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Document **G91**

ROI CASE STUDY SPSS AMERICAN AIRLINES

THE BOTTOM LINE

American Airlines deployed SPSS for Windows to replace its mainframe-based analytics system, increasing productivity of its customer research team and improving decision making while reducing ongoing costs.

ROI: 1192%

Payback: 2 months

THE COMPANY

American Airlines is the world's largest airline. American, American Eagle, and the AmericanConnection airlines serve 250 cities in over 40 countries with more than 4,000 daily flights. The combined network fleet numbers more than 1,000 aircraft. American's Web site, AA.com, provides users with access to check and book fares as well as news, information, and travel offers. American Airlines is a founding member of the Oneworld Alliance, which brings together several of the larger airlines. Together, its members serve more than 600 destinations in more than 135 countries and territories.

THE CHALLENGE

In the intensively competitive world of air transportation, knowing what customers like and don't like, predicting how they will behave, and rapidly making decisions based on changing market conditions is critical to maximizing revenues.

AA's customer research department collects and analyzes survey, focus group, and telephone interview data, and operational variables such as type of aircraft, flight crew onboard, flight delays, and passenger volumes on an ongoing basis to identify key customer service challenges and opportunities and report them to management.

AA had used a mainframe-based SAS system for some time to analyze customer data but in the late 1990s found that the scale and volume of data to be managed and the accelerating competition created increasing challenges:

- The statistical analysts had to submit requests for analysis to two SAS programmers, who then programmed the analysis and delivered the results — usually a day later.
- Developing quarterly reports was a time- and labor-intensive task, and the sheer volume of the data meant that there wasn't time to explore and illustrate statistically significant differences in the data from year to year or aircraft type to aircraft type.

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- Because the analysts were one step removed from the data, it was difficult and time consuming to test different research designs or perform more complex analyses.

THE STRATEGY

AA began looking for a desktop-based solution that could enable its analysts to perform their own statistical analyses. The company considered both SPSS and SAS (because of AA's prior use of SAS on the mainframe) and selected SPSS for two main reasons:

- SPSS invested time and effort to understand AA's business challenges and worked with them to ensure they would be successful.
- SPSS was willing to work with AA to migrate the mainframe data.
- AA found the SPSS software was relatively intuitive and easy to use and would require limited training for its business analysts.

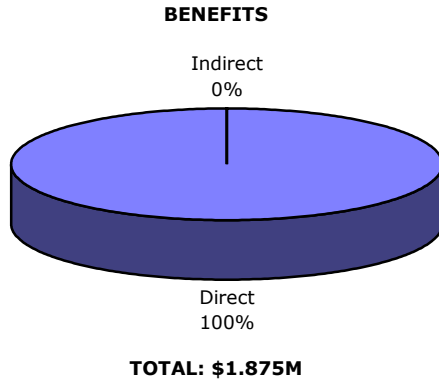
SPSS for Windows licenses were purchased in January 1996 on a very limited budget with key investments in one heavy-duty workstation and one high-speed printer to accelerate the delivery of reports to analysts.

From a training perspective, AA found that training courses were a less effective strategy than providing tactical access to training as users learned more about the solution and how to use it. Initially, 10 users pursued their own self-paced training using the existing manuals and tutorials. Today, seven analysts use SPSS for Windows to run correlations on data sets that are maintained by the senior database manager. To ensure rapid ramp-up of new analysts and data fidelity, AA has developed a data management structure with key data sets and related syntax files stored together so other users can replicate results and key data stores which can be accessed but are write-protected.

KEY BENEFIT AREAS

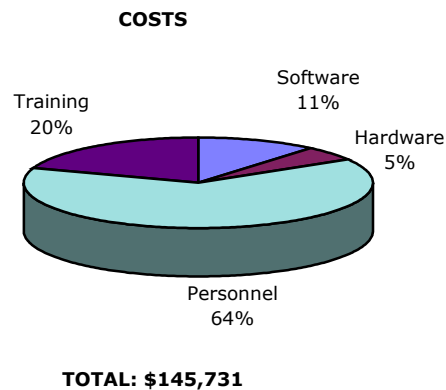
Adding SPSS for Windows to the customer research department has enabled its analysts to dramatically increase their output and respond faster to research requests. Key benefits include:

- Better decision making. The analyst team can now take on more ad hoc requests from internal clients and deliver the results of those requests much faster than before.
- New hires avoided. Dramatically improving the productivity of its analysts has enabled the team to grow without the need to add new analysts — and the ease of use of SPSS accelerates the ramp-up time for new analysts.
- Increased research flexibility. Business analysts can use SPSS for Windows to test different research designs and explore data in complex ways quickly without the need for manual coding.



KEY COST AREAS

Key cost areas for the deployment included personnel, training, software, and hardware. AA didn't incur any consulting costs. The largest cost area was personnel for initial deployment and ongoing development and management of the models.



LESSONS LEARNED

Although training is often a key component of the success of a technology project, AA found that structured training wasn't necessarily the best strategy: What was more important was providing users with manuals and tutorials so they could get up to speed quickly without time out of the office for training and providing new analysts with data sets that they could learn to use quickly.

AA also found that the key to maximizing value from SPSS was not identifying big campaigns, projects, or problems that needed to be changed, but rather ensuring day-to-day decision making in a number of areas — such as marketing, yield management, plane selection, catering, and the like — was supported by good data. The usability of SPSS enabled business users to quickly run complex analyses and deliver answers to decision makers with confidence.

CALCULATING THE ROI

Nucleus calculated the costs of software, hardware, personnel, and training over a 3-year period to quantify AA's total investment in SPSS.

Direct benefits included the department's ability to dramatically increase its output while avoiding additional hires. Not quantified were the benefits of enabling better day-to-day decision making for airline management.

Nucleus Research is a global provider of investigative technology research and advisory services. Building on its unique ROI case study approach, for more than 6 years Nucleus Research has delivered insight and analysis on the true value of technology and strategies for maximizing current investments and exploiting new technology opportunities. For more information or a list of services, visit NucleusResearch.com, call +1-781-416-2900, or e-mail info@NucleusResearch.com.

DETAILED FINANCIAL ANALYSIS

AMERICAN AIRLINES

SUMMARY

Project:	SPSS
Annual return on investment (ROI)	1192%
Payback period (years)	0.14
Net present value (NPV)	631,769
Average yearly cost of ownership	48,577

ANNUAL BENEFITS	Pre-start	Year 1	Year 2	Year 3
Direct	0	375,000	750,000	750,000
Indirect	0	0	0	0
Total Benefits Per Period	0	375,000	750,000	750,000

DEPRECIATED ASSETS	Pre-start	Year 1	Year 2	Year 3
Software	0	0	0	0
Hardware	0	0	0	0
Total Per Period	0	0	0	0

DEPRECIATION SCHEDULE	Pre-start	Year 1	Year 2	Year 3
Software	0	0	0	0
Hardware	0	0	0	0
Total Per Period	0	0	0	0

EXPENSED COSTS	Pre-start	Year 1	Year 2	Year 3
Software	10,000	2,000	2,000	2,000
Hardware	8,000	0	0	0
Consulting	0	0	0	0
Personnel	2,885	30,000	30,000	30,000
Training	28,846	0	0	0
Other	0	0	0	0
Total Per Period	49,731	32,000	32,000	32,000

FINANCIAL ANALYSIS	Year 1	Year 2	Year 3
Net cash flow before taxes	343,000	718,000	718,000
Net cash flow after taxes	171,500	359,000	359,000
Annual ROI - direct and indirect benefits			1192%
Net cash flow after taxes (direct only)	171,500	359,000	359,000
Annual ROI - direct benefits only			1192%
Net present value (NPV)			631,769
Payback (years)			0.14
Average annual cost of ownership			48,577
3-year IRR			774%

FINANCIAL ASSUMPTIONS

All government taxes	50%
Discount rate	15%