Supply Chain Metrics That Matter: Driving Reliability in Margins

Using Financial Data from Corporate Annual Reports to Better Understand Supply Chain Progress in Improving Operating Margin

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Research

Supply Chain Metrics That Matter is a series of reports published throughout the year by Supply Chain Insights LLC. This report is the sixth in this series.

These reports are based on data collected from financial balance sheets and income statements over the period of 2000-2011. In these reports, we analyze supply chain effectiveness to balance profitability, growth, complexity, and cycles through the comparison of supply chain ratios by peer group. This information is augmented by insights gained through working with these companies on their journey to drive supply chain excellence.

Within the world of Supply Chain Management (SCM), each industry is unique. We believe that it is dangerous to list all industries in a spreadsheet and declare a supply chain leader. Instead, we believe that we have to evaluate change over time by peer group. In this series of reports, we analyze the potential of each supply chain peer group, share insights from industry leaders from each industry, and give recommendations based on general market trends.

This report takes a different perspective than previous *Supply Chain Metrics That Matter* publications in that it focuses upon the relationship of different cost metrics within several industries. The industries that are profiled in this report each operate in a process manufacturing environment; but they have different potential based on market drivers.

Disclosure

Your trust is important to us. This independent research is 100% funded by Supply Chain Insights. As such, we are open and transparent about our financial relationships and our research process.

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Research Methodology

The source of information for this report is publicly available data from corporate annual reports from the period of 2000-2012. At Supply Chain Insights, we have invested in building a database of 21 financial ratios that we mine as part of our research process.

In this report, we take a closer look at process industries including chemical, consumer packaged goods, food and pharmaceutical manufacturers. We do not believe that all companies in process industries can be grouped together for comparison, but we do believe that the comparison of general trends across the industries is useful.

We try to make the methodology consistent. In picking companies for the *Supply Chain Metrics That Matter* reports, we identify two companies ranked on the 2011 Global 500 operating within the industry of focus. We augment this with hand-selected companies that we believe provide meaningful comparison. Each analysis in this report is based on either five or six companies within each industry. Specific information for each company profiled is presented in the Appendix.

We use the financial data to help readers learn from past trends, better understand current operating environments, and provide recommendations for the future. We augment the financial data analysis with information from our quantitative and qualitative research studies as well as our work with clients operating within the industries.

Executive Overview

> Organizations by nature generate inertia; there is always a tremendous investment in the status quo. The supply chain leader must be the one to take on transformation- the organization simply won't go there on its own.

- Keith Harrison, retired Global Product Supply Officer, Procter & Gamble, from the Forward of the book *Bricks Matter*

Supply chain management practices are thirty years old. Over the last decade, companies have invested in technology projects to improve financial outcomes (Technology investments over this period have averaged 1.7% of revenue). The ultimate goal was to reduce costs and improve inventory management. While many supply chain leaders believe that they delivered on these metrics, we find a less persuasive story. Through analysis of publically available balance sheet and income statement data, we find that 75% of companies in process industries lost ground on margins and only 5% of companies improved their positions on the number of days of inventory. The goal of this report is to answer the question “Why?” (For more on inventory and the Cash-to-Cash Cycle, see Supply Chain Metrics That Matter: The Cash-to-Cash Cycle.)

To begin our analysis, we wanted to understand the general trends. In table 1, we share the differences in average values for the companies profiled in this report by industry for the period of 2000-2011. In general, we see a decline in operating margins (OM). There is an increase in selling, general & administrative Costs (SG&A) and revenue per employee performance. The industries have mixed results on return on assets (ROA).

Table 1. Financial Ratio Trends for the Period of 2000-2011

Financial Ratio Trends (2000-2011)					
Industry	Average Operating Margin	Average Changes in Financial Ratios over the Period			
		Operating Margin	SG&A Margin	Return on Assets	Revenue per Employee (K$)
Chemical	0.09	-2%	2%	40%	115%
Consumer Packaged Goods (CPG)	0.16	14%	1%	25%	69%
Food	0.15	-6%	6%	-18%	56%
Pharmaceutical	0.23	-30%	-4%	-50%	97%

Source: Supply Chain Insights LLC, Corporate, Annual Reports 2000-2011
Chemical: Akzo Nobel N.V., BASF SE, Eastman Chemical Co., E. I. du Pont de Nemours and Co., The Dow Chemical Company
Consumer Packaged Goods (CPG):Church & Dwight Co., Inc., Colgate-Palmolive Co., Kimberly-Clark Corp., The Clorox Co., The Procter & Gamble Co., Unilever N.V./PLC
Food: Campbell Soup Co., General Mills, Inc., Groupe Danone S.A., Kellogg Co., Kraft Foods, Inc., Nestlé S.A.
Pharmaceutical: Abbott Laboratories, Eli Lilly and Co., Merck & Co., Inc., Novartis International AG, Pfizer, Inc.
Negative Values are shown in RED
In the event that data from 2000 was not available, the earliest available year (2001 or 2002 depending on the data set) is used to calculate percentage change.

Across the industries, supply chain maturity varies. In general, the industries with the tightest operating margins have matured faster than companies with larger and more luxurious operating margins. The industries in table 1 are listed by their maturity level. In general, chemical and consumer packaged goods companies are more mature than those operating in the food and pharmaceutical industries. Pharmaceutical companies are the least mature.

With slowing of growth, the volatility of commodity prices, and the management of product portfolios for global expansion, supply chain matters more than ever. However, only 23% of companies feel that they can easily use the data in the organization to determine financial outcomes. Additionally, in our research, only 8% of respondents feel that they have adequate "what-if" analysis to evaluate alternatives.[1] There is a need to:

- **Design with the Goal in Mind.** Redesign supply chains from the outside-in. Most supply chains are based on functional excellence based on inside-out thinking. Companies are not clear on supply chain strategy and the delineation of the financial metrics that matter.
- **Use Technology to Drive Advantage.** Adopt new forms of predictive analytics and shift the focus from a tightly integrated supply chain to value networks that can sense and respond based on market conditions. Focus market-to-market by automating horizontal processes. This is a dramatic departure from the traditional strategy of multiyear investments in Enterprise Resource Planning (ERP) systems.
- **Aggressively Tackle Change.** Accept that despite thirty years of supply chain history, there are not yet best practices. While we can learn from the past, it is time for supply chain professionals to learn the practices of the past in order to unlearn them and to relearn what is needed for the future.
- **Focus End-to-End.** Today, less than 4% of companies have a leader focused on the end-to-end value chain. The majority of opportunities to improve costs are at the management of the ends of the supply chain in sales and procurement. As we near the dawn of the fourth decade of supply chain management, the lack of metric alignment and relationship development with key partners is the Achilles' heel of many supply chains.

[1] Supply Chain Insights. Sales and Operation Planning Improves Supply Chain Agility. http://www.supplychaininsightscommunity.com/servlet/JiveServlet/previewBody/1091-102-7-1091/Agility_Report_22_MAY_2012.pdf

Tracking Supply Chain Progress Through Financial Ratios

Operating margin and return on assets are some of the most popular financial metrics used by companies to measure their corporate performance. Historically, the metrics have performed in tandem so that improvement in one would also ensure improved performance of the other. In the 1990s, companies that operated with a higher operating margin compared to a given peer group also exhibited better return on asset values. However, we believe that the relationship is shifting. In our analysis, as shown in tables 3 and 4, General Mills, Inc. and The Procter & Gamble Co. perform better on operating margins than their peer group, but worse on ROA. They also perform better than their peer group on revenue/employee. As shown in the Supply Chain Insights Supply Chain Metrics report on Cash-to-Cash Cycles here, P&G also outperformed their peer group on inventory management.

Is this a coincidence? We think not. Based on customer interactions with these manufacturers, we believe that it is largely due to a focus on driving supply chain excellence and automating decisions through the use of advanced analytics. While it is difficult to draw hard-and-fast conclusions due to market factors, it is our belief from working with these companies that supply chain discipline matters. We believe that the difference comes from these factors: a more advanced understanding of supply chain principles, enlightened leadership on the understanding of supply chain as a complex system and the use of predictive analytics. This transformation has happened over many years. It takes time and leadership.

Four Supply Chain Fallacies:

- ***The most effective supply chain is the most efficient supply chain.***
- ***Through the deployment of technologies and processes, companies have reduced costs and improved inventory.*** *The data supports that these deployments have primarily only improved revenue per employee performance.*
- ***Companies should implement "best practices."*** *We believe that organizations should implement emerging practices knowing that they are still evolving.*
- ***There is a single "best supply chain."*** *Many companies do things well. Company comparisons across industry sub-segments are of limited value. Supply chain is not and should not be a single event "beauty contest."*

A supply chain transformation cannot happen in less than three years.

•Marty Kisliuk, Global Operations Director of FMC

While technology vendors and consulting partners are quick to point out the use of their services and take credit for the results, we do not believe that these differences (shown in tables 2 through 5) are due to specific technology deployments or the use of specific or specialized consulting services. Instead, we see the organizations that have driven the best results over the past decade focused on talent development, driving value in horizontal processes, and building the value chains outside-in from the channel back.

Table 2. Twelve Year Performance of Chemical Industry (2000-2011 Averages)

Industry	Company	Operating Margin	SG&A Margin	Return on Assets	Revenue per Employee (K$)
Chemical	Akzo Nobel N.V.	0.08	0.70	9%	265
	BASF SE	0.10	0.86	7%	683
	Eastman Chemical Co.	0.07	0.93	4%	551
	E. I. du Pont de Nemours and Co.	0.11	0.89	6%	470
	The Dow Chemical Company	0.07	0.95	4%	994
	Average	**0.09**	**0.87**	**6%**	**614**

Source: Supply Chain Insights LLC, Corporate, Annual Reports 2000-2011

Table 3. Twelve Year Performance of Consumer Packaged Goods Industry (2000-2011 Averages)

Industry	Company	Operating Margin	SG&A Margin	Return on Assets	Revenue per Employee (K$)
CPG	Church & Dwight Co., Inc.	0.13	0.76	7%	579
	Colgate-Palmolive Co.	0.21	0.66	18%	352
	Kimberly-Clark Corp.	0.15	0.83	10%	303
	The Clorox Co.	0.15	0.87	13%	577
	The Procter & Gamble Co.	0.18	0.71	10%	532
	Unilever N.V./PLC	0.12	0.61	8%	259
	Average	**0.16**	**0.74**	**11%**	**443**

Source: Supply Chain Insights LLC, Corporate, Annual Reports 2000-2011

Table 4. Twelve Year Performance of Food Industry (2000-2011 Averages)

Industry	Company	Operating Margin	SG&A Margin	Return on Assets	Revenue per Employee (K$)
Food	Campbell Soup Co.	0.17	0.77	12%	338
	General Mills, Inc.	0.18	0.78	8%	430
	Groupe Danone S.A.	0.13	0.64	6%	201
	Kellogg Co.	0.16	0.73	9%	392
	Kraft Foods, Inc.	0.14	0.79	5%	363
	Nestlé S.A.	0.13	0.59	10%	299
	Average	**0.15**	**0.71**	**8%**	**336**

Source: Supply Chain Insights LLC, Corporate, Annual Reports 2000-2011

Table 5. Twelve Year Performance of Pharmaceutical Industry (2000-2011 Averages)

Industry	Company	Operating Margin	SG&A Margin	Return on Assets	Revenue per Employee (K$)
Pharmaceutical	Abbott Laboratories	0.18	0.73	10%	354
	Eli Lilly and Co.	0.23	0.69	12%	431
	Merck & Co., Inc.	0.32	0.71	12%	396
	Novartis International AG	0.22	0.65	10%	384
	Pfizer, Inc.	0.22	0.68	10%	491
	Average	**0.23**	**0.69**	**11%**	**411**

Source: Supply Chain Insights LLC, Corporate, Annual Reports 2000-2011

It is hard to have a discussion on the role of financial ratio benchmarking and supply chain performance without alignment on the definitions. The definitions used in this report are:

$$Operating\ Margin = \frac{Operating\ Income}{Revenue}$$

$$SG\&A\ Margin = \frac{SG\&A\ Expense}{Revenue}$$

$$Return\ on\ Assets = \frac{Net\ Income}{Total\ Assets}$$

$$Revenue\ per\ Employee = \frac{Revenue}{Number\ of\ Employees}$$

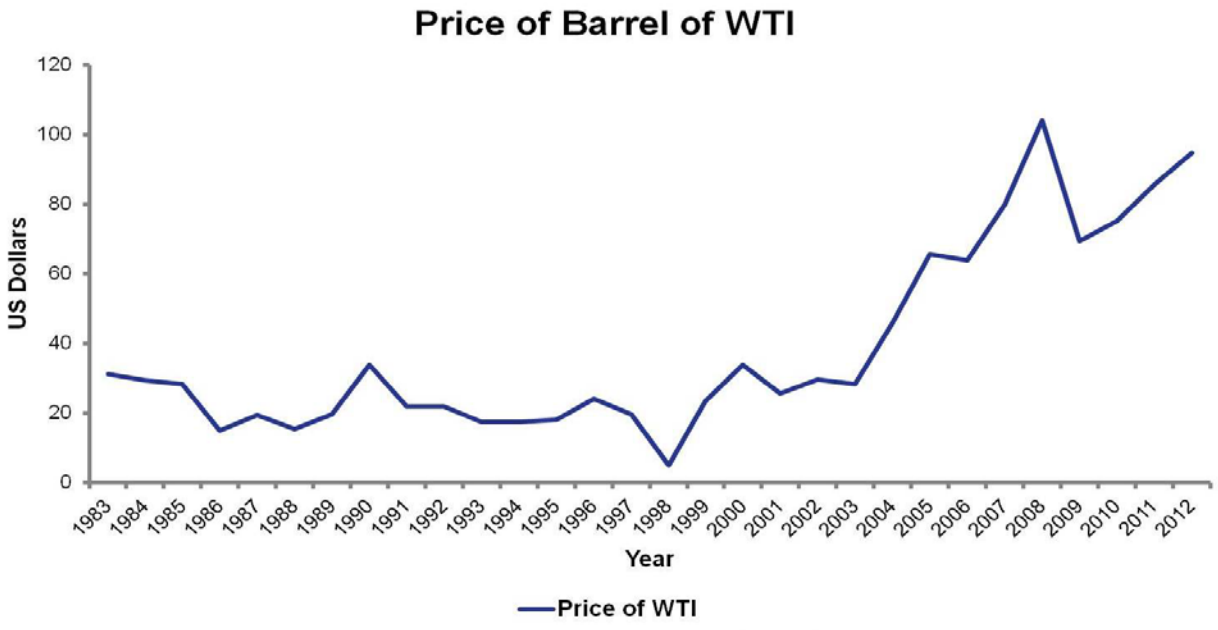
Note: While some supply chain professionals may argue that gross margin is a better indicator of supply chain performance, we find that due to balance sheet complexities the year-to-year comparison of operating margin is a superior metric.

In order to help companies working on supply chain strategy, in this report, we look more closely at four industry segments to better understand the drivers and trade-offs made in the last decade. We would encourage those operating in these industries to take a look at their supply chain and begin to redesign it against today's market realities with a focus on flexibility and agility. Understanding the metrics is a good place to start.

Not Your Father's Supply Chain

Many supply chain leaders reading this report may feel that a 1% degradation of operating margin over the decade is not bad. The last decade has been a tough one. Based on the changing operating environment, and rising costs and volatility of commodities, maintaining the operating margins may be seen as a success. There is some truth in this logic. Instead of resting on our laurels and the historic definitions of supply chain, we believe that it is time to adapt supply chain practices to embrace this new reality. We believe that commodity volatility is here to stay and that prices will continue to rise.

Figure 1. Price per Barrel of West Texas Intermediate (WTI)



Let's take an example. The definitions of Advanced Planning Systems (APS) were designed in the 1990s to reduce constraints in manufacturing. Despite the 3X increase in oil prices, many

companies operate like their supply chains are primarily driven by manufacturing costs. In figure 1, we share changes in the price of oil. Since 1999, the price of oil has steadily increased in both price and volatility.

Oil is no longer $10, $20 or $30 a barrel and is not likely to return to that price point anytime soon; yet companies are still operating their supply chain as if it is. Despite the fact that distribution costs surpassed manufacturing costs for many process industries in the early 1990s, companies continue to implement these historic systems without questioning the fit of the data models.

The traditional APS platform design is out of date with this trend. Transportation and procurement optimization systems still work in isolation from tactical manufacturing planning and distribution resource planning. In fact these platforms have changed little in the last two decades, despite the immense market shifts.

Instead of driving innovation, the APS market has been fraught with issues. Instead of redesign of the technologies to meet new challenges for the supply chain leader, the market has been more focused on platform evolution, market consolidation and ensuring that the company can capitalize on a maintenance revenue stream. The entrance of the ERP vendors into the APS market only served to increase the cost of deployment and slow true innovation.

A Closer Look at Industry Performance

To better understand the trends between operating margin and Return on Assets (ROA), let's take a closer look at the performance of individual companies within each industry subsegment. The process manufacturing company has always focused on ROA believing that success in ROA would drive operating margin. In this analysis, we test this belief and show trends between the two metrics.

Chemical Industry

The supply chain leaders in the chemical industry were early adopters of Enterprise Resource Planning (ERP) and Advanced Planning Systems (APS) to advance supply chain performance. They were the early pioneers in building the global supply chain. In many ways, they are very mature, but they learned the hard way that their supply chains were too rigid.

The chemical supply chain could not sense. When the 2007-2009 recession hit, they learned firsthand the limitations of traditional supply chain processes. Several global manufacturers

were forced to shut down large portions of their manufacturing capabilities during the past years. Examples of specific shutdowns are quoted from corporate annual reports below:

"At this early stage in the year, product inventories across value chains remain low and substantial capacity is still offline."

- The Dow Chemical Company 2008 Annual Report, page 49

"BASF was also hit hard by the deepest recession in post-war times. Sales and earnings fell considerably, but we acted quickly and decisively. We adjusted our production to the steep decline in demand by idling or closing numerous plants. Furthermore, we accelerated our programs to increase efficiency and reduce costs. Unfortunately, we could not avoid introducing short-time work and job cuts."

- BASF 2009 Annual Report, page 8

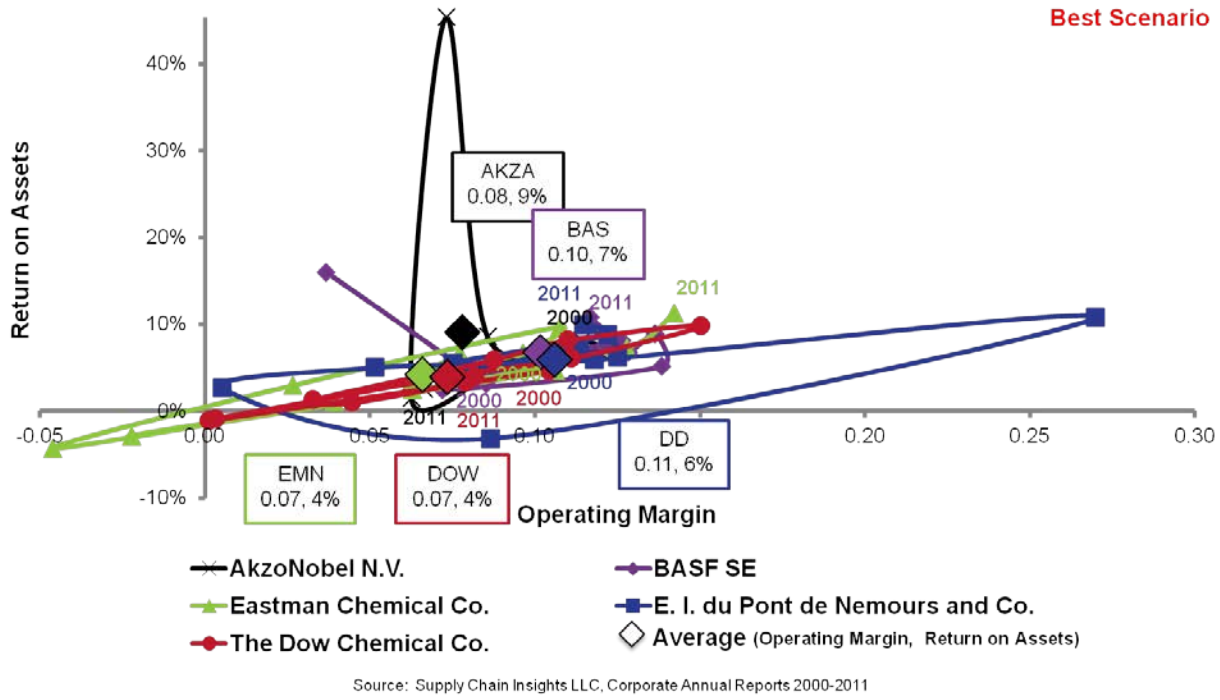
"We had already increased our focus on margin management at the end of 2008, but the severity of the downturn required us to take further steps to improve operational efficiency during the first quarter of 2009. This included taking a closer look at our manufacturing footprint in order to right-size – without cutting back on our capabilities – which led to a rationalization, particularly in Europe and North America."

- Akzonobel 2009 Annual Report, page 34

"In 2008, Praxair recorded pre-tax charges totaling $194 million ($125 million after-tax and noncontrolling interests), including $118 million relating to severance and other exit costs associated with a global cost reduction program which was initiated in response to the continuing economic downturn..."

- Praxair 2009 Annual Report, page 60

Figure 2. Chemical Return on Assets vs. Operating Margin (2000-2011)



Source: Supply Chain Insights LLC, Corporate Annual Reports 2000-2011

With low operating margins and high commodity price fluctuations, market sensing is more important to chemical companies than other subsegments. There is just not as much wiggle room to make up margin. Figure 2 below illustrates the performance of five global chemical companies on the metrics of OM and ROA over the past decade. Note the wild swings of DuPont and Eastman Chemical as contrasted with much more controlled margin management of BASF and Dow Chemical. Margin reliability is a measure of a supply chain leader.

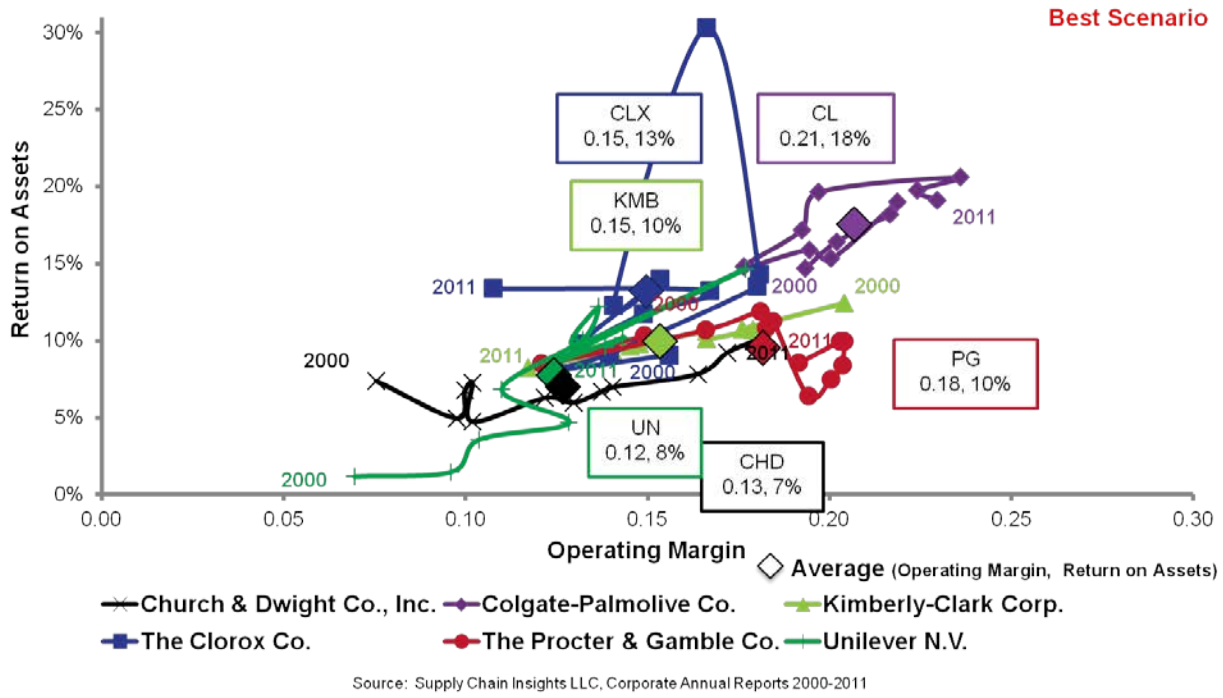
Three of the five companies illustrate improvement in both metrics over the preceding decade. To demonstrate dual improvement, we look for companies moving to the upper right corner of the graph increasing both their return on assets percentage and their raw operating margin value. Aside from DuPont's large fluctuations at the beginning of the decade, most of the companies have stayed relatively close to a balanced performance on both metrics. Graphically this is represented by close alignment to an imaginary line stretching from the origin to the upper right corner of the graph. Dow Chemical Co.'s performance shows a decline in both operating margin and ROA. This trend is the most noticeable following the Rohm and Haas acquisition. AkzoNobel N.V. has also seen a decline in both metrics.

Consumer Packaged Goods

The Consumer Packaged Goods industry has demonstrated one of the highest levels of understanding of demand-driven value networks. They remain supply chain leaders in regards to supply chain maturity within both process and discrete companies. While they are not as advanced as the high-tech and electronics companies in the use of supply chain planning systems and the management of inventories, they have been leaders in the field for many years. These companies operate global teams with global expansion powering growth in recent years. The results of six CPG global players in operating margin and return on assets are presented below in figure 3.

Here we see much more controlled patterns of performance compared to the chemical industry. Tighter and more consistent results, without large fluctuations and swings, illustrate a level of resiliency in CPG that still escapes the chemical companies. One of the reasons the chemical industry especially struggles is the latency in the demand signal and a larger impact of the bullwhip effect of demand translation across multiple tiers of the supply chain. The chemical companies have a tougher time reading market changes in the channel. The data is delayed and the distortion is making it more difficult to synchronize the supply chain.

Figure 3. Consumer Packaged Goods Return on Assets vs. Operating Margin (2000-2011)



Source: Supply Chain Insights LLC, Corporate Annual Reports 2000-2011

In the figure above, we see three of the six companies demonstrating very consistent patterns of improvement moving from the bottom left of the screen to the upper right: Church & Dwight, Colgate and Unilever. Colgate has made consistent progress at the top of the chart with the best performance in operating margin. Church & Dwight and Unilever have improved performance on both metrics, but both started at the back of the pack in 2000. Procter & Gamble, on the other hand, has improved operating margin, while managing declining performance on return on assets. In addition, P&G has made the most progress on revenue per employee.

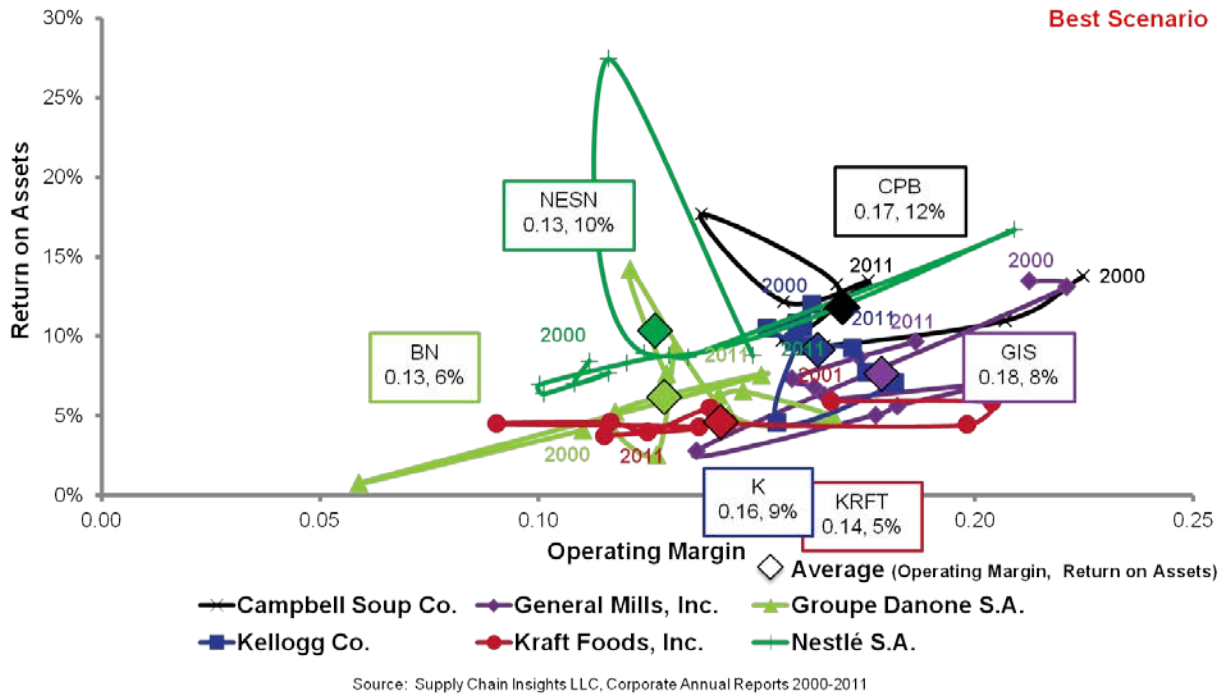
So, which is the best supply chain? It depends on the goal. If the goal is growth, it would be P&G. If the goal is the lowest cost producer, the winner would be Colgate. Three things are important: conscious choice and alignment of metrics to the goals, reliability in results, and year-over-year improvement against a strategy. Without the knowledge of the goal of the supply chain strategy, the winner cannot be determined. It is easier to answer the question of who had the worst performance. The answer to this question is clearer. In this graph, Kimberly Clark slid backwards on operating margin while The Clorox Company struggled to maintain stability and consistency in their performance. Neither company performed well compared to their peer group.

Food Industry

Food manufacturing companies struggle to have the scale of consumer packaged goods companies. The products are subject to the whims of local customs, and preferences override a lot of the advantages of global scale that are enjoyed by CPG supply chains.

Food companies, similarly to chemical companies, are also exposed to great commodity price fluctuations. Furthermore, the majority of food products are based upon seasonal raw materials and seasonal channel patterns requiring that materials must be purchased at one point and rationed for production for the remainder of the year or seasonal builds built for holidays and seasonal demand. This plus the intricacies of open code dates and short lifecycles creates additional requirements and challenges for the food supply chain. The results of six companies operating within the industry are illustrated below.

Figure 4. Food Return on Assets vs. Operating Margin (2000-2011)



Source: Supply Chain Insights LLC, Corporate Annual Reports 2000-2011

The pattern between operating margin and ROA in food is weaker than it has been in the previous two industry evaluations. In figure 4, there is not a clear line running from lower left to upper right holding operating margin and return on assets together as two pieces of a single improvement trajectory. Instead, there is turbulence and inconsistency within the financial results largely driven by commodity prices.

Supply chain leaders are resilient. For leaders, year-over-year results show consistent upward progress without wild gyrations. Groupe Danone S.A. and Nestlé S.A. both demonstrate

extremely large swings in their results over the preceding decade. Ultimately, Nestlé has demonstrated improvement in both metrics, but it has not come smoothly with large swings in both operating margin and return on assets. Similarly, Groupe Danone has improved their positioning since 2000, but not in a smooth and controlled fashion. The lack of consistency in operating margin results is an opportunity for both of these companies.

In addition, Campbell's, General Mills and Kraft have all lost ground over the past decade. Campbell lost ground on operating margin while maintaining ROA performance. Kraft remained stagnant on return on assets and lost ground on operating margin. General Mills has lost equal ground on both metrics. However, in the more immediate preceding years, General Mills has been able to drive recent operating margin improvements despite the ROA degradation.

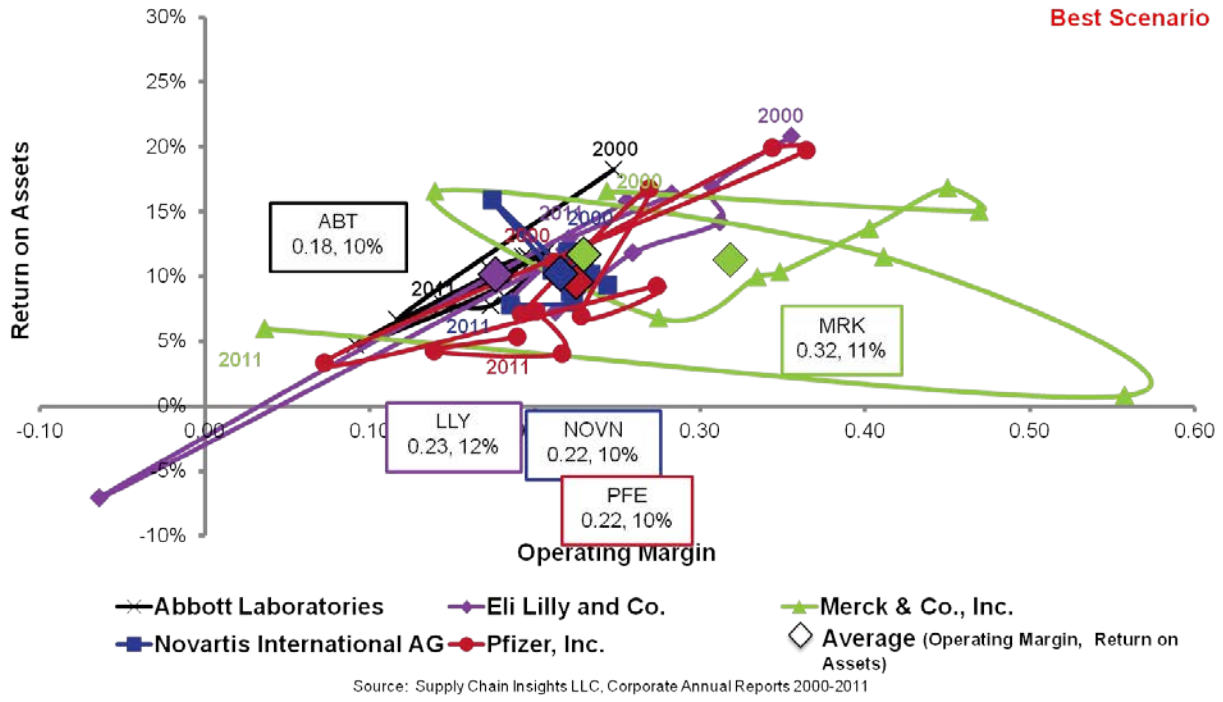
Pharmaceutical Industry

The pharmaceutical industry is the least advanced of the four industry subsegments profiled in this report. One of the main reasons for this is due to the high gross margins enjoyed by companies operating in the industry. As a result of these high gross margins, and high top line profit, companies in the pharmaceutical industry have not historically focused on driving improvements in supply chain excellence. They have also made the least progress in inventory improvements.

However, this is changing. As pharmaceutical companies face the patent cliff—with products coming off of patent protection—they are facing intense competition with generic drugs and declining margins. The financial results are presented in figure 5.

Note the wild swings compared to the prior industries. This is a sign of supply chain immaturity. It is hard to name a leader. Merck, for example, demonstrates a wildly erratic pattern, but ends the decade with some of the lowest results for both metrics falling to the bottom left corner of the plot. Others in the peer group including Abbott Laboratories, Novartis and Pfizer have lost ground on both metrics, but in an uneven fashion. Pfizer, for instance, begins and ends the decade with an OM hovering around 0.20; during that time their ROA falls by half from 10% to under 5%. The pharmaceutical industry has immense potential with improved focus on supply chain excellence and a better understanding of various financial metrics such as the ones profiled above. There is much that the pharmaceutical industry can learn from the other process subsegments.

Figure 5. Pharmaceutical Return on Assets vs. Operating Margin (2000-2011)



Source: Supply Chain Insights LLC, Corporate Annual Reports 2000-2011

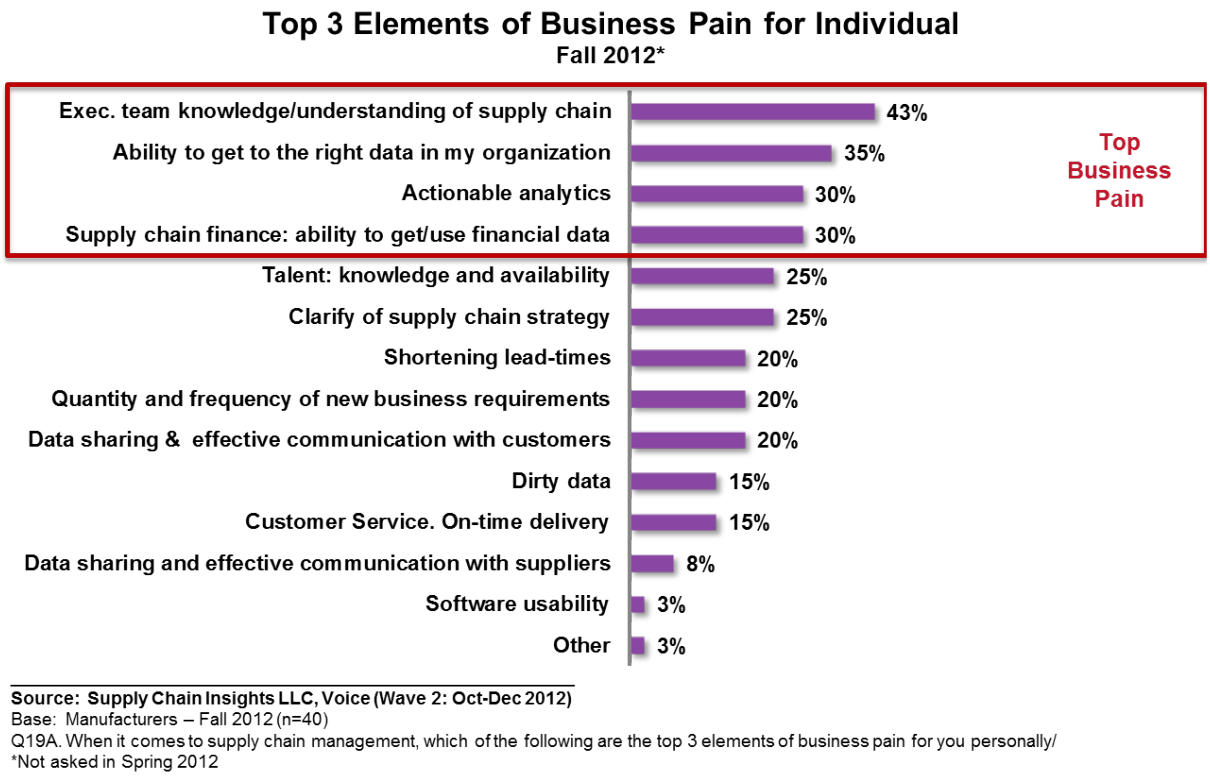
Recommendations

Companies need to be very clear on metrics in the definition of supply chain strategy. ROA can no longer be used as a proxy measurement for process manufacturers. The old belief that a focus on ROA will also give the best operating margin is stronger in some industries than others. As shown in the food manufacturing organization, the needs of manufacturing must be better aligned with commodity market swings. We have also shown that a strong focus on ROA, as shown in consumer packaged goods, may decrease growth.

While the relationship between operating margin and ROA still exists for advanced supply chains in advanced industries, it is no longer an absolute indicator of supply chain excellence or a good proxy measurement for operating margins. As a result, companies should focus on:

Step 1: Manage Costs in the End-to-End Value Chain. This journey requires the designation of a leader that is focused on the design of the supply chain from the customer's customer to the supplier's supplier. This requires a clear definition of supply chain excellence and the evolution of change management to move companies through the transition of a focus on functional silo excellence to aligned value networks. For most, as shown in figure 6, this is an issue of leadership.

Figure 6. Supply Chain Business Pain of the Supply Chain Team.



Source: Supply Chain Insights LLC, Voice (Wave 2: Oct-Dec 2012)
Base: Manufacturers – Fall 2012 (n=40)
Q19A. When it comes to supply chain management, which of the following are the top 3 elements of business pain for you personally/
*Not asked in Spring 2012

In addition, in managing operating margin, we need to be very clear on supply chain outcomes. The efficient supply chain may not be the most effective supply chain strategy and a high ROA may actually drive a lower margin. It is important to gain alignment and clarity to ensure that the right operational decisions can be made.

Supply chains are a complex system with increasing complexity. When companies lack a clear definition of supply chain strategy—what defines supply chain excellence and alignment on financial metric targets—it is tough to make progress on margin. Because the supply chain is a complex system driven by trade-offs between financial metrics, it is essential to be able to model the impact of operational decisions through what-if analysis and optimization/discrete simulation. Unfortunately, most don't. Getting this clarity is job number one.

Step 2: Provide Actionable Analytics to Manage Operating Margin: The second largest gap for process manufacturers today is actionable analytics. Companies have a lot of systems, but most supply chain leaders struggle to get to the right data to make the right decisions.

For most companies, when they hear the term "analytics," they think reporting. Most process manufacturers lack an understanding of new capabilities in analytics. To overcome the current market trends, companies need to adopt new technologies and use these new capabilities to rethink and redefine traditional supply chain thinking. For process manufacturers, there is a

need to shift thinking from reporting on an extended ERP system to thinking more holistically about analytics. While ERP reporting is an important step in stages one and two of the analytics maturity framework in table 6, it is not the foundational element in the more mature stages. Companies need strong analytic platforms to manage margins. It will be tougher in the next decade than the last. Most are not able to access and use data to determine profitability.

Table 6. Framework for Actionable Analytics to Improve Operating Margin

Maturity Model	Maturity Phase (where 1 represents least mature)				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Focus	Reporting	Reporting with limited optimization	In-memory analytics with self-service reporting by line-of-business leaders	Use of structured and unstructured data to sense and respond	Test and learn
Deployment	Functional analytics	Enterprise focus with a strong focus on ERP	Strong focus on end-to-end planning Depth of modeling for strategic and tactical decision making	Close coupling of levels of planning with operations for closed loop capabilities	What-if modeling, simulation and learning systems
Ability to Manage Operating Margin	Limited ability to see and manage total supply chain costs	Visibility of transactional information Lack of definition of a profitability data model	Visibility and usage of inter-enterprise contract manufacturing and third party logistics (3PL) data Implementation of channel and supplier sensing capabilities Clarity of a profitability data model for operations	Demand orchestration Ability to translate market changes into operational decision making end-to-end	Well-defined profit data models Clarity of financial ratio goals to supply chain strategy embedded in learning systems
Primary Goal	Integration	Data synchronization	Minimize data latency and sense market changes	Demand and supply orchestration	What-if modeling, simulation and learning systems

Source: Supply Chain Insights LLC

Conclusion

The efficient supply chain may or may not be the most effective; and the company that performs the best on ROA, may not deliver the best operating margin. Most companies profiled in this report have reached a plateau on the supply chain effective frontier to manage growth, profitability, complexity and cycles effectively. To move forward requires enlightened leadership and rethinking analytics.

Appendix

Company Profiles

Company	Stock Exchange: Ticker Symbol	2011 Revenue (billions USD)	2011 Global Employees (thousands)	Country Where Based
AkzoNobel N.V.	Euronext: AKZA	21.8	57.2	Netherlands
BASF SE	FWB: BAS	102.2	111.1	Germany
Eastman Chemical Co.	NYSE: EMN	7.2	10.0	USA (Tennessee)
E. I. du Pont de Nemours and Co.	NYSE: DD	38.7	70.0	USA (Delaware)
The Dow Chemical Co.	NYSE: DOW	60.0	51.7	USA (Michigan)

Source: Supply Chain Insights LLC, Corporate Annual Reports 2011

Company	Stock Exchange: Ticker Symbol	2011 Revenue (billions USD)	2011 Global Employees (thousands)	Country Where Based
Church & Dwight Co., Inc.	NYSE: CHD	2.7	3.5	USA (New Jersey)
Colgate-Palmolive Co.	NYSE: CL	16.7	38.6	USA (New York)
Kimberly-Clark Corp.	NYSE: KMB	20.8	57.0	USA (Texas)
The Clorox Co.	NYSE: CLX	5.2	8.1	USA (California)
The Procter & Gamble Co.	NYSE: PG	82.6	129.0	USA (Ohio)
Unilever N.V.	NYSE: UN	64.6	169.0	The Netherlands

Source: Supply Chain Insights LLC, Corporate Annual Reports 2011

Company	Stock Exchange: Ticker Symbol	2011 Revenue (billions USD)	2011 Global Employees (thousands)	Country Where Based
Campbell Soup Co.	NYSE: CPB	7.7	17.5	USA (New Jersey)
General Mills, Inc.	NYSE: GIS	14.9	35.0	USA (Minnesota)
Groupe Danone S.A.	EPA: BN	26.9	101.9	France
Kellogg Co.	NYSE: K	12.4	30.7	USA (Michigan)
Kraft Foods, Inc.	NASDAQ: KRFT	54.4	126.0	USA (Illinois)
Nestlé S.A.	SIX: NESN	94.3	328.0	Switzerland

Source: Supply Chain Insights LLC, Corporate Annual Reports 2011

Company	Stock Exchange: Ticker Symbol	2011 Revenue (billions USD)	2011 Global Employees (thousands)	Country Where Based
Abbott Laboratories	NYSE: ABT	38.9	91.0	USA (Illinois)
Eli Lilly and Co.	NYSE: LLY	24.3	38.1	USA (Indiana)
Merck & Co., Inc.	NYSE: MRK	48.0	86.0	USA (New Jersey)
Novartis International AG	SIX; NOVN	59.4	123.7	Switzerland
Pfizer, Inc.	NYSE: PFE	67.4	103.7	USA (New York)

Source: Supply Chain Insights LLC, Corporate Annual Reports 2011

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About Supply Chain Insights LLC

Supply Chain Insights LLC (SCI) is a research and advisory firm focused on reinventing the analyst model. The services of the company are designed to help supply chain teams improve value-based outcomes through research-based Advisory Services, a dedicated Supply Chain Community and Web-based Training. Formed in February 2012, the company is focused on helping technology providers and users of technologies improve value in their supply chain practices.

About Lora Cecere

Lora Cecere (twitter ID @lcecere) is the Founder of Supply Chain Insights LLC and the author of popular enterprise software blog Supply Chain Shaman currently read by 4500 supply chain professionals. Her book, **Bricks Matter**, published on December 26th, 2012.

With over nine years as a research analyst with **AMR Research, Altimeter Group, and Gartner Group** and now as a Founder of Supply Chain Insights, Lora understands supply chain. She has worked with over 600 companies on their supply chain strategy and speaks at over 50 conferences a year on the evolution of supply chain processes and technologies. Her research is designed for the early adopter seeking first mover advantage.

About Abby Mayer

Abby Mayer (twitter ID @indexgirl), Research Associate, is one of the original members of the Supply Chain Insights LLC team. She is also the author of the newly-founded blog, Supply Chain Index. Her supply chain interests include connecting financial performance and supply chain excellence as well as talent management issues, emerging markets, and improving risk management practices through the use of big data and analytical analysis. Abby has a B.A. in International Politics and Economics from Middlebury College and a M.S. in International Supply Chain Management from Plymouth University in the United Kingdom. She has also completed a thru-hike of Vermont's 272 mile Long Trail, the oldest long distance hiking trail in the United States. As part of the planning and food prep process, she became interested in supply chain management when she was asked to predict hunger pangs for the entire three-week trip before departure. If that isn't advanced demand planning, what is?!?!