



Uncover the *Truly Maximum Profit* Opportunity of a Prospective M&A Deal: Next Generation M&A Financial Analysis Capability

Alan Dybvig

This article is divided into five sections: (1) Introduction; (2) The Role of Analytics in M&A Analyses; (3) Review of the Three M&A Financial Analytics Relevant to This Article; (4) Limitations of Current M&A Financial Analytics and How an OIS Addresses Them; and (5) Conclusions. Finally, some possible future articles are discussed.

INTRODUCTION

This is the fourth in a series of articles the author has published in this journal within the last 18 months. They constitute a series describing (1) what the basic optimized

By integrating three analytic techniques already in use, separately, for merger and acquisition (M&A) financial analysis, it will be demonstrated that an optimized income statement (OIS) represents a “next generation” financial analysis capability for M&A and private equity portfolio management. The three techniques currently in use are (1) mixed integer and linear math programming (MILP) for least-cost supply chain design, (2) predictive analytics for sizing and allocating sales and marketing expenditures more profitably, and (3) activity-based costing (ABC). ABC data availability can substantially reduce the cost and time required to implement the MILP portion of an OIS model. It also improves the profitability of the M&A analysis beyond that available with OIS analyses conducted without ABC detail. © 2016 Wiley Periodicals, Inc.

income statement (OIS) value proposition is, including its two foundational structural elements; and (2) ways in which an OIS can be applied. The

first OIS structural element is that it is activity based, which is described in the first two articles, and the second is that it is demand driven, which is described in the third article.¹

Because OIS is both activity based and demand driven, it can relax both of the traditional income statement assumptions of a fixed supply chain and a fixed forecast. This allows OIS's prescriptive solver to answer the question: “What is the

best possible outcome (X)?” In OIS's case, it is an income statement containing (1) the truly maximally profitable forecast, (2) the optimally feasible

supply chain required to make and fulfill the new forecast, and (3) maximized sales and marketing ROI.

THE ROLE OF ANALYTICS IN M&A ANALYSES

To put analytics in perspective apropos an M&A opportunity, the author found the following quote helpful, from “M&A Trends Report 2014: A Comprehensive Look at the M&A Market”²:

More than half (58 percent) of corporate respondents use data analytics either in select areas or as a core component of their M&A analysis. The larger the company, the more likely a user of the technology-driven process; more than 70 percent of companies with revenue in excess of one billion said they use analytics either partially or as a mainstay of their transaction analysis.

Companies cited complexity as the chief reason why more than four in 10 don't deploy analytic technology. Almost one-third of respondents cited either confidentiality reasons or the unwillingness of the seller to provide information as impediments to the use of data analytics. Other reasons included the time and cost required to undergo analysis.

On the company side, almost one-fourth of respondents—22

percent—said they are not using data analytics at all, which presents a large opportunity for many companies, says Brian Bird, director, Deloitte & Touche LLP. “Data analytics might appear challenging—complex, time consuming and costly—to companies who haven't used it before,” Bird said. “But there is and will be a growing opportunity for companies to leverage data, to gain broader insight into their own company and M&A targets, in this rapidly changing area.”

Private equity respondents are heavy users of analytics—with more than one-third saying it's a core component of their M&A analysis and another 37 percent saying that they use analytics selectively. Private equity firms also rely on data analytics within their existing portfolio companies. Almost 70 percent of private equity respondents said that they use technology-driven analytics as either a core or partial component of their analysis of the companies in their portfolio.

About two-thirds of corporate respondents that deploy analytics said they use the tools mainly to analyze customers and markets. “The customer data is

easiest to get in a short period of time and certainly helps one understand end markets and pricing,” Bird said. “However, you can generate larger insights by **using analytics across the entire supply chain** to identify synergies and cost savings opportunities prior.” (Bold added.)

The reader's attention is directed to the Executive Summary, which begins: “Over the past 18 months, merger and acquisition (M&A) activity has accelerated meaningfully in the U.S. That trend is poised to continue, if not accelerate, in many industries, among public and private firms and for both corporations and private equity firms...”

The Deloitte's article's Executive Summary was confirmed by the actual results of 2014 M&A activity as reported by WilmerHale's article, “2015 M&A Report”:

REVIEW Fueled by improvements in macroeconomic conditions, high levels of cash among strategic acquirers and low interest rates, the M&A market produced record or near-record results across most geographies and sectors in 2014.

The article concludes its Outlook section by commenting: “Economic challenges remain, but the above factors encourage favorable expectations for the M&A market over the coming year.”³

REVIEW OF THE THREE M&A FINANCIAL ANALYTICS RELEVANT TO THIS ARTICLE

- Mixed linear and integer programming (MILP) for supply chain network design
- Predictive analytics for sizing and allocating sales and marketing expenditures more profitably
- Activity-based costing and the Fast Track Model for improving customer and product profitability

Mixed Linear and Integer Programming (MILP)

Over the past 30 years, the firm INSIGHT has seen its flagship supply chain network design MILP product, SAILS, used in a variety of merger and acquisition analyses.^{4,5} Examples include Exxon's merger with Mobil (1998); Procter & Gamble's acquisition of IAMS (1998) and Gillette (2005); Pfizer's merger with Warner Lambert (1999) and Pharmacia (2002); Kraft's merger with General Foods (1989), and Kellogg's acquisition of Keebler (2002).

Another firm using supply chain network design analytics for M&A purposes is LLa-masoft. Quoting from its white paper:

Supply chain design technology enables companies to model their supply chains, evaluate alternatives, optimize the network structure and simulate multiple scenarios in or to predict the resulting operational performance of the merged organizations. There are opportunities to leverage modeling across all stages and types of M&A activity, including pre-merger, post-merger and divestiture/spin-off."⁶

Predictive Analytics

In industry today, the use of predictive analytics for sizing and allocating marketing expenditures is referred to as marketing mix modeling (MMM). According to Wikipedia:

It is a term of art for the use of statistical analysis such as multivariate regressions on sales and marketing time series data to estimate the impact of various marketing tactics on sales and then forecast the impact of future sets of tactics. It is often used to optimize advertising mix and promotional tactics with respect to sales revenue or profit.

Not surprisingly, the application of MMM techniques to M&A as well as private equity portfolio management came to the author's attention from the website of one of the most successful MMM firms: ZS Associates, whose website states:

Private equity firms increasingly are asking their portfolio companies to generate profitable growth. A key path to such growth is improving sales and marketing effectiveness and efficiency.

ZS has helped numerous private equity firms make rapid improvements in the sales and marketing organizations of their portfolio companies, ones that

have boosted revenue as much as 20% and made unprofitable businesses profitable in 1–2 years—without having to launch new products or services.

ZS's services help private equity firms:

- In due diligence, we can rigorously assess and identify the best growth opportunities and the sales and marketing capabilities of a potential acquisition.
- Propel revenue and profits of portfolio companies.
- Determine the optimal size, territory structure and compensation model for a sales force, and the competencies of sales professionals and sales managers.
- Identify, articulate and implement changes to substantially boost sales leads, close rates, and customer retention. Our audits explicitly identify issues, the steps in solving them, and the financial returns of doing so.
- Rigorously evaluate the returns on potential sales and marketing investments such as additional sales professionals and new marketing campaigns.⁷

Activity-Based Costing and the Fast Track Model

This author's introduction to the use of activity-based costing as an analytic tool for M&A analysis was the elegant

approach described in “Acquiring Profit Opportunities: A Breakthrough M&A Mode” by Steve Anderson, then Chairman of Acorn Systems and Kevin Prokop, Director, Questor Management, June 2004. The article states:

We have before us a new approach to M&A—never before contemplated.... We propose a breakthrough approach to mergers and acquisitions. By using sophisticated Fast Track Profit Models to identify profit opportunities before an acquisition, the acquirer can know the profit improvement opportunities in great detail, up front.⁸

What is not made explicit in the quote is that the Fast Track Profit Model is constructed using activity-based costing (ABC) data. Wikipedia’s website states:

CIMA (Chartered Institute of Management Accountants) defines ABC as an approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilize cost drivers to attach activity costs to outputs.

This allows a much more accurate identification than traditional costing methodologies do of unprofitable products

and customers. These can be addressed with a variety of different means, including product related (e.g., eliminate, reprice, redesign, change production processes) and customer related (e.g., implement minimum order quantities, concede permanent loss customers to competitors).⁹

Mr. Anderson and Acorn Systems extended traditional ABC techniques in two ways, which are the bedrock of the M&A analysis approach outlined in their white paper:

1. He developed time-driven activity-based costing. It was popularized in a book of the same name (Harvard Business School Press, 2007) and co-authored with Dr. Robert Kaplan of the Harvard Business School.
2. At Acorn Systems, he participated in the development of Fast Track Profit Models.

Again, quoting from the white paper:

Time driven activity-based costing, introduced by Mr. Steven Anderson and Dr. Robert Kaplan, is the cornerstone of a new solution that has enabled organizations to build exactly what the private equity world needed. Company overhead and expenses can now be driven intelligently to all customers and products, based on how much time was spent. This gives management a true understanding of profitability drivers.

Industry template models, complete with standard process time

equations that are easily customizable to an acquisition candidate, create a very accurate model. Building an accurate model is now easy. Time driven models naturally have order and line item cost objects. As a result, pulling standard transaction files is straightforward. MIS is not tasked by custom downloads, and getting data is easier.

Finally, it is important to understand that the MILP model built for supply chain network design is activity based. Further, as noted in the abstract, if activity-based data exist, the creation of a supply chain network design MILP model is quicker and less expensive than using the traditional techniques.

LIMITATIONS OF CURRENT M&A FINANCIAL ANALYTICS AND HOW AN OIS ADDRESSES THEM

The key limitations of both supply chain network design analytics (i.e., MILP) and MMM applications (i.e., predictive analytics) are that they both yield, necessarily, suboptimal results even though they both use prescriptive solvers.

This is because “optimizing each subsystem independently will not, in general, lead to a system optimum.”¹⁰ Elaborating, while supply chain network design applications have a variable supply chain, the forecast is fixed. Conversely, while MMM applications have a variable forecast, the supply chain is fixed.

Also, as a further compromise to financial optimality, MMM applications do not use true profit as the objective function (i.e., that which is being optimized); rather, they use contribution margin (i.e., revenue minus variable product costs).

In the case of ABC analytics, while the objective function is true profit, the analytics are descriptive and, thus, also sub-optimal. These points are summarized in Exhibit 1.

CONCLUSIONS

As is clearly demonstrated in Exhibit 1, OIS's M&A analytic value proposition is simple: The profit opportunity implicit in an M&A deal can now be maximized! As noted in the abstract, this maximization is made possible by integrating two analytic techniques

already being employed, separately, in M&A financial analyses: MILP and predictive analytics.

Additionally, the maximization is further enhanced if the firm has already implemented ABC analyses:

1. The MILP portion of the OIS model may be significantly less expensive and quicker to build.¹
2. The total profit improvement is greater than would otherwise be possible because improvements have already been made to enhance customer and product profitability.⁹

Readers interested in more details should contact Jeff Karrenbauer, Glenn Sabin, or Alan Dybvig. See below for contact information.

ACKNOWLEDGMENTS

The author wishes to thank Jeff Karrenbauer, President of INSIGHT, Inc., a leader in providing supply chain services and consulting services. INSIGHT implemented the author's intellectually property in its flagship supply chain network design product to create the product, INSIGHT Enterprise Optimizer that creates an OIS. He can be reached at jkarrenbauer@insightoutsmart.com, 703-956-1423 (office) or 703-999-2925 (cell). Also, Glenn Sabin, Managing Principal of ZS Associates' Princeton office in Princeton, New Jersey. ZS Associates is a leading sales and marketing consulting firm. He can be reached at glenn.sabin@zsassociates.com, 609-419-3849.

Exhibit 1

Comparison of Four M&A Financial Analytical Techniques

<i>Comparison Elements</i>	<i>Mixed Integer and Linear Math Programming (MILP)</i>	<i>Predictive Analytics</i>	<i>Activity-Based Costing</i>	<i>An Integration of All Three (OIS)</i>
M&A problem solved	Least-cost supply chain network design	More profitable sizing and allocation of sales/marketing expenditures	Improved customer and product profitability	1. Maximally profitable forecast 2. Optimally feasible supply chain 3. Maximum sales/marketing ROI
Objective function	Cost	Contribution margin	Profit	Profit
Solver	Prescriptive	Prescriptive	Descriptive	Prescriptive
Solution optimal	No	No	No	YES

NOTES

1. onlinelibrary.wiley/journal/10.1002/
(ISSN)1007-0053 for the three articles:
May/June, 2014; September/October,
2015 and November/December, 2015.
2. <http://optimizedincomestatement.com/roi/wp-content/uploads/2015/08/Deloitte-MA-Analytics.pdf>
3. <http://optimizedincomestatement.com/roi/wp-content/uploads/2015/08/2015-WilmerHale-MA-Report.pdf>
4. http://www.insight-mss.com/images/product_literature/INSIGHT_SAILS.pdf
5. http://www.insight-mss.com/images/press_releases/INS_MAKraftFINAL.pdf
6. <http://optimizedincomestatement.com/roi/wp-content/uploads/2015/08/Llamasoft-MA-supply-chain-design.pdf>
7. <http://optimizedincomestatement.com/roi/wp-content/uploads/2015/05/2009-IRI-marketing-mix-modeling.pdf>
8. <http://dybvig.com/roi/wp-content/uploads/2013/06/Rethinking-MA.pdf>
9. <http://optimizedincomestatement.com/roi/wp-content/uploads/2015/06/Activity-based-management-recommendations.ppt>
10. http://pespmc1.vub.ac.be/ASC/PRINCI_SUBOP.html

Alan Dybvig is Managing Partner of Dybvig Consulting, a boutique consulting firm specializing in the integrated application of predictive analytics and mathematical programming techniques for the creation of optimized income statements and to the various ways in which they can be applied to real-world problems that have never before been solvable. He can be reached at alan@optimizedincomestatement.com or 609-947-2565 (cell).