

Getting Innovation Right

Overcoming Obstacles to Innovation in the Chemical Industry

Innovation – Leading chemical companies have long been aware that innovation is a key success factor in the chemical industry. Global champions such as BASF, Bayer or Evonik all emphasize the importance of new, innovative products as a source of competitive edge, increased profit margins, enhanced customer relationships and high reputation within the industry.

In the future, innovation may become even more important for Western companies wanting to compete with chemical companies from emerging markets such as China and India. With competitors from these countries, Western players are often not able to compete on price, and their initial edge on quality is gradually eroding as the emerging competitors improve. In the long run, only innovation will remain as a source of competitive advantage and differentiation.

Research vs. Development

In order not to be misunderstood, it is necessary to make a clear distinction between development and research. While research relates to activities aiming to create truly new chemicals, development describes the modification of existing chemicals, for example the modification of chemicals so that they match the needs of a specific customer. Development activities tend to be more short-term, less risky and at the same time also potentially less profitable than research activities (fig. 1).

Chemical Companies: Difficulties With Basic Research

Many chemical companies focus on development and not on research, that is, on providing good technical service and products customized to specific customer requirements, not on major product innovations. However, in the long run, the weakness of these companies in being truly innovative seems problematic. Any product that does not substantially change over time will undergo commoditization. Customers will get more and more familiar with the product and its properties, and will be less willing to pay a premium for product-related services. Correspondingly, they will be more likely to switch to cheaper suppliers, exposing the producers of these chemicals to stronger competition from emerging markets.

Furthermore, any position obtained as a preferred chemical supplier via development (as opposed to innovation and research)

Development	Research
<ul style="list-style-type: none"> Primarily adaptation of existing knowledge and existing products to slightly changed circumstances Oriented at specific problems of present customers Defined target market Relatively short timeframe High likeliness of success Limited investment of resources No big advances in knowledge required No substantial new IP created 	<ul style="list-style-type: none"> Creation of substantially new knowledge, new technology and new products Not necessarily oriented at specific problems of present customers Unknown target market Long timeframe Low to medium likeliness of success Potentially high investment of resources May require big knowledge advances Potential to create substantial new IP

Fig. 1: Basic differences between development and research in chemicals

Operations	Innovation
<ul style="list-style-type: none"> Short-term results Cost controlling Strict utilization of controlling systems Emphasis on stability and planning Monitoring of results Adherence to guidelines and rules Performance and efficiency 	<ul style="list-style-type: none"> Ambitious long-term results Investments with unclear result Acceptance of ambiguity Emphasis on flexibility and changes Acceptance and tolerance of failure Creativity, breaking free of rules Growth and innovation

Fig. 2: Key focus in operations- and innovation-driven environments

Step in Innovation Process	Benefit of Optimizing Step
Identification of businesses in which innovation is the most profitable for a chemical company	<ul style="list-style-type: none"> Research resources are focused on genuinely worthwhile areas Innovation in target areas, not accidental
Development of ideas for successful innovative products that give chemical companies an edge	<ul style="list-style-type: none"> Idea development is broad-based and conclusive Thus only high-quality ideas are pursued
Management of research projects to give quick results with limited resource input	<ul style="list-style-type: none"> Clear provision and management of research resources Timely progress of research projects
Optimization of market success of innovative products by entering the market in the right way	<ul style="list-style-type: none"> Optimized market entry High profit impact of new, innovative products

Fig. 3: Different steps in the innovation process



Fig. 4: The Stratley Innovator optimizes innovation of chemical companies

is very difficult to leverage globally. Development services typically are localized and depend strongly on the staff-delivering them, and thus are difficult to transfer to a business relationship in another country. In contrast, once a chemical company is known as innovative, such an image is a truly global advantage. Thus research – as opposed to development – gives a competitive advantage that is much more in line with business realities in a globalized world.

Given these facts, it is surprising that many Western chemical companies are relatively weak with regard to innovation, and it seems worthwhile to look for the causes. The most likely reason is that the companies are run by operations people with a limited understanding of the way innovation works, and the requirements innovation needs (fig. 2).

As a consequence, whole companies – including those functions responsible for innovation – are run based on the principles of operations-driven businesses. Thus the mindset is short-term, risks are avoided and failure is not allowed. While pure development work (such as the customization of a product to the needs of the requirements of a specific customer) may still be possible, truly groundbreaking innovation cannot happen. This would require investing a larger amount in a longer project with an uncertain result.

The Innovation Process

If a chemical company wants to change this situation and thus embrace the opportunities that truly innovative chemical products bring, it is well advised to look at the individual steps of the innovation process in detail (fig. 3).

In the first step, a company needs to identify the areas in which it is to look for innovation. These should be those areas which are in line with company strategy, and in which innovation is considered to be the most likely to be successful and the most profitable.

In the next step, ideas need to be developed that can be pursued. Here, it is advisable to look for input not only from internal but also from outside sources to avoid limiting oneself to a small pool of innovative ideas. It is best to start with a large number of ideas – even though some of them may sound very unlikely – and to reduce them later in a systematic evaluation step.

Innovation management is the key to the third step. Once projects have been selected, it is necessary to provide the required resources, set realistic timeframes and readjust project goals.

Finally, once a project gets close to a product ready for market entry, the transition to the market has to be well prepared in order to maximize the potential of the new product. This often involves removing barriers between marketing and research staff.

A Tool to Promote Innovation

In order to help chemical companies optimize the innovation process within their companies, the consulting company Stratley has created a tool, the Stratley Innovator, that gives detailed advice on how to handle each step of the process (fig. 4).

Depending on the specific situation of a company, and the detailed input derived from this situation, the Stratley Innovator tells chemical companies all information relevant to innovation, from focus areas of research over lists and prioritization of ideas and resource requirements to market entry plans and measures.

There are strong indications that many Western chemical companies will need to become better at basic research to stay competitive. Otherwise, these companies run the risk of their markets getting more and more attacked by companies from emerging countries with cost advantages, big domestic markets, and rapidly improving product quality and technological knowledge.

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