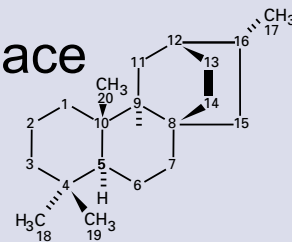




# Staying Competitive in the Changing Chemical Manufacturing Marketplace

*Business insights for real-time decision making*



Authored by David Caruso, a technology strategy expert

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Over the past decade, chemical manufacturers have struggled to maintain growth and profit margins. As the economy slows, chemical firms are carefully analyzing every investment decision. Executives must proactively protect revenues by focusing investment on the right products, services, and markets. At the same time, they must identify ways to gain operating economies through better asset utilization and improved workforce productivity and aggressively pursue additional margin through careful product pricing. All of this requires critical and timely information given today's rapidly changing economic outlook.

When heading into soft economic times, many firms automatically cut expenditures across the board. It's an instinctive response to difficult economic conditions. Unfortunately, this response could lead a chemical firm – whose very expensive plant asset base requires decisions to be made with multi-year implementation time frames in mind - into real trouble in the coming years, regardless of economic conditions.

Ask any executive and you'll hear that the data to manage these issues exists all over their organization. The challenge is to pull it together and put it into context. Executives must have information systems that provide marketplace visibility, business process flexibility, and bring the right insights to speed effective decision making tools throughout the entire organization. There is a mandate to re-examine the current role and future needs of ERP in your company and nowhere is this more true than in chemicals.

## MARKET DYNAMICS AND HOW THEY UP THE COMPETITIVE ANTE:

Positioned at the core of most supply chains, chemical firms must deal with many challenges to growing profitably - flat demand, deflationary prices, and emerging competitors to name a few. At the same time, opportunities are expanding in emerging markets such as China and India, yet those very opportunities spawn aggressive and often well heeled new competitors. The stakes are high and chemical companies find the dual challenges of cost containment and revenue growth at the heart of many decisions. Effective response requires addressing some critical issues:

- **Understanding demand.** Customer demand provides the context for all profitable investment decisions. Unfortunately, the difficulty of making decisions is compounded for chemical companies by their inability to see the consumer demand that drives their customers' order patterns. Severe fluctuations in energy and feedstock costs add volatility to chemical pricing making the problem worse, often encouraging downstream buyers to time their purchase orders in ways that create lumpy and unpredictable demand.

- **Product innovation.** In chemicals, product innovation is all about extending existing products to improve performance or finding new customer applications. According to a recent AMR Research survey, on average, a third of the chemical industry's 2007 revenue came from products introduced within the past two years. The impact is even greater in small and midsize chemical businesses, where almost half (45%) of 2007 revenue comes from products introduced in the past two years. Indeed, with today's pervasive "green" initiatives, developing new environmentally compliant products can clearly be a growth and competitive opportunity.

The overwhelming importance of new products to the chemical industry is clear - the percentages of 2007 revenue for products launched within the past five years ranged from 49% in the commodity products world to 67% among those that considered themselves product innovators.

Yet in the same AMR Research survey, most chemical companies indicated they don't have formal new product development and launch processes, and only a third of respondents have a project/program management office. Product portfolio analysis and management was deemed critical to successful business innovation, and yet more than two-thirds of companies felt they underperform in this area.

- **Differentiating products through innovative customer service.** New products are required to win and keep customers, but that's not enough. Leading companies differentiate themselves by marketing innovative services as well. Building additional value by surrounding existing products with value-added services – for example offering customers more flexibility in packaging, on-site support, and delivery services – extends product adoption and cement long term customer partnerships. In many cases, that creates the potential for customers to outsource key manufacturing and services tasks with an eye to reducing their cost structure and reduce cycle times and improving profitability.

One specialty chemical producer that uses services to improve market share recast itself as a provider of custom programs. In this effort, the company creatively leveraged its intellectual property and customer relationships to create custom applications that include designing and managing solutions ranging from food safety through pest management and equipment maintenance. In addition the firm also provides training and consultation services to its customers making them the go-to supplier when a customer has a new cleaning challenge.

- **Managing increased regulatory oversight.**

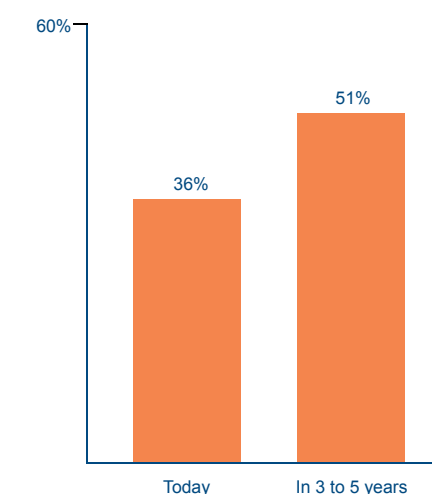
Legislators in every country have read about tainted environments, chemical spills, and refinery explosions – and they want to protect their citizenry. The result is an ever expanding list of regulations that is different in nearly every country. Among the regulations every firm must deal with:

- REACH - the new European Union regulations for the Registration, Evaluation, and Authorization and Restriction of Chemicals which is being phased in starting in 2007 and will require full compliance by 2011 – likely impacting 50% of most chemical firms products at that time.
- Plant Vulnerability Assessments (United States, post-September 11),
- Securing international logistics supply chains (C-TPAT)

The bottom-line: the Chemical industry faces a tougher regulatory climate than any other industry – one that can consume as much as 3% of revenue.

### An Example of the Impact of Regulatory Issues in Chemicals: REACH

Q. What percent of your products are affected by REACH  
Q. What percent of your products do you estimate will be affected 3 to 5 years from now?



Source: AMR Research, 2008

## ARE YOUR CURRENT INFORMATION SYSTEM UP TO THE TAST?

Chemical firms are often the home to complex IT environments. For many this creates latency in information availability and increases IT costs – especially those firms with aging and siloed operational systems. These companies must combine data from many sources – multiple ERP systems, multiple divisions and multiple applications – maintenance, human capital, CRM, and supply chain to name just a few – to create a complete or holistic view for critical decisions. The upshot: escalating complexity in all areas of the business, including development, purchasing, manufacturing, distribution, and sales, render aging siloed systems ineffective and expensive.

Under pressure to bring needed information together many firms are now saddled with complex integration efforts that have driven up IT costs and increased the risk of fast access to mission critical information. In a 2007 survey Forrester Research found that on average, chemical firms spent 2.5% of revenue on IT with 72% of the IT budget on ongoing IT operations. As more business processes are managed electronically, the cost to maintain and upgrade existing systems becomes a key issue. If not dealt with appropriately, it can hamper a company's ability to react to industry change.

The increasing complexity of the chemical industry, coupled with uncertain economic times, demand that chemical companies prepare now. Whatever the starting point, it is clear that chemical firms must achieve a new level of strategic business insight or they risk the chance of failure. Unfortunately, real experience indicates that while ERP systems are invaluable, ageing systems aren't always helping manufacturers become better real time decision makers.

## FIVE BIG ISSUES THAT NO CHEMICAL FIRM CAN IGNORE:

Chemical Industry executive decisions are far reaching and expensive. To underscore the reality, industry giant Dow Chemical recently reported they experienced a \$400M US increase in feedstock and energy costs compared with the year earlier period. Such a dramatic swing of input costs could threaten any firm. While that is probably enough to jolt most firms into bottom-line protection strategies, chemical executives must also be concerned with a looming recession and slower sales. What's the right response? Hunker down? Or invest in the right stuff? A new chemical plant can cost upwards of \$1B US to build, so the decisions cannot be taken lightly.

When it comes to recession-proofing, there are several critical decision points that can only be accomplished with a strong underlying ERP system and a powerful business intelligence platform. Among these essential areas:

**1. Understanding the true cost to serve –** capturing an accurate picture of the cost structures of running a chemical operation is critical to extending products and identifying new services opportunities, and designing effective pricing models. Research conducted by AMR Research has shown that even without raising prices, a disciplined approach to reducing all the sources of price leakage can yield 10% to 15% gross margin improvements. Using a current generation ERP system can provide price analysis and management tools and that provides a true head start on protecting profitability. Ultimately go-to-market strategies will determined by correlating the impact of customer demand, supply, and asset utilization.

There are many aspects to maintaining profitability, such as energy costs, local plant expenses, that must be monitored at the plant, market, and corporate levels. But chemical firms with global operations must go beyond internal costs, monitoring landed

cost and managing increasing outbound supply chain costs. Companies without the real time visibility to the full range of local and global KPIs, financial performance, emerging trends, and the way feedstock price increases affect the global business – will be at a disadvantage.

Likewise a key to innovating and winning at extended services for customers is effective segmentation, not giving away services to those that don't value them, and charging a premium to those that do. The challenge is doing this while leveraging shared high-volume/low-product mix manufacturing assets.

In addition to capturing the traditional manufacturing operations costs, new cost models must include other internal organizations, such as customer service, engineering, and field sales and service that are essential to moving to services segmented by customer or market. This new business model will require managing ongoing operational and inventory parameters, as well as ensuring closer interaction between research and development (R&D) labs, procurement, production, and marketing. Making these new models work will take cultural change. Providing performance data and measuring to new KPI's fed by ERP can support these changes. Companies can integrate multiple facilities and departments, from down the hall to across the globe, by delivering a single reporting view into all chemical manufacturing, sales, production, and financial activity as it occurs.

### **2. Capturing and analyzing demand information.**

In addition to having an accurate picture of product shipments and correlating that with feedstock pricing, the next step is to develop the rich information that will capture trends and identify growth opportunities – be it in products or segmenting services. The challenge for Chemical executives is to create a

differentiated advantage in product areas that can be physically identical, right down to the molecular level. Accomplishing this requires defining market focus and positioning, and then establishing an operating model that exploits a distinctive set of capabilities that creates and sustains meaningful differentiation.

Companies can do this if they understand customer wants and needs. Extend their offerings to embrace application, service, and price, and develop superior collaborative partnerships with their customers. Success in the new model will include using extrinsic information, demand patterns, and customer collaboration to identify new, higher-margin products and markets – and even acquisition targets-something many existing information systems can't support.

**3. Optimizing global operations.** New competitors from emerging countries where production costs are lower and the trend toward product commoditization require faster access to global market information and the ability to correlate it to accurate operations performance data. Given their heavy capital investments, Chemical producers strive to completely utilize plant capacity, often without understanding whether they are losing more money by doing so. In some cases, it's possible to be more profitable carrying idle capacity and producing higher margin products. Likewise – because the lead time of adding new capacity, not recognizing upward shifts in markets or products may mean missed opportunity or underutilized assets.

With improved market visibility to demand signals chemical firms can conduct large-scale, global economic optimization of their enterprise. Instead of optimizing a single plant's economic return, they can optimize total enterprise manufacturing cost, perhaps even sacrificing one plant's efficiency for the greater good. This is not fancy or particularly visible, but it's worth millions.

**4. Analyzing asset utilization and maintenance investment.** While nearly every chemical producer focuses on their equipment and facility assets, most take a transactional view of maintaining the asset and calculating maintenance costs. The next step is to step up the analytical process to understand how to optimize those assets. This includes analyzing the cost/benefit tradeoffs of various maintenance strategies to improve operations and protect against asset failure or catastrophe. In short, chemical manufacturers are gaining competitive advantage by adding the notion of risk-based analysis to their physical plant maintenance programs.

**5. Analyzing the impact and risk of human capital –** Today, most manufacturers have most basic transaction related Human Resource functions and workforce management processes in place but just aren't getting the insight they need, and are moving beyond core issues to address critical strategic hurdles. Some are just beginning to consider a strategic approach to workforce optimization, assessing available skills and training, and assessing Return on Investment (ROI). This is especially important in an industry where a great percentage of the workforce – especially those in the knowledge-based equipment maintenance functions – is approaching retirement and finding talented new workers to replace retirees is important.

To manage strategically and align the workforce with business goals on an individual level, companies need to address strategy related HR questions:

- Where our critical human assets are and what exposures do we have?
- How do we effectively deploy and track these individuals?
- How do we continue to improve skills and develop these valuable resources?
- How do we motivate and measure employees for better performance?

## CURRENT GENERATION ERP MOVES BEYOND TRANSACTIONS AND CONTROL

The aging and siloed systems used by many chemical firms to manage operations provide them much of the basic data they need, but the most critical decisions they make require projections, trends, and correlations. How does an executive ensure that the workforce can keep pace with the increasing complexity and speed of decision making if the answers are buried in complex transactional systems? The single, comprehensive database underlying ERP systems is the key to instantaneous global views and can unleash the power of organization and value chain-wide collaboration enabling companies to:

- Integrate multiple facilities and departments by delivering a single reporting view of all chemical manufacturing, sales, production and financial activity as it occurs.
- Improve reaction time with transparent visibility into global demand, inventory, and logistics challenges.
- Collaborate globally in real time with powerful operational reporting.

The marketplace demands on today's chemical operations make better data even more important because most successful chemical companies have taken out layers of management, and have wired the company together transferring knowledge and information to employees so they can make decisions independently is now a necessity. Leading companies use ERP systems coupled with the pervasive desktop tools, to move beyond the realm of the accountants and business planners and analysts – providing information to all the decision makers at all levels organization. In the new model everybody becomes a strategic thinker because they have information and the tools to act confidently on it.

In most business environments users are very familiar with today's desktop tools and extend and analyze the initial data in creative ways many IT professionals couldn't have anticipated. In this way, today's ERP systems can set into motion a more integrated and successful chemical firm. Putting the control of the information in the hands of more employees makes it easier for chemical manufacturers to be more competitive on a global level by helping companies:

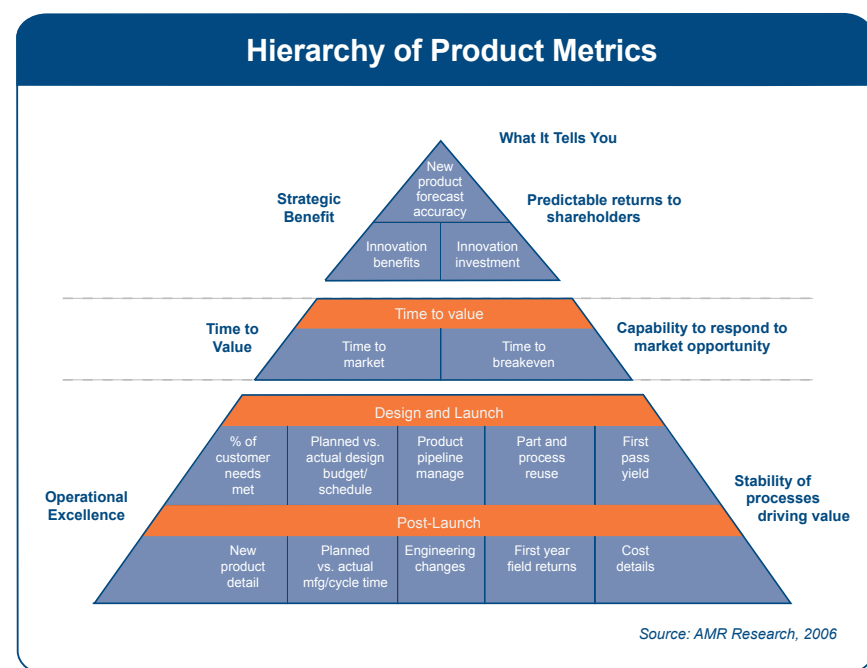
- Integrate monitoring, analysis and planning into a single, configurable platform
- Create visual forms that provide multi-dimensional analysis and include non-ERP data, market forecasts, extrinsic data reports, weather, and more. Share data for analytic purposes across a wide audience that can quickly and confidently apply the data to their needs.
- Monitor KPIs, financial performance, emerging trends, and the impact from feedstock price increases real time.

To stay competitive in today's global markets, companies must be adept at managing their portfolio of products and services. To effectively integrate that portfolio across all aspects of the company requires understanding the complex interrelationship between intellectual property, products, services, and pricing. Executives implementing such practices need to be aware of their true cost to serve. This includes knowledge of how feedstock prices, currency, capital investment, supply chain costs, internal production capabilities, and other related expenses combine to create a positive value in the eyes of the customer. And, if not, what corrective actions should be taken.

All of these external issues necessitate strong internal actions and drive chemical executives to concentrate on a relentless need to improve operating efficiency. According to AMR Research, 90% of companies see chemical costs as rising, with 62% calling the increase "substantial" and is no small concern – this could push many traditional customers to look for alternatives and overseas suppliers, likely to new competitors – if the issues of pricing and supply in the chemical supply chain are not solved.

All of this is at the core of daily life in the executive suite. At the end of the day it's all about information and developing and anticipating the necessary response to drive profitable chemical businesses. A powerful ERP system that can offer operational control, process flexibility and business insight has become mandatory.

Chemical firms large and small must develop the insight to change and win in today's ever-morphing competitive landscape. While it is felt at every level of the chemical industry, smaller specialty chemical producers may have the most difficult challenge. They must participate on a global level and deal with all the regulatory issues without scale/cost advantages and have to compete on business process agility and responsiveness as well as product/service innovation. But regardless of size, the game has changed in the chemical industry. Soon, the ability to speed decision at every level of the organization will not be a differentiator; it will be the price of entry.



## About the Author



*David Caruso* is the founder and Principal of David Caruso & Associates, Inc, a consulting firm specializing in ERP selections and business case development for technology investment. David brings over 35 years of technology and manufacturing industry experience to his role. Prior to starting his own firm, David was Senior Vice President & Director of Research at AMR Research.

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