Innovation management is one of the key discussion topics at board level for most companies. Nearly 70 percent of companies rank it as a top-3 priority, while even 40 percent consider it their top concern. A 2006 BCG innovation management survey among European chemical companies shows similar results for the chemical industry.

Innovation management may be a top priority for many companies, but what about its results? How satisfied are companies with their return on innovation management? Only half of the companies are satisfied with their innovation management results (48 percent of the companies are dissatisfied with the returns on their investments in that area). We found similar figures for the chemical industry.

There is hardly a recognizable relationship between research rate and company growth in the chemical industry, as is shown by Exhibit 1. Average research rates (research and development spend as a proportion of revenues) in 1995–2000 hardly correlate with annual revenue growth in 2000–2005, assuming that research spending is not transformed into (additional) revenues until later years.

Research rates clearly fail to explain revenue changes. In fact, these seem to be driven by other, more significant, factors such as revenue impact of regional business cycles or business cycles in customer segment. The way chemical companies are influenced by these factors depends on the focus of their operations.

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1 Source: Global 2006 “Innovation-to-Cash Study” by The Boston Consulting Group among 1,072 companies (a summary was published as a Special Report in BusinessWeek on April 24, 2006).
Chemical companies, however, clearly show a positive correlation between their average annual research rate in 1995–2000 and subsequent return on sales in 2001–2005, measured by EBITDA (Exhibit 2). High returns correspond with high research rates. Of course, return on sales is also influenced by other factors such as competitiveness of product portfolio and market position. It is difficult to assess the success of innovation management in the chemical industry. BCG’s European chemical industry study shows that many chemical companies have insufficient transparency on the expenditure of their overall research and innovation portfolio, while some have not yet defined their innovation management targets, measures, and objects for individual projects. Innovation management targets could include focus on growth generated by new business, on business stabilization after competitive advantage has been eroded, or on efficient profitability improvement procedures. Products, applications, procedures, processes, and individual customers or customer segments are typical innovation management objects. Innovation procedures, for instance, frequently aim to reduce production costs and hence boost profitability.

This lack of transparency on goals and objects of their overall portfolio will affect a consistent separation of innovation management monitoring and monitoring of ongoing, application-related support for products. It will also complicate alignment of business strategy and innovation management targets. Innovation management must be a part of the overall strategy of a company or a business unit. This may sound straightforward, but many companies are facing a major improvement potential in this area.

What reduces return on innovation?

Why are nearly half of all companies dissatisfied with their innovation management results? As we have seen, insufficient transparency in innovation management targets is partly to blame.
From Pipeline to Bottom Line

Our global 2006 'Innovation-to-Cash' study points out two additional reasons: (poor) internal processes and market knowledge. Interviewees indicated that excessive development time, inadequate prioritization of ideas, and poor internal coordination are the key reasons for disappointing returns on innovation (see Exhibit 3). Again, the chemical industry follows a similar trail. Chemical companies are often multi-business enterprises. They operate in different markets and product segments, and internally they are organized in divisions or business units. Their organizational structure makes them particularly vulnerable to cross-divisional innovation process flaws. Although market orientation is one of the most frequently used phrases in management-speak, many companies claim that inadequate customer knowledge is one of the main reasons for innovation management failure.

Specific challenges for the chemical industry

In our survey on innovation management in the European chemical industry we asked companies to evaluate external factors that influence innovation management. Globalization of value chains and commoditization of former niche products were among most cited key external factors. Often there is a close correlation between globalization and commoditization. New low-cost competitors increasingly target Europe and the United States. At the same time chemical industry customers relocate production to low-cost countries.

In this way the market facilitates product lifecycle acceleration and chemical product commoditization. Compared to other industries, notably those with shorter product lifecycles and fast product development processes, chemical companies regard themselves more as innovation followers rather than innovation leaders.

Involving third parties in idea generation is one of the chemical industry’s main challenges

Most chemical companies that we surveyed are satisfied about their idea-generation process, although they agree that ideas are still largely derived from internal R&D and Marketing & Sales departments (see Exhibit 4).

A limited amount of ideas originate from third parties such as customers, research institutions, and joint venture partners. Although chemical companies may want to tap their customers’ idea potential, they do not have a structured process to incorporate these ideas into their overall idea-generation process. This is a critical challenge most chemical companies still have to face,

EXHIBIT 3
WHAT REDUCES THE ‘RETURN ON INNOVATION’?

“In your opinion, which factors are responsible when you are not fully satisfied with the return on your investment in innovation?”

- Excessive development times: 32%
- Inadequate prioritization of ideas: 21%
- Only limited knowledge of customers: 25%
- Poor internal coordination: 28%
- Wrong marketing or communication models: 18%
- Risk-averse culture: 26%
- Inadequate metrics: 21%
- Not enough big ideas: 18%
- Competitors are more innovative: 8%
- Inadequate management backing: 17%


*Multiple mentions possible.
as they realize that third parties can make valuable contributions by providing an outside-in view of new market and technology trends. Likewise, relatively few ideas seem to come from suppliers. Are suppliers non-innovative? Do chemical companies have deficient supplier management processes that ignore supplier innovation potential? What will be the effect on marketing and product offer if chemical companies do not recognize their suppliers as innovation partners? Many chemical companies like to see themselves as a source of innovation for their customers and tend to forget the idea potential of their suppliers.

**Product launch and support failure is another challenge**

Given the limited involvement of customers in the innovation process, it is no surprise chemical companies recognize that most product launch failures are caused by unmet customer requirements and expectations (Exhibit 5). Product development processes often have sophisticated milestones covering technical product feasibility and patent checks, but customer benefits are rarely an important part of this process. When the product has been launched, it is crucial to support its success. Unfortunately, product developers no longer feel responsible to support the product after it has been introduced to the market. "We often simply throw the product on the market and don’t bother about whether it’s successful or not after that – that’s a job for our colleagues on the sales side", one survey participant claimed. Quite a few chemical companies would benefit from disciplined, seamless roll-out skills to improve product positioning and support.

**Enhancing the value added by innovation management in the chemical industry**

Innovation management in the chemical industry can be enhanced by focusing on four topic areas:

- Alignment of business and innovation strategy
- Idea generation
- Innovation processes
- Innovation governance

**Alignment of business and innovation strategy.** Successful innovation management begins with aligning business and innovation
strategy targets. Some chemical companies have integrated their medium-term business and innovation strategy processes but finalize these strategies in separate processes. “If we would actually realize only 50 percent of the revenues quoted in the research planning with new business, our growth would be twice as fast as the industry average”, claims one chemical company.

Best practice is to integrate innovation into the business strategy of the individual divisions or business units and prospect an organic growth percentage for core operations. Companies have to decide how mergers and acquisitions can contribute to growth and which share of medium-term growth can be derived from innovation management. Moreover, it is good practice to have additional cross-divisional innovation platforms and innovation processes to support business line intersection. Besides allocating research budgets to individual business segments, a good innovation strategy also includes innovation-related HR management requirements such as skill and behavior profiles.

**Idea generation.** As we have seen, the success of idea generation is partly based on incorporating external ideas into innovation strategies. Over the past few years, some chemical companies have truly progressed in integrating third-party ideas. Degussa AG’s ‘Science to Business’ is a good example. In consumer goods Procter & Gamble’s innovation management is well positioned. P&G actively communicates innovation topics to the outside world and has become a magnet for ideas and concepts of companies in all sorts of industries.

Technology giant Intel avoids deep internal research. Instead it funds and leverages hundreds of university research projects in over thirty countries. These projects focus on areas that Intel deems critical to its future business success. It manages these relationships both with individual researchers and with their institutions. By soliciting research proposals from excellent university scientists and engineers, Intel can survey the landscape of research opportunities and concentrate its internal capabilities on development and manufacturing.

There are many ways to incorporate ideas from external sources, for example by simple one-on-one meetings with customers or by involving one or more customers into the ideation process. Another approach could be to set up customer-focused teams that facilitate communication between
the chemical company and its customers. These teams serve as a customer sounding board and translate ‘customer language’ into ‘company language’ for R&D. Other companies leverage their supplier network for new ideas and allow suppliers to submit their ideas on the company’s website.

Mega-trend analysis is another idea generation approach worth mentioning. It monitors opportunities and threats as a result of general changes in society, such as globalization, commodization and sustainability, and incorporates them into innovation strategy. Most companies adapt these trends incrementally and somewhat passively as events unfold. However, a good understanding of the impact of these trends on the world, the industry and consumers, and of the way you can open up to them to create customer utility, is great input for idea generation. A good example is Southwest Airlines, a low-cost airliner from the U.S. It anticipated to the trend of air travel commodization by remodeling its business into a low-cost carrier. It significantly changed its value curve to compete not only with other airlines but also with car transportation in the U.S. Southwest Airlines is currently one of the most profitable airlines, and many other low-cost carriers, such as easyJet and Ryanair, were inspired by its business model.

**Innovation processes.** A lot of chemical corporations established milestone-based innovation processes, so-called ‘StageGate processes’. In addition, they introduced methods to evaluate individual projects, such as internal return rate, sensitivity analyses, or risk profiles. Nevertheless, many companies can still improve the structuring of their cross-divisional innovation processes by focusing on marketing, sales, research, production, and application support interfaces. A lack of these interfaces often leads to unclear coordination between the different departments, resulting in a failure of product launch and support. A product launch process, including its support, is more than an activity of the marketing and sales department. It should be seen as a multi-disciplinary project within an innovation project. Product launches involve many departments and must be consistent across projects, regions, and categories.

To assess the innovation success rate, corporations frequently need to evaluate and interpret often vague information. It is therefore important that project managers are clear about the status of their project and do not have direct or indirect incentives to present them more favorably. This can be achieved by ensuring innovation projects that are terminated prematurely do not necessarily mean the end of a project manager’s career (how to kill a project without killing the team). On the other hand, having a direct stake in a project, such as a financial contribution, may also contribute to its success.

Having the right processes, metrics and incentives in place will ensure a company will isolate only the very best ideas, driving them exclusively and emphatically to the market.

**Innovation governance.** What is the best way to establish innovation management in the organization? Many companies in the chemical industry differentiate between three levels of innovation:

- Innovations and improvements close to the company’s core business or of individual divisions or business units are essentially driven by these divisions. Their internal development departments implement the innovation.
- Corporate centers develop company-wide technology platforms. Many chemical companies face the challenge of motivating local units to work seriously on these general technology platforms. Sometimes operational performance indicators stand in the way.
- Some years ago leading chemical companies, such as BASF Future Business, Bayer Innovation and Creavis (Degussa), expanded their innovation by creating corporate business development centers. Individual business units more or less independently implement innovation ideas that are beyond classical core activities of corporate groups.

The consistent assignment of innovation projects to one of these three innovation levels is essential for clear internal coordination and successful transformation of innovation initiatives into marketable products.

Training and experience of employees in development units, especially new business development units, will support successful innovation. It is proven that managers with a science and business administration background are usually successful innovation
managers. It is also important these people have gained experience outside the corporate group, ideally with startups. In order to be successful, they need to think and act like an entrepreneur, to be willing to assume risk, and work hard.

High potentials of the corporate group, who manage a project as part of their 'natural' career track, may be inclined to make decisions that will boost their future career. In this case, the risk of making a mistake outweighs the importance of successful innovation projects.

* * *

Nearly half of chemical companies are dissatisfied with their innovation management results. They often regard themselves as innovation followers rather than leaders. To break the vicious circle and become innovation leaders, chemical companies must face the challenge of defining their innovation targets, measures, and objects. They have to incorporate innovation management into their overall business strategy and adopt a more outward, customer-oriented perspective. Innovation must not be seen as the only way to survive but as the best way to feed the pipeline.
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At BCG, we will always welcome the opportunity to sit down with chemical companies to discuss their successes, their challenges, and ways in which they can build competitive advantages. If you would like to discuss your chemical business or its innovation-related aspects with BCG, please contact one of the following leaders of our global Chemical Industry practice:

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