)*]

Variance = {Year j fuel cost/gallon} * {Year j budgeted ASMs} * {Year i gallons used /ASM – Year j gallons used/ASM}

2. Fuel Costs (b)

[*Fuel (ASM) cost effect of the Productivity Component (i.e., lower costs due to higher passenger load factor)*]

Variance = {Year j fuel cost/gallon} * {Year j gallons used/ASM} * {Year j budgeted ASMs – Year j actual ASMs}

3. Passenger-related costs

[*Passenger-related cost effect of the Productivity Component (i.e., lower costs due to higher miles per passenger)*]

Variance = {Year j cost/passenger} * {Year j budgeted revenue passengers – Year j revenue passengers}

The Capacity Underutilization Component

1. Flight-related costs (a)

[*Changes in flight-related costs relating to unused capacities (i.e., higher unit costs to acquire capacity that is unused)*]

Variance = {Year j actual ASMs – Year j RPMs} * {Year i cost/ASM – Year j cost/ASM}

2. Flight-related costs (b)

[*Changes in flight-related costs of available capacities (i.e., lower underutilization due to decrease in available capacity)*]

Variance = {Year i cost/ASM} * {Year i actual ASMs – Year j actual ASMs}

3. Flight-related costs (c)

[*Changes in flight-related costs of used capacities (i.e., higher underutilization due to decrease in capacity used)*]

Variance = {Year i cost/ASM} * {Year j RPMs – Year i RPMs}

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