



2012 Chemicals Industry Perspective

We would like to offer our thoughts on the current business environment for chemical companies, what the future holds, and which specific capabilities they need to enjoy the greatest success.

Current Trends

Not long ago, the center of the global chemical industry seemed destined to be moving to the Middle East from North America and Europe, propelled by the ready availability in the Arab world of relatively inexpensive oil as a feedstock. That idea has now been turned on its head. A wave of drilling activity has unearthed giant supplies of natural gas in shale rock around the world, but mostly in the United States, creating a surfeit of raw material for making ethylene-based plastics inexpensively even as the cost of oil skyrockets. Indeed, with this sudden boom in natural gas capacity, the price of Henry Hub futures dropped about 13 percent in the first nine months of 2011.

This has altered chemical industry dynamics in significant ways. For one thing, demand for most ethylene-based petrochemicals – including polyethylene – is skyrocketing as their price falls in line with that of natural gas. This demand boom is particularly true in fast-growing markets in emerging nations. As a result, many of the large integrated majors like Exxon Mobil, Dow Chemical, Shell, and Chevron are quickly adding to their natural gas reserves in North America with the goal of manufacturing ethylene polymers locally and shipping them to factories around the world, where the chemical can be used for everything from sandwich bags and cling wrap to car covers, squeeze bottles, water pipes, and cable insulation.

This trend could force Middle East chemical companies to think twice before increasing their petrochemical capacity but also may in time create an ethylene price war and profit margin pressure for the chemical companies with the most invested in this commodity. Indeed, the possibility of an impending price war is further punctuated by activities in China, where natural gas resources are substantial and ethylene factory capacity is increasing at a rate equal to that of the rest of the world combined.

Meanwhile, some petrochemicals are facing a far different set of conditions. Higher-end oil-based chemicals – essentially, the propylene polymers – are losing their attractiveness as the price of oil continues to be high and volatile. And as the tilt toward natural gas exacerbates, the demand for propylene feedstock will likely continue to spiral downward. The riskiness of this chemical sector was a big reason that Dow Chemical sold its polypropylene unit in July to Braskem, Brazil's biggest petrochemical company. With this deal, Braskem became the biggest U.S. producer of polypropylene and Dow exited an uncertain sector while generating cash to pay down debt and fund growth in other areas. There's likely to be much more industry consolidation of this type in the immediate future.

And as the dynamics in the basic chemical sector fluctuate, specialty chemicals continue an inevitable march toward commoditization in much of the world. Just a decade ago, gross margins for specialty products including additives, pigments, and personal care items were extremely attractive; thus, many companies – even many large ones – were motivated to participate in the specialty segment. But today, specialty chemical margins have tumbled to historical lows.

The reasons are painfully obvious, if difficult to address. As more and more competitors seek to take a piece out of this still highly profitable market and put pressure on prices to improve their market share, specialty chemical providers are compelled to move into lower-margin applications in hopes of expanding and creating new markets for their products – often overlooking the fact that these less profitable applications and additional R&D expenditures may not be warranted.

In several cases, the specialty chemical company suddenly finds itself in a race toward the bottom. Further, the sector is weakened by improvements in downstream design and manufacturing processes that allow customers to eschew specialty chemicals in favor of more standardized feedstocks for their products. With all of these challenges, a long and costly price war – or, in this context, commoditization – is the unavoidable result.

To overcome these handicaps in the specialties niche, diversify portfolios, and enhance scale and breadth of existing businesses, companies are turning to acquisitions to swell their specialty offerings relatively quickly without the enormous up-front R&D costs that ultimately demand a long-term commitment to the product in order to realize a satisfactory return. For example, DuPont purchased the Danish niche chemical firm Danisco last May for US\$6 billion to gain access to Danisco's synthetic enzyme technology, which can be used in cleaning supplies, textiles, food, and animal feed, as

well as Danisco's strength in cellulosic ethanol research, which complements DuPont's interest in carbon reduction products. And just a few months earlier, Belgian-based Solvay acquired Rhodia, a French producer of specialty chemicals for cosmetics, personal care, water treatment, and plastics, for nearly \$5 billion. This deal will give Solvay direct access to emerging markets in Asia and Latin America, where Rhodia has strong distribution and supply chain networks. That could be an enormous coup for Solvay, particularly in China, which has few specialty chemical facilities and relies primarily on imports for its rapidly expanding specialty needs.

If nothing else, these transactions show that many specialty chemical companies are still feeling positive about their prospects, even if a big part of their business model is to stave off commoditization. Decent revenue and earnings growth, primarily in emerging markets, has allowed them to build up cash and minimize debt, making this period of business expansion relatively pain-free financially.

And as 2011 comes to an end, along with these clear conditions and trends, signs of instability and uncertainty bedevil the chemical industry – chiefly, in demand growth. Though demand will certainly rise over the next few years, the steepness of the curve is impossible to predict. With GDP growth in developed nations projected to be well below 3 percent under the best scenarios in the next few years, the chemical companies are counting on emerging countries – especially China and India – for robust revenue and profit streams. But even in these markets, hints of trouble are apparent. In both China and India, inflation is rising and growth is slowing. In September, China's inflation rate rose about 6 percent, well above the government's 4 percent target, while third-quarter GDP gains dropped to 9.1 percent from 9.5 percent in the prior three months. As business conditions tighten in these regions, chemical demand will be a victim. Consequently, chemical companies must develop well-thought-out strategies and skills to deal with the changing dynamics in emerging countries, including establishing reasonable production and R&D footprints in Asia to best compete with local suppliers for both market share and talent.

A Capabilities Strategy

Although the industry landscape is so clearly risky and may be difficult to navigate, chemical companies are facing a set of real opportunities. But to take advantage of them, chemical outfits need to revisit the capabilities they already have and should have – to differentiate themselves from competitors in the race for profitability and improved performance. These capabilities are sets of tools, processes, systems, or skills that combine to drive a company

toward its strategic goals. In our view, the following capabilities should be the main priorities for chemical companies in 2012 and beyond:

- *Choose the Right Business and Operating Models*
Tailored business streams (TBS), in which distinctive management approaches are designed for products and regions, depending on customer preferences and product life-cycle status, are already essential today but will become even more critical as commoditization escalates in the chemical industry. By adopting TBS, a company would, for example, dedicate direct sales teams for selling specialty chemicals to key customers. These teams would, in essence, serve as embedded experts to help customize the chemicals to meet specific client product needs and to upsell other specialty chemicals that may fit the parameters of future products that the client is developing. The goal would be to earmark the lion's share of the chemical company's expenditures for driving higher volume and market longevity for specialty products that command a premium price. At the same, this chemical company might opt for a far different business model for its commodity products, selling them through third-party distributors and devoting just a sliver of the overall R&D budget to advancing these low-margin items.

Regional differences should also be taken into account when choosing the right business model. Uppermost in mind should be emerging economies with their potentially large markets. Companies need to develop plans not merely to grow in these countries but to outpace the rate of growth in local markets. Consequently, tailored business streams should be developed to target unique aspects of the local business environment and customer behavior and buying patterns.

In all cases, business requirements and management approaches chosen under the TBS umbrella must also be translated into operating models that support the tailored business streams.

- *Embrace Natural Supply Chains*
There are certain things that chemical companies can't change about their supply chains to any significant degree: for example, where your customers are, and where you buy your raw materials. And external forces determine the cost of fuel for shipments. But it is possible to control logistics and storage or inventory costs. In fact, the best way to do that is through an approach we call natural supply chains: a combination of rigorous market-back and product-forward supply chain strategies.

Under this approach, chemical companies segment their product and customer base into organic categories – specialties, commodities, and petrochemicals – and then further by their value to the company, and then design their supply chains to best suit each of these individual buckets. The goal is to leverage and scale common supply chain elements across the enterprise when market requirements allow – for example, when there are long lead times and standard designs and supply volumes. Alternatively, special supply chain services can be applied to products that have unique requirements – shorter lead times, plenty of variability, smaller volume, order flexibility, and numerous potential configurations depending on customer needs.

Natural supply chains have consistently been shown to better support business requirements and drive increased value through lower operational costs. For example, after implementing natural supply chains, one large chemical company improved lead time fulfillment by 20 percent, reduced inventory by 40 percent, and slashed operating costs by about 20 percent.

- *Provide Solutions and Services*
As a growth lever, this capability involves using a company's deep knowledge of its customers and of chemical applications and technology to develop new offerings that go beyond the basic chemical value chain, including solutions based on performance-driven pricing. Companies that implement this strategy successfully can enjoy the types of sustainable and stable revenue returns that the so-called razor-blade model offers; that is, after the initial sale, customers are likely to keep coming back for refills over a long period of time. Pricing and promotions management is critical, however, to make this strategy work. Products must be offered at prices that customers perceive as on par with the value of these new solutions and materials.

Overall, a move into providing solutions and services requires a significant upgrade of a company's go-to-market capabilities – it's critical to identify the markets in which you can gain and sustain leadership – as well as prolific idea generation, cross-functional and regional cooperation, a disciplined process that holds project managers responsible for strategy execution, and ruthless portfolio management. While most companies are good at some of these dimensions, very few actually attempt real portfolio management – to their detriment.

- *Enhance M&A Management*

With acquisitions and partnerships certain to play more a prominent role in the chemical industry, particularly for expanding operations in emerging nations and for increasing the specialty chemical presence in a portfolio, effective postmerger integration or joint venture management is increasingly essential. Strategies for manufacturing, R&D, staff recruitment, talent development, and customer service must be developed that take into account the combination of multiple organizations into an efficient, seamless operation. In addition, chemical companies need to develop proficiency in valuing potential acquisitions or joint ventures, based on accurate readings of the dynamics of emerging markets and on credible forecasts of demand and pricing for individual products and raw materials.

- *Design a Robust Innovation Strategy*

As the chemical industry becomes more challenging globally, innovation as a core capability is increasingly a determinant of success. However, innovation is much more than R&D; it is a company-wide strategic thrust driven by a culture that encourages and rewards new ideas in all aspects of the business, from design to marketing, from manufacturing to talent development. Indeed, according to the Booz & Company Global Innovation 1000 annual study, the firms in all industries voted the 10 most innovative by global corporate executives outperformed the 10 companies with the largest R&D budgets by 33 percent in revenue and 20 percent in EBITDA margin averaged over five years. In fact, only three of the top 10 innovators were among the 10 biggest R&D spenders.

At the heart of a successful innovation strategy is well-developed and insightful knowledge about what customers need and want, along with a process for using this information to lead market-back product development. The result of this exercise might be to provide unique offerings for specific regions or niche segments. To support turning customer ideas and preferences into products, there must be highly visible leadership commitment for innovation, including investment pools for novel ideas and ambitious targets for innovation-driven growth across the organization to encourage entrepreneurialism. Moreover, direct exposure of business managers, including the CEO, to markets and customers is critical, as is establishing application development and production facilities and customer relations centers in the areas (such as emerging nations) where market growth is expected to be strongest and where proximity to customers can be a significant advantage.

We hope this letter stimulates your thinking about the capabilities your organization should develop or strengthen to compete in a period of volatility and change. We would welcome the opportunity to hear your thoughts about the year ahead and to discuss how you might create a more prosperous 2012.

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