



Challenges and Opportunities for the Global Chemical Industry

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In soccer, there is a saying that “The next game is always the hardest”. The industry equivalent to this is that most managers working in a specific industry think of this industry as being one of the most challenging, and facing the most challenges. For me, this industry obviously is the chemical industry – which means I cannot really judge whether the challenges to this industry are particularly tough, but I certainly know what these challenges are. This paper briefly discusses the ones that I currently see as the most critical ones (Fig. 1) – those that offer both substantial rewards for companies getting things right and huge dangers for those taking the wrong steps. While most of the challenges are relevant globally, some may be more applicable to either European, American or Asian/Chinese companies. Let us take a look at them one by one.

sold at a high price. However, with time competitors will also be able to produce these or similar products. At the same time, customers get more experienced in using these products, thus need less support from their chemical suppliers and are more willing to switch suppliers. While production volumes increase, margins decrease substantially.

Dealing with commoditization can either mean accepting it – then the focus will be on increasing efficiency so that it becomes possible to compete on price. Often, however, the preferred alternative is to try to reduce the speed of commoditization by protecting existing products (e.g., patents) and by continuously creating new ones (so that only the oldest products commoditize). The decision which course to follow is not easy and has to take the likeliness of success into account as well.

cost and availability of these resources in different regions. While the Middle East has always had good access to cheap oil, recently the US chemical industry has profited from the exploration of shale gas, which substantially lowered some of their raw materials costs. In China, coal has become an additional raw material source for the chemical industry, though the final conclusion on whether it is an economical one is still out.

As a consequence, European chemical companies focusing on basic chemicals (specialty chemicals are less affected as the raw materials cost share in their production is much smaller) have become under intense cost pressure. On the one hand, the Middle East has started building up its own chemical industry based on cheap oil. While before, they just exported the oil, they now become direct competitors to European chemical manufacturers. On the other hand, US producers benefit from cheap shale gas, and Chinese companies have invested in coal conversion. Within the industry, companies particularly threatened by uncompetitive raw materials costs need to consider proactive responses, e.g., a move towards specialty chemicals or a shift of production to other regions.

Commoditization

Commoditization is a constant threat for advanced chemicals companies. They have spent substantial resources on developing their products, which if superior can be

Raw material changes (types and costs)

Most of the products of the chemical industry are based on fossil resources. The last few years have seen a major shift in the

Shift of the chemical industry to Asia

For the production of many chemicals, it is an advantage if it is done near the customers. This is not only due to transportation costs, but also because many specialty chemicals require close adaptation to markets and rapid reaction to customer needs, so reduced transportation times and better market knowledge coming from local production have positive effects.

In the past 10 years or so, many customers have moved to Asia and particularly China

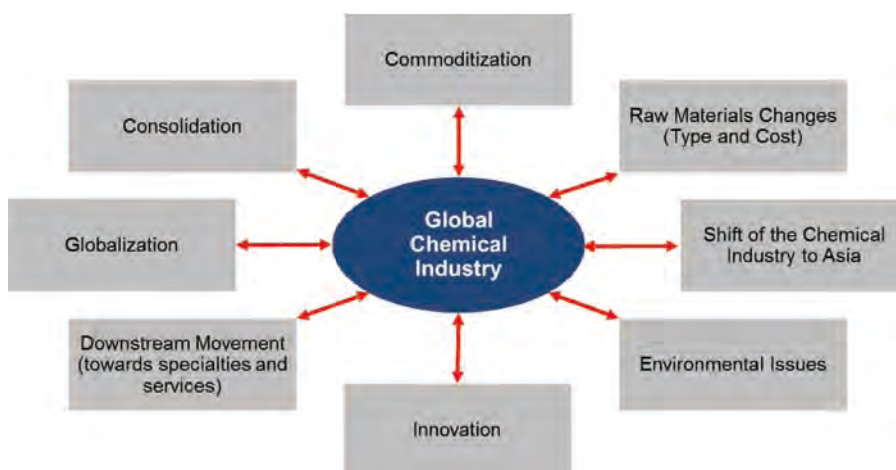


Fig. 1: Crucial challenges to the global chemical industry



as production there is cheaper, and Asia also has the biggest number of end customers. For example, China is now the biggest market for both chemicals and automotive. As a consequence, companies not aligning their own facilities with this shift risk losing market share. Check your own company in this regard. They need to check which are the best functions to localize closer to the markets – R&D, production, sales, or even (as done by the polycarbonate business of Bayer) the headquarter. They will also need to adapt their investment plans to the growing importance of Asia. The hardest part for non-Asian companies will be to close down plants and reduce the number of employees in their home countries.

Environmental issues

All chemical companies are affected by environmental regulation. However, they need to be aware that such regulation can also have positive effects on their company if the right measures are taken. For example, chemical companies may focus more strongly on products helping to deal with environmental problems – there are many examples for such materials ranging from, e.g., battery materials for electric cars, insulation materials for homes, catalysts for cars, materials for solar cells, to development of less toxic pesticides. They may also experience negative effects on competitors with inferior environmental standards – which can also work out to their advantage.

Innovation

It is almost a cliché to state that as chemical markets are becoming more and more competitive, innovative products are the best way to increase sales and margins. However, obtaining innovative products is not straightforward. Many chemical companies have had limited returns on investment in R&D. An important aspect therefore is to focus on improving innovation capabilities. This may encompass many different aspects, e.g., optimization of the innovation process, acquisition of small innovative chemical companies, innovation

in areas other than products (e.g., services), etc., and therefore does not necessarily mean spending more on R&D but to spend it more effectively.

Moving downstream, towards specialties and services

Margins in basic chemicals are generally lower than in specialties, and likely to decline further as players in lower-cost countries gain market share. In China, state-owned chemical companies with a limited profit focus are also primarily active in basic chemicals, further adding to the price pressure in this segment. In addition, raw materials costs matter more in basic chemicals than in specialties.

Water treatment is an example. Among the three types of chemical companies in the water treatment area – those making individual chemical substances for water treatment, those making formulations, and those providing services (such as managing the complete water treatment for a chemical plant or a municipality). Margins increase from the first to the third type as the core capabilities shift from production to know-how, which is much more difficult to replicate for new competitors.

As a consequence, players in lower-margin, upstream market segments may consider moving more strongly into specialty chemicals and associated services, thus potentially achieving higher margins and better protection from low-cost competitors. A detailed assessment needs to examine options for such a shift and prioritize the most suitable areas based on, e.g., capabilities of the company, current product portfolio, existing customers etc.

Globalization

Chemical markets are becoming more global. Increasingly, some big customers will not deal with suppliers that cannot deliver the same chemicals at different global locations at comparable costs. In addition, R&D costs and economies of scale in production also favor selling a product worldwide.

Globalization is obviously less of a

challenge for the biggest multinational chemical companies such as BASF and Dow. However, there are still many chemical companies with a strong focus on a specific region or even only a specific country. There are rationale reasons behind such a focus – however, the limitations leading to this focus need to be examined and analyzed. Often, this turns out not to be an issue of a lack of demand but rather of a lack of infrastructure. In this case, options, opportunities and costs of establishing such an infrastructure need to be assessed, e.g., by setting up production overseas, by identifying distributors, or even by buying a foreign competitor.

Consolidation

In many regions and segments, the chemical market is still highly fragmented. For example, in Spain only 39 chemical companies have more than 500 employees while in China about 30 000 chemical companies have sales above about 3 million Euros. As smaller players have some inherent disadvantages such as lack of economies of scale, difficulty to target foreign markets, limited attractiveness to investors, customers, suppliers and staff etc., they need to consider increasing their size, with the acquisition of a competitor as the fastest way to achieve substantial growth. Of course, such an acquisition partner needs to be selected carefully not only with regard to general attractiveness (e.g., profitability) but also based on fit with the buyer, e.g., with regard to chemical segments, capabilities, regional reach etc.

A final challenge that is driven less by economics is that chemical companies need to change both their self-perception and their public perception from an industry that is creating issues (e.g., environmental ones) to one that makes a major contribution to solving mankind's most pressing issues, whether pollution, energy, health or food supply. It will be interesting to see whether such a shift can truly happen, or whether it will merely lead to an extensive marketing campaign by the chemical industry with limited credibility. ■