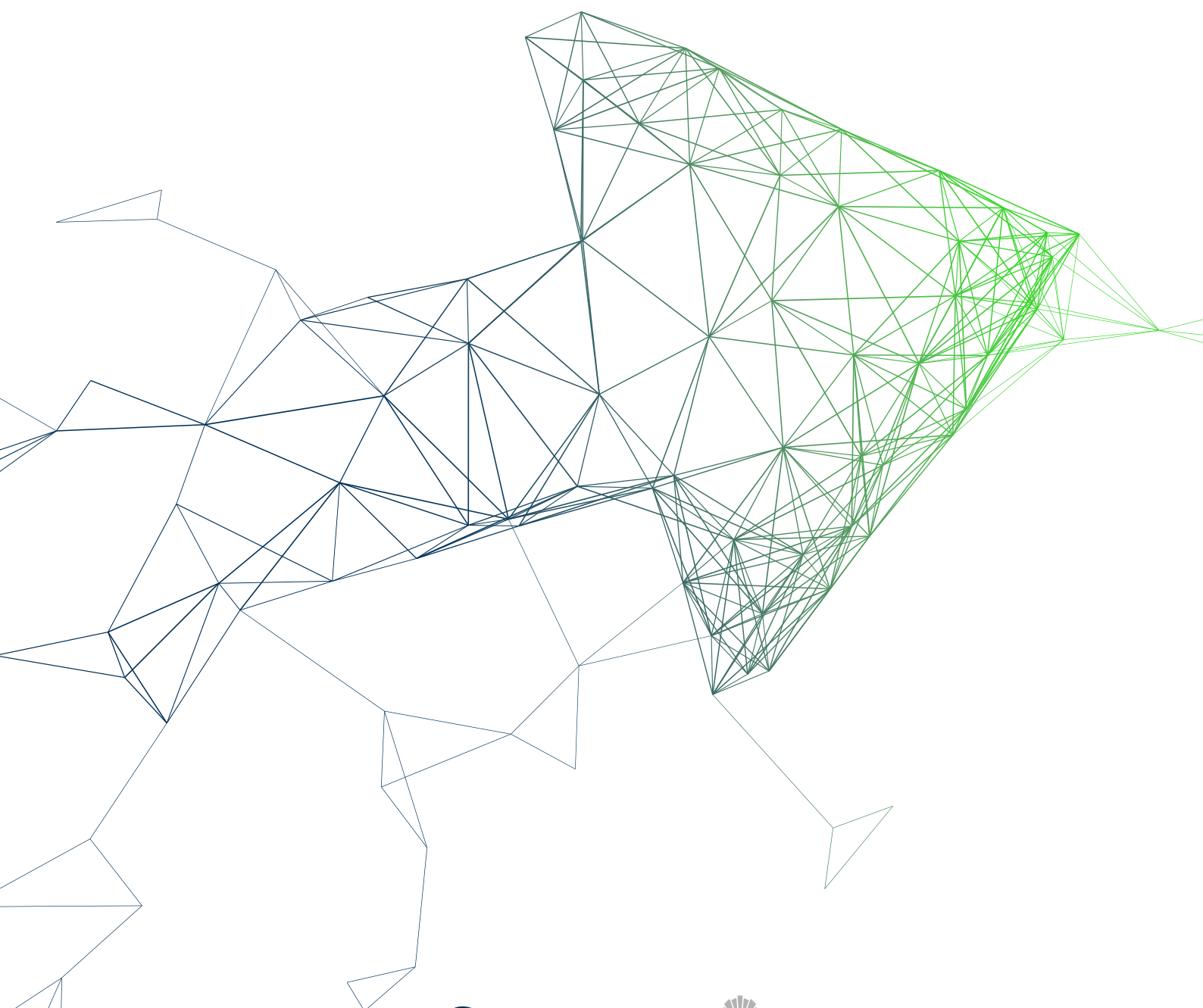

PAVING THE WAY FOR INNOVATION

A study by IW Consult and Santiago for the
German Chemical Industry Association (VCI)

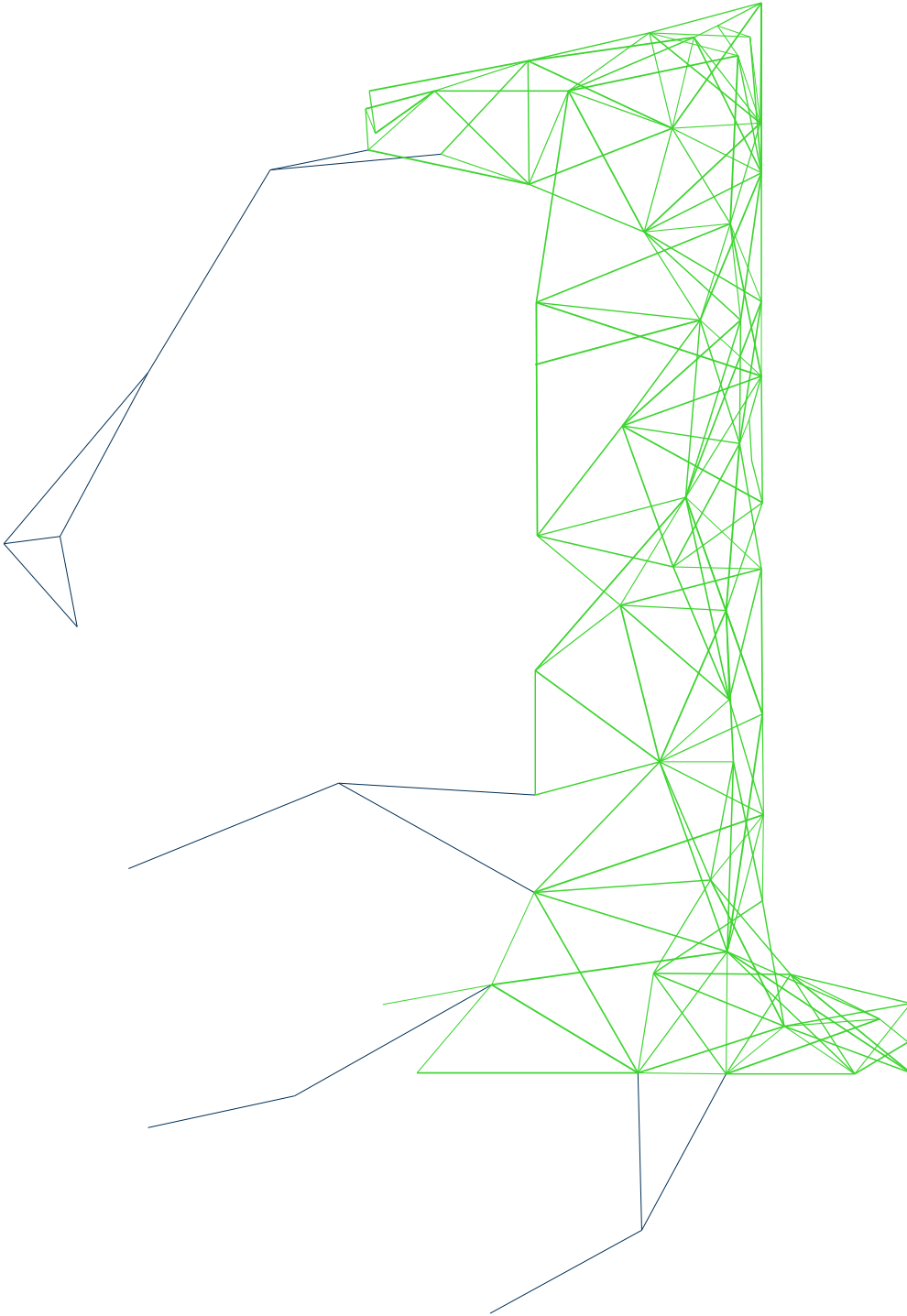


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PAVING THE WAY FOR INNOVATION

A study by IW Consult and Santiago for the
German Chemical Industry Association (VCI)

FOREWORD



Germany's prosperity relies on the economic and innovative vitality of its domestic industry. Innovation opens up new markets and gives businesses a competitive edge. It creates and preserves high-quality jobs. Many Asian countries such as China, India, and South Korea as well as the United States have recognized this and are investing in science and technology. Today, 40 percent of inventions in the chemical industry come from Asia.

Businesses and policymakers representing the chemical and pharmaceutical industry in Germany must respond to these trends. Investments in research and development are important – but it is even more important that businesses establish an internal culture of innovation that encourages the enterprise-wide realization of new ideas. Businesses also need better external conditions to strengthen the international competitiveness of the industry and its function as an engine of innovation for industrial value chains.

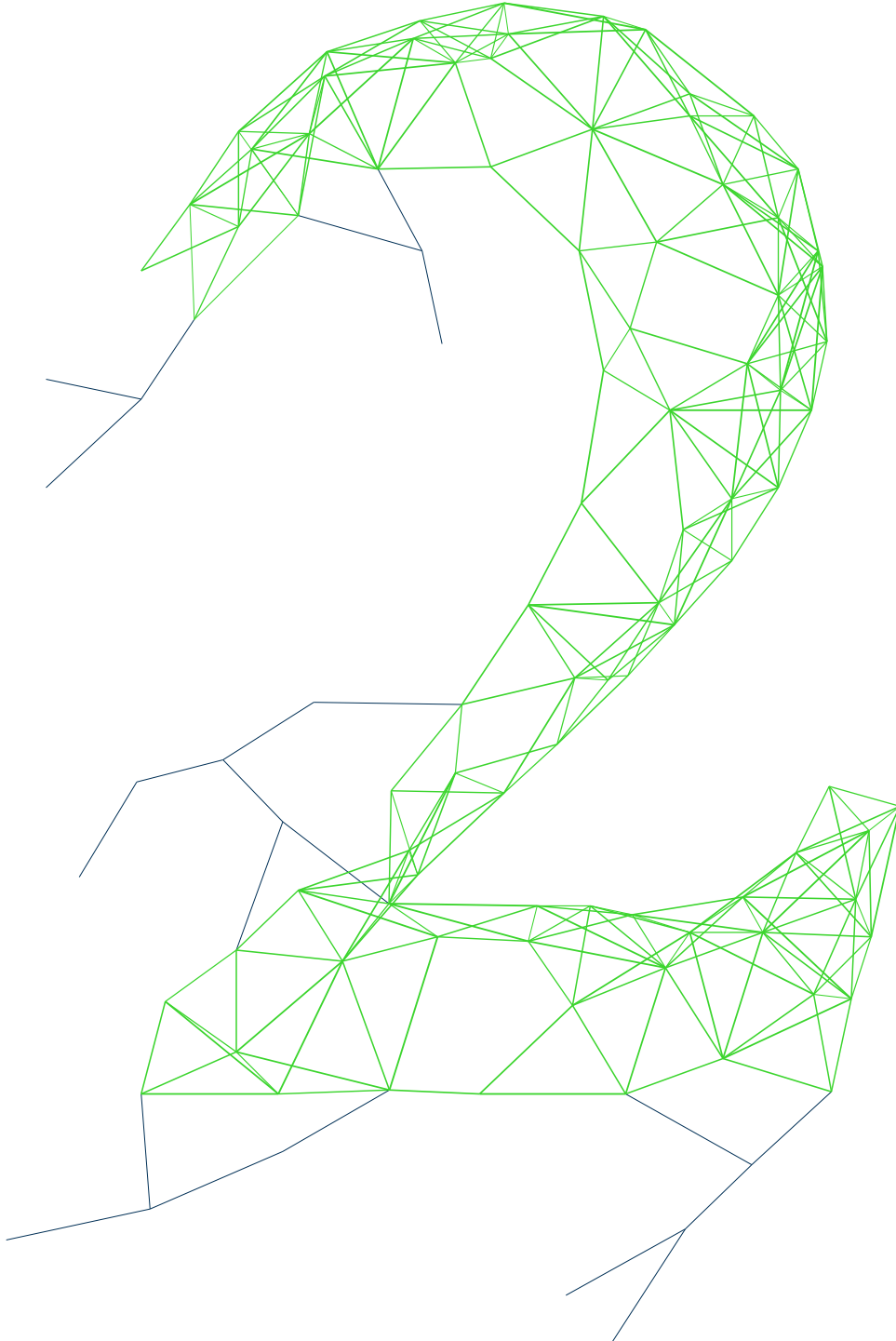
The Chemical Industry Association of Germany (VCI) commissioned IW Consult and the consulting firm Santiago Advisors to identify the industry's internal weaknesses and external obstacles to innovation on the path from the laboratory to the marketplace. The aim is to improve the processes that are critical to ensuring that ideas become innovations and patents become marketable products.

Everyone in Germany who is in a position to promote the innovative capacity of the industry and make important decisions for the ongoing development of the chemical and the industrial sector in Germany should take a good look at the findings and recommendations of this study, which offer a roadmap to a brighter future.

I would like to thank the nearly 200 corporate members who took part in the survey for this study. I wish to extend my special thanks to the over 70 industry experts who shared their special expertise through interviews, to the members of the VCI Steering Committee, and to the authors of the study. Your efforts will certainly bear fruit. I know that this study will provide a wealth of inspiration for further innovation.

Dr. Marijn Dekkers, President of the Chemical Industry Association of Germany

EXECUTIVE SUMMARY



Our future will be shaped by the challenges that confront our world: global population growth, food security, healthcare, environmental protection, mobility, urbanization, and energy. Without innovation, we cannot meet these great challenges.

The chemical and pharmaceutical industry is one of the most research-intensive industries in Germany, spending more than 10 billion euros a year on research and development (R&D) and generating one-fifth of its revenues through products less than five years old.

The chemical industry is also an engine of innovation: Many other industries – especially automotive, electrical, machinery, and construction – rely on innovations from the chemical industry to remain competitive. That’s why the innovative capacity of the chemical industry is so important for Germany as a whole.

Competition is intensifying –
emerging economies are catching up

Germany is still one of the most important centers of the chemical and pharmaceutical industry at a global scale. But Germany’s share in global chemical and pharmaceutical revenues has been falling for years. One reason is the rapid rise in the demand for and production of chemical products in emerging markets, but even developed economies like the United States have gained a significant competitive edge since 2008 thanks to low energy and commodity prices. German policymakers have not responded to these changes, leading to an economic climate in Germany that is no longer conducive to success. Energy prices here are no longer competitive.

The competitive pressures German industry is facing globally are also fueled by accelerating cycles of innovation and the speed with which emerging economies are gaining ground technologically. Asian nations, for example, show the greatest increases in the percentage of patent applications: Over 40 percent of international chemistry-related patent applications today come from Asia. Over one-fourth of all academic publications in chemistry now come from China, making it the largest single source.

Innovation is the key to success in the global marketplace – for the chemical-pharmaceutical industry and for its base in Germany. If the German chemical and pharmaceutical industry wishes to continue playing a leading role, however, it will need to become better and faster at turning innovations into marketable products in the face of tough international competition.

Maintaining a leadership role –
boosting agility and innovative capacity

But internal obstacles within the companies and external conditions that hamper innovation are preventing businesses from becoming better and faster in their innovation activities. In response, the German Chemical Industry Association (VCI) has commissioned the Cologne Institute for Economic Research IW Consult and the consulting firm Santiago Advisors to identify these obstacles and find out where internal and external adjustments can be made to strengthen innovation. The study involved 70 interviews with scientific experts, customers, and partners as well as a written survey in which nearly 200 VCI corporate members took part.

Many obstacles to innovation have cultural roots (attitudes)

The study produced three basic findings. (1) The negative impact of internal and external obstacles to innovation is more or less balanced. (2) It is the responsibility of company leaders and policymakers alike to improve the conditions for innovation and remove the obstacles. (3) In businesses, it is primarily the culture of innovation that must improve; in society, it is the openness toward innovation. This would prepare the ground for more innovation-friendly conditions with efficient regulation, lower regulatory costs, and less bureaucracy.

Obstacles to innovation are often rooted in attitudes. This applies to businesses, policymakers, and society in equal measure. It is possible, however, for innovations to become both better and above all faster. The corporate world must work tirelessly to eliminate their internal weaknesses. At the same time, political institutions must improve the prevailing conditions to make Germany more competitive as a hub for innovation. And society must cultivate a curiosity for innovations.

Four areas of activity identified to overcome internal obstacles

Strengthen the innovation culture: An inadequate culture of innovation is the largest internal obstacle. Almost two-fifths of companies complain about a lack of risk tolerance. The management team must lead the way in transforming the innovation culture. Diversity and freedom are particularly helpful in creating and fostering innovative ideas in the workplace.

More attention for technological breakthroughs: About one-third of companies sees the overemphasis on short-term goals as a major obstacle. The result is too strong a focus on incremental innovations. That's why companies should ask their R&D departments to once again focus more on the necessity of technological breakthroughs. This requires formulating strategic objectives, which must then also be pursued with a long-term commitment.

Increase speed and efficiency: Too many projects and the resulting lack of focus on the respective innovation projects are an obstacle to expediency and slow the time-to-market. That's why it's necessary to clearly prioritize and free the innovation processes from excessively bureaucratic requirements. This is especially true in large enterprises, where the creation of "small business" structures could be an important part of the solution.

Strengthen the effectiveness of innovation processes: Despite all perceived progress, market orientation is still in need of improvement. Businesses see weaknesses primarily in the rollout phase – especially compared to the international competition. That's why more focus is needed on what the markets of tomorrow will need and how new business models can tap into more potential added value.

Strong need for improvement in external conditions as well

Regulation and bureaucracy: Over 60 percent of the companies feel that the regulatory hurdles to innovation are greater in Germany than in other countries. Regulation needs to be stripped down to accelerate the registration and approval processes. The same applies to the critical partnerships between the business and academic sectors: The government should incentivize and support them rather than adding costs and roadblocks through over-regulation.

Public acceptance: A lack of openness to new technologies is a major obstacle to innovation felt most keenly by large enterprises. Nearly two-fifths of companies would like to see more social recognition for the contributions of the chemical-pharmaceutical industry to solving the problems of the future. This requires a proactive dialog with the population. Politicians should be more active in mediating – emphasizing the opportunities that technologies offer rather than just safety concerns. In the future, policymakers should be better advocates for innovation, encouraging a dialog between innovators and society and weighing all arguments before deciding whether and how to impose regulations.

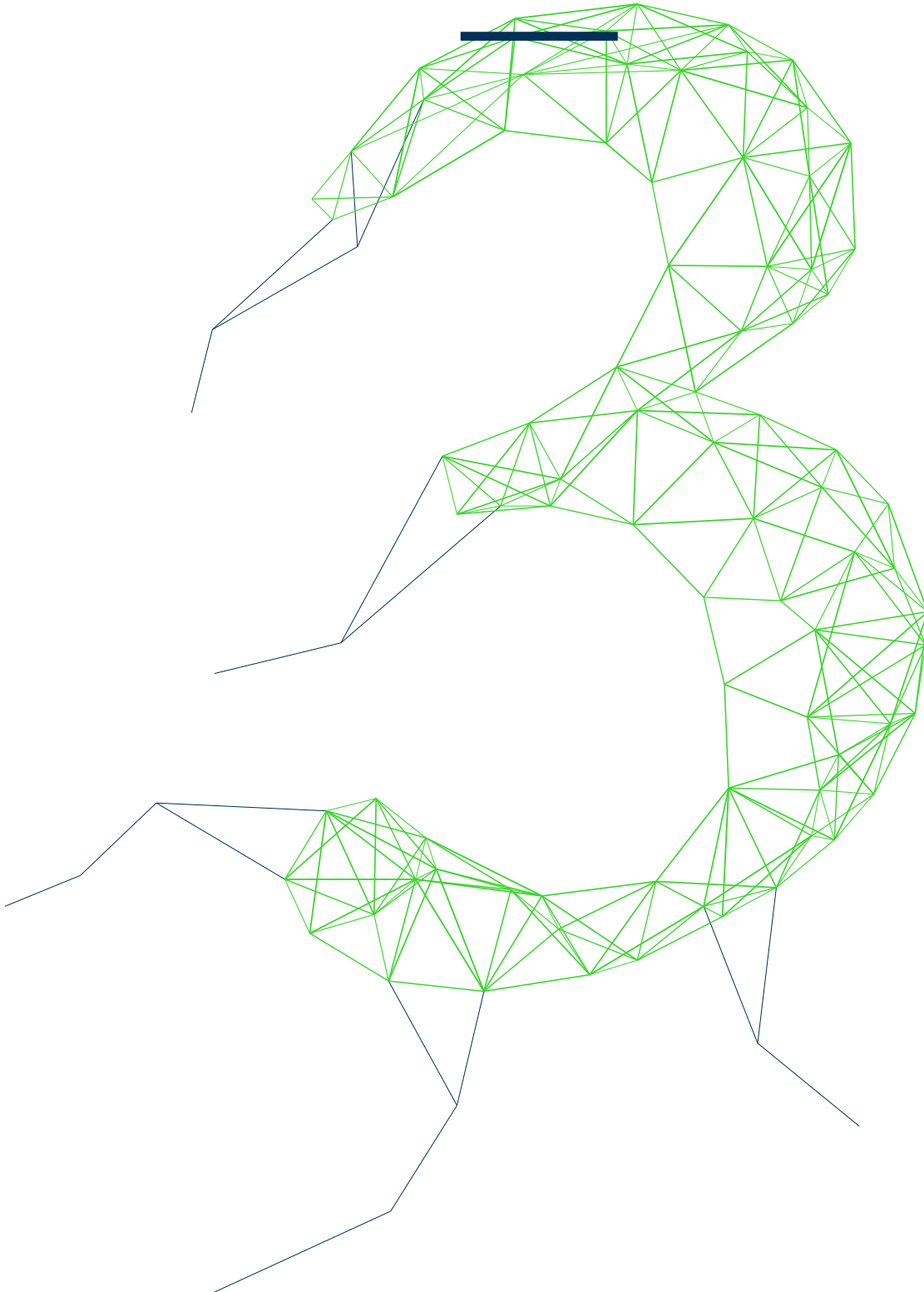
Skilled employees: Small and medium-sized businesses in particular see the lack of skilled employees, especially in the STEM fields (science, technology, engineering, and mathematics), as a major obstacle to innovation. That's why we also need to ensure that the importance of technology is firmly established in the education chain – from preschools to universities.

Partnerships and innovative environment: The potential of partnerships – not only in the value chain but also with the scientific community – is not fully exploited. Despite justified concerns about guarding trade secrets, we need more business-to-business partnerships. Partnerships with the scientific community should be based on the standard contracts published by the Federal Ministry of Economics and the EU.

Funding and subsidization opportunities: Germany still lacks R&D tax incentives and robust venture capital markets. The government needs to step forward and implement solutions that have already been proven effective in other countries in Germany as well.

The following pages will cover the internal obstacles to innovation in more detail.

FACTS ON THE INNOVATIVENESS OF THE SURVEY PARTICIPANTS



Surveyed companies tend to be more innovation-friendly than overall chemical-pharmaceutical industry in Germany

The structural data of the survey participants was similar to that of the industry as a whole as documented in the relevant association publications. But the survey participants did report higher values for typical indicators, so it seems safe to assume that companies who participated in the survey tended to be more innovation-intensive:

- An average of 10.5 percent of employees of the surveyed companies work in R&D positions (VCI members: 9.3 percent).
- The surveyed companies spend an average of 6.7 percent of their budgets on R&D (VCI members: 5.2 percent).
- The surveyed companies generate 20.6 percent of their revenues on average from products launched within the last five years.¹

Business model innovations account for only 10 percent of corporate innovations on average – with large SMBs ranking highest

Traditionally, innovation in the chemical-pharmaceutical industry is based on product and process innovations. This is reflected in the survey data as well, where product innovations account for 62 percent and process innovations for 23 percent, the two largest types of innovation. Large SMBs in the range of 1,000 to 20,000 employees lead the pack in the development of business model innovations, reporting that 12 percent of their projects fall within this category compared to the 10 percent average among all companies. The remaining 5 percentage points needed to reach 100 percent fall under “other innovations” – a designation for everything left over and an alternative category for businesses that could not or would not assign their innovations to any or just one of first three categories of product, process, and business model innovations.

¹ Comparison data for the same period could not be obtained. ZEW data showing a 14 percent share of revenues from new products could serve as a frame of reference, but this data is restricted to chemical companies over a three-year period.

Incremental innovations dominate – especially with SMBs

On a scale from –5 for exclusively evolutionary to +5 for exclusively disruptive innovations, the chemical-pharmaceutical industry describes itself as predominantly incremental innovators on average (–2.0). Disruptive innovations tend to play a rather subordinate role.

The experts were unambiguous in their view, as reflected in the following statement: “Incremental innovations are the most important type of innovation for today and tomorrow. They keep our products competitive and fund our growth. The real question is whether that will be enough for a sustained, long-term competitiveness.”

In an industry traditionally dominated by science, the interest in scientific and technological insights historically won out over the interest in a specific applicability or the current demands of markets or customers. The experts all agreed, however, that the market orientation has developed in all segments of the chemical-pharmaceutical industry in recent decades. As a result, the picture today is more balanced. The surveyed industry sees its innovative activities as defined slightly more by market pull (1.2 on average, where –5 is exclusively market pull and +5 is exclusively technology push). A representative of a specialized chemical SMB describes the focus this way: “We concentrate on innovative formulations, because we know exactly what our customers need and sometimes even anticipate their needs or manage to create entirely new needs. We have neither the capacity nor the expertise for new molecules.” Many chemical companies today are proud to work closely alongside customers in developing new products, which yields tailor-made solutions to the unique challenges facing the customers.

Paralyzing effect of internal and external obstacles more or less equal

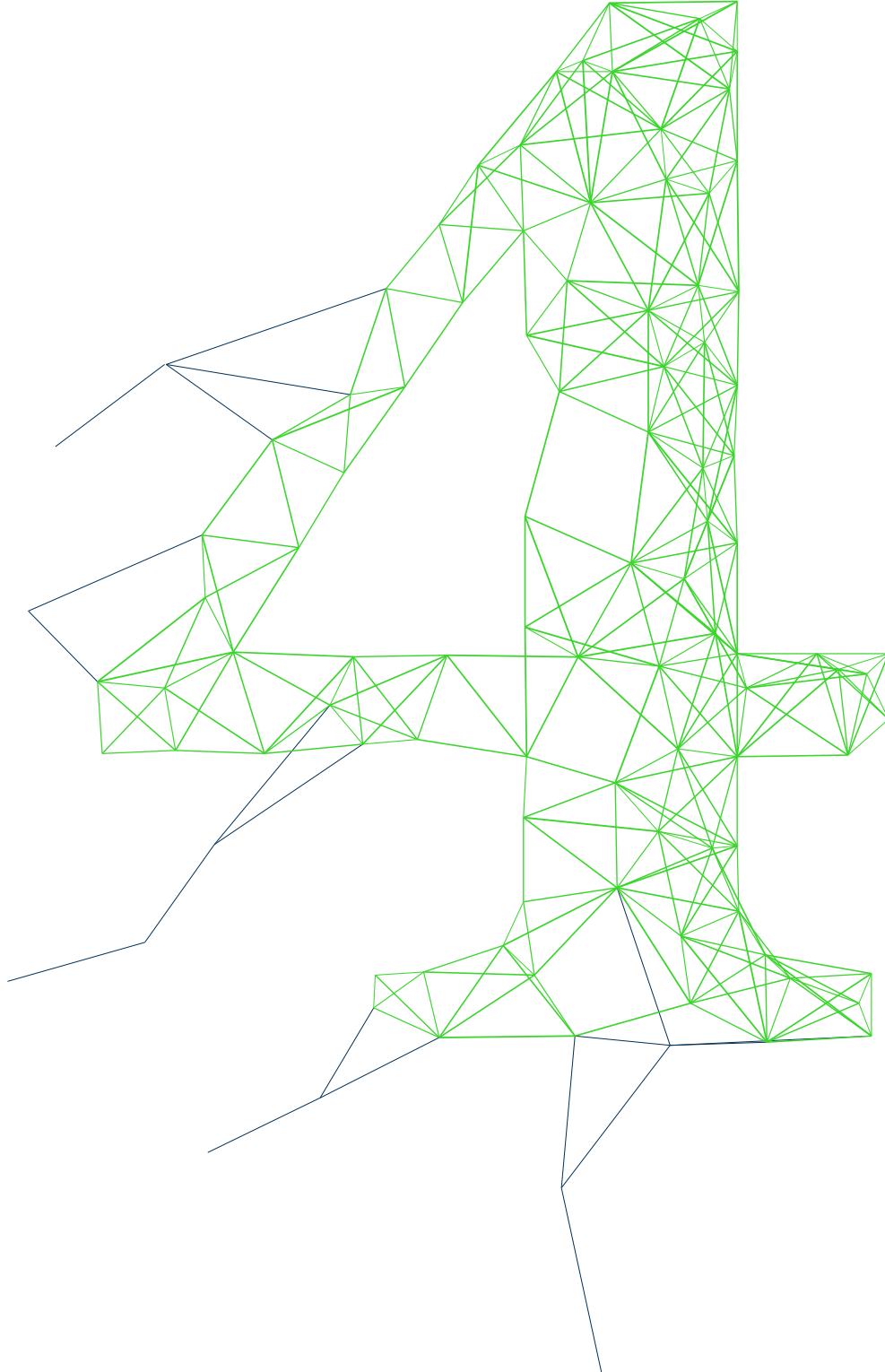
Businesses were asked whether their innovative activities were hindered exclusively by internal obstacles (-5), exclusively by external obstacles (+5), or by both types in equal measure (0). The results: The total number of businesses that felt slightly to exclusively hindered in their innovative activities by external obstacles is only marginally higher than the number burdened mostly by internal obstacles. At the same time the significant spread of answers made it clear that the degree of burden also depends heavily on the specific situation of the business in question.

External obstacles very difficult to overcome – but internal obstacles not much easier

Participants in the study ranked the external obstacles to innovation as difficult to overcome (on average 7.0 on a scale of 1 for very easy to 10 for very difficult). This finding reinforces what the experts said in their interviews – that there is widespread frustration among businesses over how the regulatory environment could be better organized.

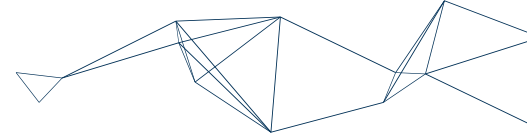
But anyone who thought that the industry would have a much easier time finding a long-term solution to its internal obstacles would be mistaken: They are also ranked as difficult to overcome, only slightly less so than the external obstacles with an average score of 6.3. What both questions had in common was that the responses were spread across the entire scale. So when it comes to evaluating the difficulty of overcoming internal obstacles to innovation, the specific situation of each company (size, segment, orientation) once again plays a big role.

INTERNAL OBSTACLES TO INNOVATION



What can businesses do to bring their innovations to market quickly and more successfully? Before examining what can be done to improve the external environment, we first take a look at what can be done internally.

4.1 Internal obstacles to innovation vs. internal success factors



Diversity of chemical-pharmaceutical industry calls for differentiated analysis of internal obstacles

What are the key internal obstacles to innovation? In the view of most of the experts interviewed, this core question can only be adequately addressed by analyzing it from various perspectives. The diversity of this industry is defined by its various segments and the types of business each segment encompasses, with their different customer and market demands. This leads to a significant heterogeneity among the companies in terms of size, organizational structure as well as business model.

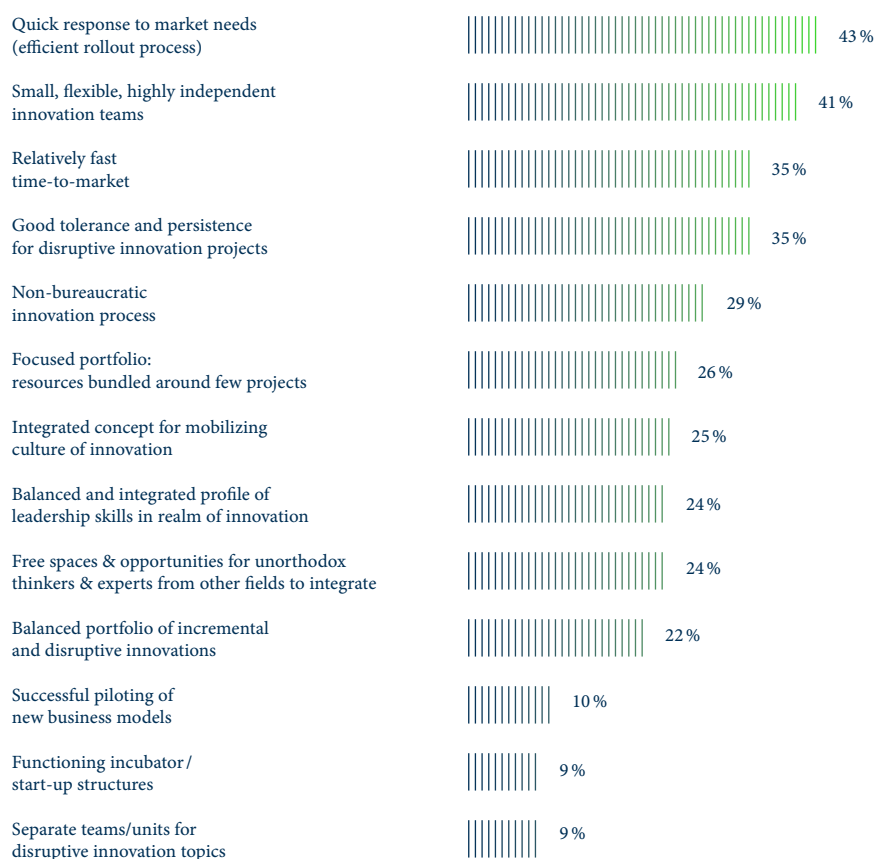
Experts emphasize importance of inadequate innovation culture as source of innovation obstacles

Given the described diversity, this study approaches the internal innovation obstacles step by step. The first step looks at the expert interviews to gain a very basic understanding for the internal obstacles. The experts emphasize the overarching significance of the innovation culture as the linchpin for unleashing the creative innovation potential within a company. Conversely, say the experts, an inadequate innovation culture negatively affects broad cross-sections of a company – how resources are allocated, how the risk profile of projects is determined, etc. In this way, the innovation culture has a fundamental impact on a company's innovation performance.

Top-down perspective: Indications of unrealized potential in disruptive innovations, in incubator and start-up structures, and in implementing new business models

The second step is to narrow down the obstacles to innovation by looking at the innovation strengths: If you analyze the literature to identify the relevant success factors for efficiently and effectively developing and implementing innovations, you find a multitude of possible criteria. A cross-comparison with the prioritization of the interviewed industry experts and the project experience of the study authors within the chemical and pharmaceutical industry ultimately led to a written corporate survey that asked for the assessment of 13 success factors. Conversely, you may also use this analysis to find first indications on possible obstacles where strengths are underdeveloped (top-down perspective). Figure 4-1 shows the main areas in which the surveyed companies ranked themselves as better than – or, conversely, weaker than – their competitors. In Figure 4-1 one could focus first on those success factors in which only up to one-tenth of the surveyed companies see themselves as better than their competitors.

*Figure 4-1:
Innovation topics in which companies
see themselves as better than their
competitors*



This leads to an initial indication of the potential key obstacles to innovation:

- Lack of success models in piloting new business models
- Lack of success models in setting up and nurturing incubators and start-ups
- Lack of structural separation between incremental and disruptive innovation efforts

This self-assessment of the relative competitive position of the companies does not automatically allow for any conclusion as to the quantitative significance of any innovation obstacle. But it does offer an early hypothesis that approaches for disruptive innovations might become an important improvement area for increasing innovative power.

Chemical-pharmaceutical companies see themselves in a leading position at quickly responding to market needs and forming small, powerful innovation teams

Figure 4-1 illustrates another finding as well. It demonstrates that many businesses have done their homework in recent years and, as a result, rank themselves more favorably than their competition. By their own account, the overwhelming share of surveyed companies have ensured their ability to respond quickly to market needs and set up small, independent innovation teams. When you analyze these success factors just for small businesses with up to 250 employees, the pattern of success among medium-sized businesses becomes apparent: They consistently report higher for the same factors. This implies that the structure of smaller businesses fosters the advantages of smaller organizational units (“small teams”).

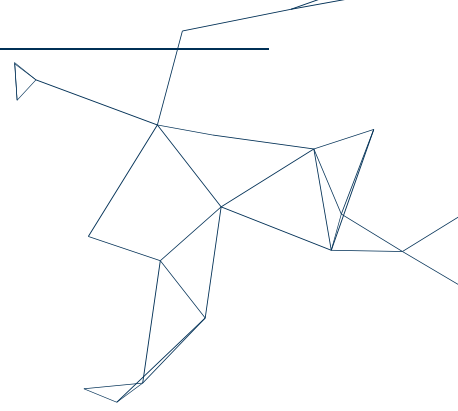
They score higher on everything relating to speed and accessibility (“quick response,” “fast time-to-market,” and “non-bureaucratic innovation process”). When it comes to studying the internal innovation obstacles, what this means is that speed and efficiency as well as the effectiveness of innovation processes offer the highest leverage for optimizing the innovation performance (Govindarajan/Trimble, 2010).

On the other hand, despite the generally very confident self-assessment in some areas, we continue to see high percentages of some 50 to 70 percent (depending on the success factor) of businesses that feel they still need to improve to assume a dominant position. At the same time, the increasingly competitive nature of the global marketplace compels the chemical-pharmaceutical industry to focus on its future competitiveness and work proactively to accelerate its time-to-market and protect the long-term viability of its current competitive advantages.

So when it comes to finding the primary causes for the internal innovation obstacles, the analysis of the expert interviews and success factors leads to four improvement areas:

- Innovation culture
- Disruptive innovations
- Speed and efficiency of innovation process
- Effectiveness of innovation process

The identified innovation obstacles will be assigned to these improvement areas in the following. For each improvement area specific recommendations for overcoming the obstacles are then identified and summarized in individualized improvement initiatives.



4.2 Innovation culture

Cultural obstacles predominant at large enterprises

Inadequate culture of innovation is largest internal obstacle to innovation

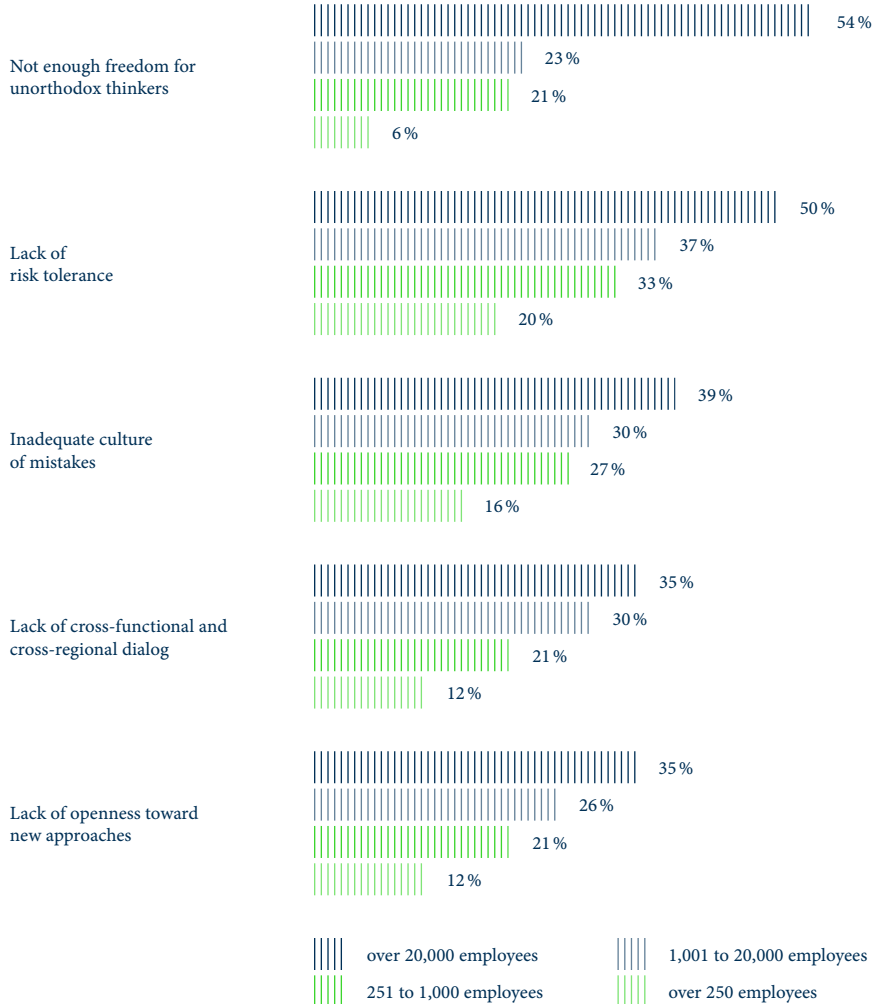
The surveyed companies assigned the greatest overall importance to the deficits summarized under the category of “cultural obstacles to innovation.” In that, the findings from the quantitative survey match those of the expert interviews and from the top-down analysis before that.

No culture of taking risks and learning from mistakes, not enough freedom, lack of openness, inadequate dialog identified as key cultural deficits

Figure 4-2 shows the overall ranking of cultural obstacles to innovation. A differentiated analysis of these deficits by company size and industry segment yields additional key insights.

Figure 4-2:
Key obstacles to innovation in corporate culture – by size of company

Percentage that sees a major or somewhat major obstacle



Large enterprises have a pronounced cultural problem

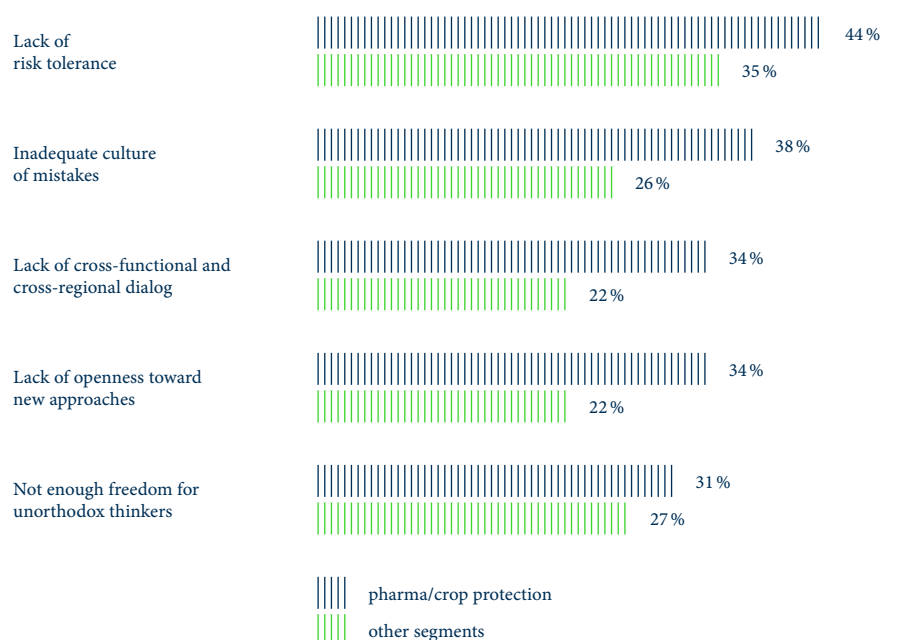
The breakdown by company size reveals that the problems in the innovation culture grow along with the size of the company, as Figure 4-2 shows. Focusing on those responses that cited a major or somewhat major obstacle presents an even clearer picture and the order changes as well. 54 percent of surveyed large enterprises with more than 20,000 employees see a major or somewhat major obstacle to innovation in the lack of freedom (for unorthodox thinkers, for example). By comparison, only 4 percent of companies with up to 250 employees see a major problem here. This vast bandwidth and almost continuous linearity in the dependence between the size of the company and the amount of cultural barriers persists throughout all major internal obstacles. The reason for this often lies in the strong division of labor, the pronounced hierarchical structure, and the overall regimentation in large enterprises that leaves little space for individual employees to explore their creativity or find opportunities for development beyond their assigned responsibilities (Garcia Pont/Rocha e Oliviera, 2012; Govindarajan/Trimble, 2010).

Pharmaceutical and crop protection companies struggle more with cultural problems than other segments

A look at the segment-specific data shows 44 percent of companies in the pharma and crop protection segment see a major or somewhat major obstacle to innovation in the lack of risk tolerance within the company. In the chemical segment, on the other hand, the figure stands at just 35 percent. Representatives from the pharma and crop protection segment also see the influence of the next-most important group of obstacles – inadequate culture of mistakes, lack of dialog across functions and regions, and lack of openness toward new approaches – as much more critical for their companies as their counterparts in the chemical segment (Figure 4-3).

Figure 4-3:
Key obstacles to innovation in corporate culture – by segment

Percentage that sees a major or somewhat major obstacle



There is a lack of key skills as a prerequisite for successful innovations: visionary thinking, internal entrepreneurship, integration, and leadership

The experts pointed out that it is the responsibility of the management team to enhance the corporate culture. At the same time their range of activity is limited. Leaders can only rely with their actions and priorities on creating an environment favorable to creativity and innovation. Employees with the right skill sets must then drive the innovations forward (Leavy, 2005). The experts also emphasized that, in addition to inadequate leadership, the main innovation obstacles in their experience were insufficient visionary (out-of-the-box) thinking, the lack of internal entrepreneurship, and untapped network intelligence.

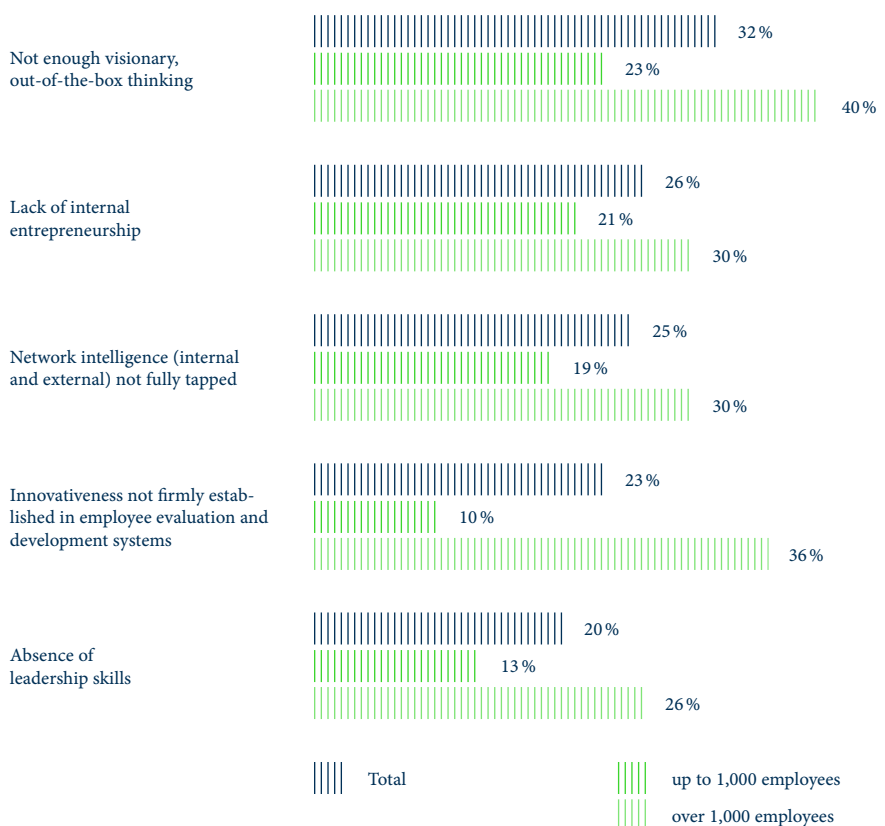
The written survey confirms the view of the experts and adds a few new perspectives. Here, as with the findings relating to the innovation culture, the significance of many obstacles tends to correspond to the company size (Figure 4-4).

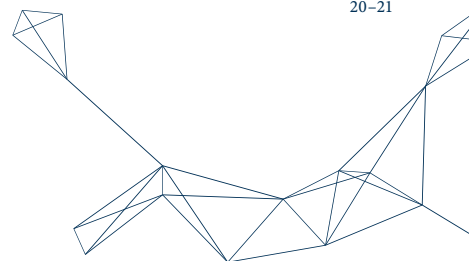
Employee development systems lagging behind – seen as a relevant innovation obstacle especially in large enterprises

The analysis of innovation skills also shows, however, that major personnel systems in many companies do not adequately reflect innovation and innovation capability and therefore do not ultimately promote these skills as they should. On average, in fact, companies identify the failure to firmly establish innovativeness in employee evaluation and development systems as the fourth most important innovation obstacle in this category. The question that arises here is how the company's innovative performance can be improved if the employees' innovativeness has no tangible positive impact on their career or compensation. Here, too, the significance increases in line with the company size: The share of large enterprises that identify this as a major or somewhat major obstacle is 26 percent, over twice as high as for small and medium-sized businesses (SMBs) at 10 percent.

Figure 4-4:
Key obstacles to innovation among innovation-related employee skills – by size

Percentage that sees a major or somewhat major obstacle





Improvement initiative: promoting a culture of innovation

In the following we draw upon the expert interviews, an analysis of the literature, the project experience of the study authors, and information from the written survey to recommend actions designed to overcome the innovation obstacles highlighted above. The recommendations and the actions associated with them can only offer a general roadmap. The status quo of each single company in the chemical-pharmaceutical industry is too diverse for one-size-fits-all solutions. Company size, industry segment, focus, organization, and management philosophy have a strong influence on the innovation performance. That's why a detailed individual analysis must be conducted before any action plan is put into place. Examples of best practice are presented at the end of each initiative to illustrate the intent.

a) Ensure a comprehensive approach beyond R&D

Changing a culture is a long and slow process that is heavily influenced by the people driving it and living the change. The aim is to generate as many opportunities as possible for people in organizations to initiate changes of behavior step by step and “from within” (Dugan/Gabriel, 2013). Studies also point out that innovativeness must be firmly and specifically rooted beyond R&D in all areas of a company, in its personnel and management systems, and in the corporate values. This is the only way to get everyone on board with the issue and tap into the potential that exists among the employees and thus within the organization. SMBs in particular manage to motivate employees in this regard by personally demonstrating the importance of innovation and innovative practices.

Action items

- Company management must demonstrate the importance of a cultural shift – create role models and position inspiring personalities
- Integrate creativity and innovative performance (creative improvement ideas etc.) into the employee competency profiles
- Establish innovativeness as a fixed mandatory element of target agreements and performance appraisals
- Introduce creativity techniques into the company-wide training portfolio

b) Promote diversity

Innovation is often the fruit of dialog or the combination of diverse fields of expertise (Govindarajan/Trimble, 2010). Many businesses in the chemical-pharmaceutical industry also want their strategy to target the customers of the customers more closely. To achieve this, they need to integrate and maintain the “end customer expertise.” So it makes sense to also recruit and retain employees who bring “exotic” areas of expertise into the company.

Action items

- Consciously promote the integration of unorthodox thinkers into the circle of innovators
- Consciously integrate “exotic” skills so you can optimize how you handle designated new fields of innovation (digitization experts for Industry 4.0 topics, for example, or civil engineers for the development of applications for the construction industry)

c) Create free environments

Many innovations come about because employees create their own free environments to work autonomously on their own ideas (Dugan/Gabriel, 2013). The experts we interviewed confirm this impressively with many examples. The creation of free environments has proven successful as an engine of innovation and creativity, especially among SMBs, even though it is still a topic of heated debate among experts. Prominent companies claim to have achieved major successes in innovation through such measures.

Action items

- Allow employees to use 10 to 15 percent of their work hours to explore innovation topics on their own (in consultation with their supervisors)

d) Improve leadership

All the recommendations outlined above can only be successfully implemented with strong leadership. Executives in the innovation area are the ones who need to embody the cultural shift, manage the necessary diversity, structure how the teams ought to work together, and organize the individual degree of freedom for employees (Miller/Wedell-Wedellsborg, 2013). Studies clearly demonstrate that innovations emerge from the right composition, the right guidance, and the right coaching of teams with different, sometimes competing skill sets. The increasing importance of openinnovation approaches depends on effective, trust-based leadership across company boundaries and without hierarchies. The trend toward the globalization of R&D activities also means that the management of teams across time zones and cultural boundaries is increasingly important to innovators as well (Huston/Sakkab, 2006).

Action items

- Specifically train and provide role models for leadership in an innovation environment: from the scientifically literate researcher to the internationally experienced, technically literate motivator and integrator of (open) teams

e) Adapt personnel systems

Managers need key support from Human Resources to implement improvements. A whole range of personnel management systems need to be adapted to support innovativeness, diversity, and leadership. A development and career ladder tailored to chemists and pharmaceutical specialists is not adequate enough to recruit and retain diverse characters and skill sets in a way that adds value for the company.

Action items

- Systematically develop existing personnel systems (from recruitment to development and qualification to evaluation and incentive systems) to best serve the aforementioned needs
- Create specific interaction formats (new specialist communities for exotic disciplines, etc.) within the company

CASE STUDY

Medium-sized market leader for innovative connection systems shows how it's done: 10 percent of work hours free for innovation-related work of one's own choosing

“When we had the idea to give our researchers and developers more freedom over their time as well, we did not waste too much time thinking about it,” says the Managing Partner about the decision to allow employees to use 10 percent of their work hours to pursue their own research and development projects. This company decided not to impose any restrictions on the subject matter. The only conditions: Projects already underway could not suffer, and employees should report to their colleagues and the company management about their ideas and projects during the regular team meetings. The employees themselves decide their own schedules. One more reason why the owner was not worried about possible losses of efficiency or the like is that he typically worked closely with his R&D team. In any event, the results certainly convinced him: “A variety of new approaches and above all some very effective solutions to problems.”

4.3 Disruptive innovations

Obstacles: Too little focus on disruptive innovations

Short-term outlook promotes risk aversion

“A short-term outlook and the systematic search for ground-breaking, disruptive innovations are mutually exclusive.” This typical statement is representative of the unanimous opinion of all the experts who were interviewed. But it is precisely this focus on short-term profit that is pushed on all sides in the chemical-pharmaceutical industry (and in other sectors as well). Most systems used to manage targets, reporting, and incentives focus on monthly or yearly earnings, and rotations at management levels are a regular and frequent occurrence. This makes those in charge concentrate on quick success and leads to frequent shifts in the priority and stability of long-term activities for research and invention.

When asked about the strategic obstacles to innovation, 36 percent of all companies cite an overemphasis on short-term goals as a major or somewhat major obstacle (Figure 4-5). This confirms that a long-term strategy and a reliable basis for planning are essential to successful innovation. This obstacle was seen as especially critical by large SMBs with 1,001 to 20,000 employees: 47 percent of them see the overemphasis on short-term goals as a major or somewhat major obstacle – the highest-ranked obstacle in this category for this group. Companies in the pharma and crop protection segment also see the short-term focus as the biggest obstacle, with 47 percent – compared to “only” 34 percent of companies in the rest of the chemical industry – ranking it as a major or somewhat major obstacle to innovation.

Short-term orientation leads to an almost exclusive focus on incremental innovations and impedes disruptive innovations

This short-term focus has a tremendous impact on the innovation portfolio, especially for large enterprises with more than 20,000 employees. Nearly half of these large enterprises (46 percent) see the resulting focus on incremental innovations as a major or somewhat major obstacle to innovation. This finding is fully in line with the opinion of the experts. “We are far too evolutionary in our approach. This comes at the cost of disruptive innovation projects. We optimize for today and tomorrow and concern ourselves too little with next week. One reason we do this is because we are not measured against or paid according to long-term results,” is how one representative of the specialty chemicals industry summed it up.

The ultimate result of this emphasis on incremental innovation projects is an imbalance in the innovation portfolio. Some 28 percent of large enterprises with over 20,000 employees – and a nearly equal share (27 percent) of companies with 251 to 1,000 employees – report an imbalance in the portfolio as a major or somewhat major obstacle.

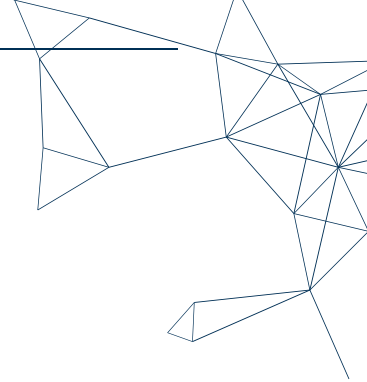
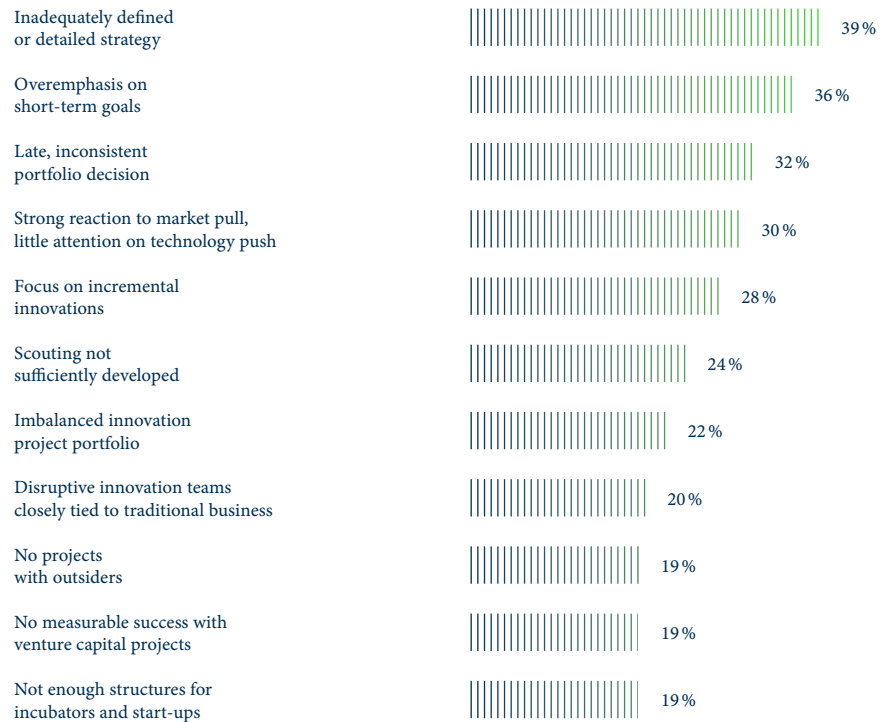


Figure 4-5:
Key obstacles to innovation in the disruptive environment from the areas of strategy, portfolio, and organization

Percentage that sees a major or somewhat major obstacle



The mixture in the size and duration of projects is often not what it should be, the experts add. “Many small short-term projects have negligible risk and produce a regular flow of successes. This really fits in with the mentality of our managers and employees,” says the Head of Research at a large chemical company, illustrating the bigger picture.

For many companies – especially small companies with up to 250 employees – the subject of disruptive innovations is not at all relevant. They have made a conscious decision to focus on the fast, market-driven, and above all customer-driven development of new products. Consequently, only 14 percent see an overemphasis on incremental innovations and only 16 percent see the imbalanced innovation portfolio as a major or somewhat major obstacle.

Big customers like leading automotive manufacturers call on the chemical industry to think beyond current boundaries

Traditionally, the chemical industry is proud of its close partnership with customers in developing new products and the large number of joint innovation projects. Surprisingly, then, it is the experts from key customer industries – especially automotive – who, in the interviews, call on the chemical industry to think differently and more disruptively and to even redefine the value chain for emerging market segments. “The chemical industry should focus on their potential impact across value chain steps – not only theoretically in strategy sessions but by integrating it more closely into new ways of collaboration and new value chains in areas such as lightweight construction or across the board in electromobility,” urges the Head of Innovation Management at a large automobile manufacturer.

Sufficient detailed innovation strategy often missing

The assessment implied by many experts of whether and to what extent an innovation portfolio is too incremental or not disruptive enough can only be conducted properly by looking at the strategy of the company in question. All the more critical it becomes when 39 percent of companies see a major or somewhat major obstacle to innovation in the inadequately defined or detailed innovation strategy of their company. It's worth noting that this is the obstacle to innovation with the highest average individual ranking (see Figure 4-5).

However, this finding from the online survey stands in strong contrast to the statements of all the experts who at no point saw a real problem in the existence or clarity of the strategy. The broad-based online survey, however – which is of course based not only on statements by seasoned experts – uncovers a widespread dissatisfaction with the level of detail in the innovation strategy: not enough information about the resources needed to implement the strategy, for example, or no reflection at all in the project portfolio of the megatrends and growth segments proclaimed so loudly in the corporate strategy.

Not enough technology-push innovations in some areas, especially SMBs

Even though market orientation has, in the unanimous consensus of the experts from the chemical-pharmaceutical industry, made progress in recent decades and a full 43 percent of companies surveyed here ranked themselves as better than their competitors in responding quickly to the needs of the market (see Figure 4-1), many companies still come to the conclusion that having proprietary technology is a more sustainable strategy for maintaining a competitive advantage than satisfying the demands of customers. A full 30 percent of companies see a major or somewhat major obstacle to innovation in a strong market-pull orientation at the expense of technology-push approaches.

As the Head of Innovation Management at one chemical company sums it up: “The customers won't be the ones to tell us about breakthrough innovations, and of course they can't very well express needs that they're not yet even aware of.” Looking at the results by size, it is the small companies with up to 250 employees that perceive the lack of adequate technology-push initiatives as especially critical: 32 percent rank this as a major or somewhat major obstacle. For the broad spectrum of SMBs, this result expresses a keen perception of the potential threat to future prospects arising from the lack of proprietary technologies. Technology-oriented start-ups jump right into this gap, and so this result does not apply to them.

Attempts to outsource disruptive technologies, especially by large enterprises, often fail: low success rate for incubator, venture capital, or partnership models

As was already apparent in the self-assessment of competitiveness in the innovation environment (see Figure 4-1), only relatively few companies (9 percent) ranked themselves as being better at successful incubator and start-up concepts. This assessment carries over in the ranking of obstacles to innovation, where 19 percent of companies see a major or somewhat major obstacle in the inadequate incubator and start-up concepts and in the lack of success in venture capital projects. Companies with over 1,000 employees see these obstacles as especially critical: 28 percent of them attest to major or somewhat major obstacles with incubators and start-ups and 24 percent with venture capital projects. The experts confirm that the past approaches in both areas have often failed to yield the desired results, especially because the company management afforded these approaches too little emphasis and attention. In many companies, the goal was also not clearly defined at the outset of such initiatives.

Nevertheless, these approaches remain very important for the integration of innovations that originate outside the company or are initially meant to be intentionally kept outside the company (Huston/Sakkab, 2006). That's why many companies are currently trying to rework their concepts. In any event, they learned from their mistakes: The goals are clear and the initiatives tend to be rooted higher up in the corporate hierarchy. Basically, these are the only two options to develop new business models flexibly outside of the traditional organization without having them "suffocated" early on by the dominant structures.

Internal disruptive innovation teams frequently "cannibalized" by traditional business operations

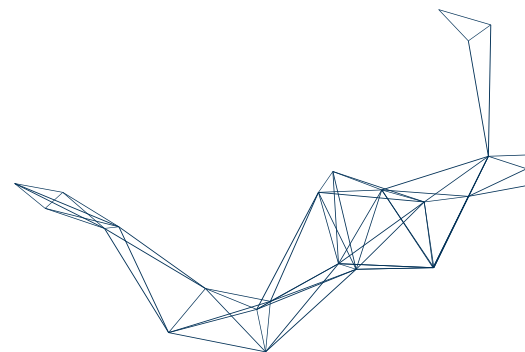
The option to base disruptive operations inside the company – rather than outside, such as in incubators or affiliates – involves precisely this risk: that an absence of or shift in management commitment may lead to premature termination or that the complex internal management systems (reporting, IT, etc.) will over-extend the often small teams. One-fifth of surveyed companies share the concern that day-to-day operations will "suffocate" internal disruptive innovation teams with their requirements and rank this as a major or somewhat major obstacle to innovation. This is often particularly acute at the larger enterprises due to their complexity. Consequently, one-fourth of companies with more than 1,000 employees ranks this as a major or somewhat major obstacle.

Some customers note that chemical companies lack enough effective locations for disruptive topics of innovation. The Head of Innovation Management of a large automotive manufacturer who was already quoted earlier describes the resulting structural deficit as follows: "We have an excellent partnership in the plants at an operational level. At the executive level, we have no shortage of sounding boards when it comes to innovation topics. But who do we turn to with our out-of-the-box ideas? The strategists are too far away. The "new business" teams are too weak, and in the business units these topics fall between the cracks."

Scouting for new technologies also frequently underdeveloped

The response to the question about systematic out-of-the-box thinking points in the same direction. Nearly one-fourth of those surveyed (24 percent) perceives underdeveloped scouting – the systematic search for relevant new technologies outside of one’s own company – as a major or somewhat major obstacle to disruptive innovations. And the differences by company size are less than one would assume. The perception of scouting as a problem as formulated above is true for 28 percent of companies with over 1,000 employees and for 21 percent of smaller companies.

Improvement initiative: creating a suitable environment for disruptive innovations



Here, too, we drew upon the expert interviews, an analysis of the literature, and the project experience of the study authors to formulate recommendations appropriate to overcoming the obstacles to innovation highlighted above. The recommendations and the proposed actions associated with them can only offer a general roadmap. The status quo of the various companies in the chemical-pharmaceutical industry is too diverse for one-size-fits-all solutions. With this particular improvement area, it’s also important to first check to what extent the entire subject is of any relevance for the company in question. That’s because companies sometimes differ greatly in their basic strategic direction. Businesses might assess disruptive innovations as irrelevant for them – because the business model does not require it, because the company sees itself as too small to do anything revolutionary, or because they lack the necessary expertise.

But in case the individual strategic analysis in the companies identifies a need to strengthen disruptive innovations, a few relevant recommendations are included below.

- a) Set clear strategic goals, transfer them into a target project portfolio, and ensure a consistent, long-term commitment by the company management

It’s easy to say the portfolio is “not disruptive enough”, but on the other hand, you also need to define positively the scope of the budget for disruptive innovation. But that alone is not enough: Only an ongoing comparison of the target project portfolio – what you hope to achieve through all your innovation projects – with the current portfolio structure shows whether that portfolio is balanced and whether it is aligned with the strategic goals (Anthony et al., 2014; Dugan/Gabriel, 2013). After all, disruptive innovations don’t happen overnight. The interviews conducted with experts show that disruptive innovations are often the fruit of decades of development and must be pursued with the appropriate tenacity (example: development of liquid crystal displays over 30 years).

Action items

- Define long-term (innovation) goals and the level of resources to be allocated for disruptive ideation
- Redefine key performance indicators (KPIs) for evaluating innovative performance and reflecting this in the innovation portfolio
- Integrate the necessity of an ongoing search for disruptive innovations into the corporate values and have the company management implement these values over the long term
- Ensure that the management has a long-term commitment to the budget and resource allocation for disruptive innovations

b) Focus more on technology-push innovations and business model innovations

In the experience of the experts, predominantly customer-driven innovation efforts do not generally yield disruptive innovations (Garcia Pont/Rocha e Oliviera, 2012). Innovations that bear a sustainable disruptive effect frequently have a new technology at their core or are based on fundamentally new business models.

Action items

- Define the required technology portfolio and make better use of existing technological capacities in new applications/markets

c) Eliminate the typical phase-gate process² for disruptive innovation projects

Disruptive innovations in today's structures often come about by chance or because researchers do not adhere to the straitjacket of internal standards (especially those of the phase-gate process). They permit themselves the freedom to question their observations and to stubbornly pursue an idea "in their free time."

Action items

- Use the defined phases of the innovation process to bring transparency to status of knowledge progress of individual ideas and abolish the traditional reporting scheme
- Focus the reporting on regular updates of the growing insights and a regular assessment of the development work still to be done

d) Push the scouting for new technologies and businesses and acquire shares of promising start-up businesses

Truly disruptive innovation can only happen outside the company – that's the conviction within the panel of acknowledged experts involved with many years of management experience. A successful organization needs focus – a clear DNA. Very few organizations manage to promote incremental and disruptive innovations at the same time with an equivalent rate of success within the same organization. The greater the potential of the disruptive innovations is to cannibalize current businesses, the more this applies. At the same time, a company that hopes to survive sustainably must master technologies with the potential to cannibalize or replace existing technologies itself so that it dominates them and keeps a decisive influence.

So if a company needs to keep disruptiveness outside, and yet the replacement of its traditional business model is one of the biggest existential threats, then an openness to innovation must be outward-facing. This openness begins without scouting – the active structured search outside the company for technologies that

² Structured model of an innovation process divided into individual phases of development, where oversight committees decide on the continuation or termination of innovation projects based on predetermined criteria at each transition ("gate") between one phase and another.

present a high potential for either risk or opportunity – and continues with active investment in interesting start-ups (using own risk or venture capital, for example).

Action items

- Define a responsibility for scouting of new technologies and create transparency with regard to relevant new technologies
- Define a financial vehicle and rules for investing in start-ups

e) Engage in more partnerships

Focusing on disruptive innovations raises the overall risk for the company. Even though partnerships between competitors are often viewed critically, companies must engage more often in collaboration, especially with competitors and technology partners in high-risk projects (Huston/Sakkab, 2006). This is the continuation of the outward-oriented open innovation approach called for earlier. These peer-to-peer partnerships between companies often fail due to a lack of trust or administrative difficulties in defining the rules of the game. Having legal, intellectual property, and compliance departments work together on a case-by-case basis slows down preparations. The strategic benefit is lost in the discussion of legal and formal arrangements. More and more experts are becoming convinced that the monolithic model of demanding the exclusive, unilateral right to exploit IP rights will become increasingly outdated in the future if one hopes to spread and optimize the risks of innovation through partnerships.

Action items

- Define simple, model partnership structures in advance (“plug-in joint ventures”) involving all relevant internal stakeholders, then make specific, case-by-case adaptations in the event of a respective negotiation.

f) Establish incubators for new technologies and business models

Traditional R&D organizations seldom manage to systematically produce disruptive innovations. Changes to processes and mindsets typically unfold over years. Despite the frequency of failed attempts, businesses today support internal incubator concepts to create new platforms for growth markets outside the existing organization.

Action items

- Set up incubators outside the existing organization, equip them with the right mix of competencies, and keep them “on a long leash”

g) Regularly communicate the significance, successes, failures, and risks

The otherness of disruptive innovations and the lack of short-term successes often stimulate distrust in other business units and lead to internal questions of whether the resource allocations are appropriate (Davidson/Büchel, 2011).

Action items

- Regular communication about the current status and personal “protection” by the company management
- Discipline, consistency, and reliability in the company management when it comes to making the decisions to allocate resources (incremental/disruptive – internal/external)

CASE STUDY

DAX-listed company locates incubators close to existing research institutes

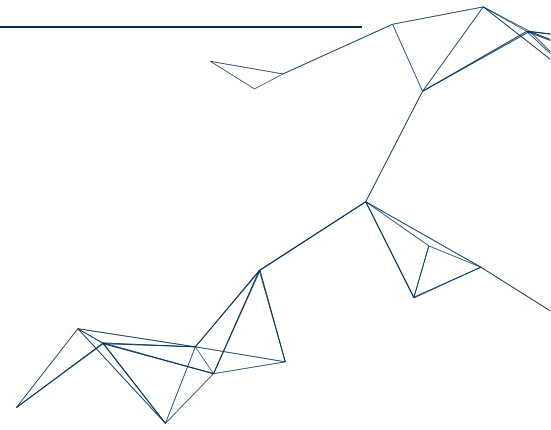
“For us, the proximity to a first-rate university and its infrastructure was a key factor in choosing a location,” says the Head of Innovation of a DAX-listed company, describing how the process began. The incubators materialize in five laboratories set up and run by the company, each with five in-house interdisciplinary experts recruited from around the world. These experts are the roots of the local organization. To provide for a smoother transition to the incubator, they remain on the payroll of their respective business units in the parent company and have the right to return. Assignments to the incubator are initially limited to two years. The plan in this initial phase is to recruit and integrate new internal and external talent and initiate 15 to 20 project per lab. Each lab is to be evaluated following a defined exploration phase.

Given the diversity of existing incubator concepts, even a summary look at typical success factors, independently of any specific example, can be helpful at this point.

PROJECT EXPERIENCE OF STUDY AUTHORS

Summary of success criteria for setting up, designing, and running incubators

- *Consistent organizational isolation of incubators from ongoing operations and the existing business units*
 - *Direct access to the company management – sponsor at the top level*
 - *Separate legal entity, physically situated outside the parent company*
 - *Team equipped with the necessary diversity of the competencies:*
 - *Deep understanding in the required technologies*
 - *Business model development expertise*
 - *Entrepreneurship*
 - *Start-up culture with separate, streamlined business processes; autonomy in choosing support and necessary service providers; no mandatory ties to corporate systems (especially compensation and benefits, IT and reporting)*
 - *Separate, streamlined reporting that makes budget consumption and knowledge development transparent*
 - *Establish entrepreneurship – team participates financially in success of venture*
 - *Defined term and clear end products: demonstrate suitability for use with customers (proof of concept), business model, market assessment, scaling concept, roadmap, best ownership for next phase*
-



4.4 Speed and efficiency of innovation process

Obstacles: Lack of focus and too much complexity inhibit speed

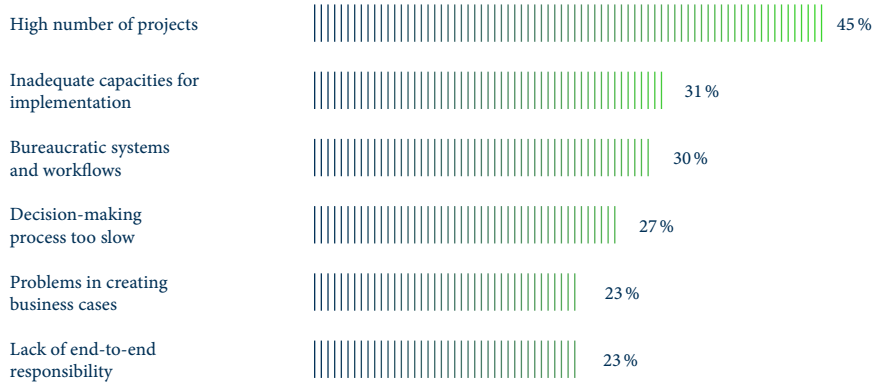
Core problem: high number of innovation projects leads to insufficient critical mass per project

The internal innovation obstacle with the greatest number of individual citations is the excess of projects. The large number of projects is ranked as especially critical – a major or somewhat major obstacle – by 45 percent of companies (Figure 4-6). The very large and very small companies have an especially hard time with this, returning an identical result (48 percent of small businesses with up to 250 employees or large enterprises with more than 20,000 employees) but for different reasons.

The experts who were interviewed pointed out that the high number of projects at large enterprises tends to be an expression of the riskaverse culture and respective profile of a multitude of small innovation projects, while at smaller businesses it tends to reflect their often-emphasized focus on incremental innovation. What both have in common is that through a high number of projects, the overall focus of the innovation is lost, and above all, the critical mass of resources and concentration of the employees on each individual project suffers (Miller/Wedell-Wedellsborg, 2013). Bottom line: Limiting the number of projects and having employees focus more on fewer projects is key to accelerating the innovation processes.

Figure 4-6:
Most important innovation obstacles with regard to the faster development of new products in the areas of portfolio, organization, and processes

Percentage that sees a major or somewhat major obstacle



SMBs also struggle with resource problem

If you look at the above findings for the question about the adequacy of employee resources, you find that 31 percent of companies rank this obstacle as critical – that is, as major or somewhat major – but that the figure is actually 38 percent among businesses with fewer than 1,000 employees. This means that SMBs perceive a massive shortage of appropriate employee resources. To some extent, this shortage is welcomed by the company leaders – they want the projects to always be competing for the best resources so that only the most promising persevere in the end. But what is lacking often is a resolute decision against a project and a realistic view from management of the existing pressure on employees, say the experts.

Lack of shared responsibility along the innovation process leads to unnecessary friction at key transfer points

Another bump in the road to fast and smooth innovation projects is the lack of shared responsibility among the players in the innovation process for the results of the process – in short: The lack of end-to-end responsibility. Over one quarter (28 percent) of companies with over 1,000 employees see an obstacle in the lack of a shared chain of responsibility along the overall process – from research and development to the rollout of new products. The experts see in this another key to successful and above all faster new product development: Many of the identified obstacles fail to materialize when all parties involved in the innovation process share the same goals and are encouraged to focus on the ultimate market success, thereby avoiding typical territorialities or a lack of thinking across department boundaries.

This obstacle is naturally most prominent among larger innovation and marketing units with a high degree of division of labor. The survey clearly detects this: Only 17 percent of companies with fewer than 1,000 employees perceive this issue as an innovation obstacle. Smaller organizations bear less complexity and this encourages its employees to assume more responsibility.

The lack of end-to-end responsibility represents a major or somewhat major obstacle for nearly one-third (31 percent) of companies in the pharma and crop protection segment. The percentage stands at just over one-fifth (22 percent) for companies from other segments. This difference persists across all procedural obstacles: Companies from the pharma and crop protection segment generally rank the procedural barriers and obstacles higher than companies from other segments.

Lack of entrepreneurship leads to slow decision-making processes in the innovation area, especially with large enterprises

“The clutter of numbers and calculations that we required from our project managers in an early phase of the innovation process did not make our decisions any better. They cost us time and served only to personal reassurance. In the end, it is an entrepreneurial decision. We must not forget that.” That’s how one business unit leader described another stumbling block on the path to accelerating the innovation process.

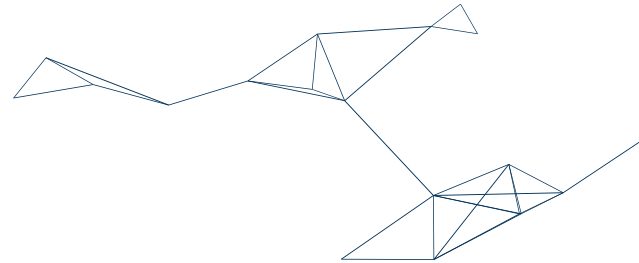
A full 36 percent of companies with more than 1,000 employees complained of slow decision-making processes compared to just 18 percent of smaller companies. Here, too, fast decisions were facilitated by simple and transparent structures, often combined with a proximity to the entrepreneur. But the structure in different industry segments also plays a role here: In the more closely regulated segments of pharmaceuticals and crop protection, the slow decision-making processes are seen as particularly critical: 47 percent of companies in this segment see a major or somewhat major obstacle here, compared to only 24 percent of companies in the rest of the chemical industry.

Bureaucratic systems and workflows further impede the innovation process

A similar picture emerges of the obstructing effect of bureaucratic systems and workflows. A total of 39 percent of companies with more than 1,000 employees are bothered by too much bureaucracy in innovation processes compared to just 21 percent of smaller companies. Here, too, companies from the pharma and crop protection segment feel more strongly affected. Once more, 47 percent of companies from this segment see here a major or somewhat major obstacle compared to only 28 percent of companies in the rest of the chemical industry.

“We are massively satisfying a system,” says one business unit leader, describing the complex process of feeding IT systems along the innovation process and calling into question the cost-benefit equation: “The system should serve us, not the other way around. It should make us more innovative or more successful and not burden us without returning an appropriate added value.” Bureaucracy is also expressed in the obligation of employees to calculate complex business cases at a very early point in the innovation process. Consequently, nearly one-quarter of those surveyed (23 percent) also criticized this. The lesson to be learned at this point: Smaller, entrepreneurially managed structures are faster and more agile.

Improvement initiative: unburden the innovation processes



This initiative focuses on the efficiency within the innovation process. The primary aim here is to get faster. The identified procedural obstacles call for a comprehensive approach to overcome them.

a) Mimic small business structures

The study shows a clear relationship between the size of a company and complexity-induced obstacles (slow decision-making processes, bureaucratic systems, etc.). Small, autonomous, well-integrated, entrepreneurially managed teams that share joint responsibility and feature an interdisciplinary mix are more agile and develop more quickly than large organizations with divided responsibilities (Garcia Pont/Rocha e Oliveira, 2012). This is the unanimous opinion of the experts surveyed.

Action items

- Reorganize existing R&D organizations based on a model of autonomous, innovative cells, and mobilize the organization through corresponding long-term change management

b) Define end-to-end responsibilities and establish shared incentives

R&D and sales & marketing teams should, wherever possible, share responsibility for market success. Highly innovative SMBs have developers and sales representatives meet regularly to discuss the market success of their products and the respective lessons learned: The developments are a joint effort, so the success or lack thereof is also shared.

Action items

- Establish end-to-end responsibility through a comparable structure of personal targets and the related incentives for developers and sales representatives (attractive bonuses for innovation successes paid out to everyone involved in the specific innovation process, for example)

c) Ensure more critical mass on each innovation project

Many experts see the key to acceleration in the revision of the innovation portfolio and the reduction of the number of projects, achieving speed by bundling resources more tightly and focusing.

Action items

- Focus the innovation portfolio: fewer projects – more critical mass, competency and dedication per project – do not de-focus R&D personnel by having them working on several projects

d) Ensure adequate reporting along the innovation process

Some experts describe the reporting requirements as too detailed and still not effective at the same time. The requirements for business case calculations at an early stage of the process earned special criticism (Dugan/Gabriel, 2013).

Action items

- Focus reporting requirements on what is necessary and sensible

e) Establish entrepreneurial decision-making processes

The opinion of the experts is clear: “More numbers do not produce better decisions and certainly don’t produce better innovations.” They also criticize the composition of decision-making committees which often tend to incorporate insufficiently market and customer knowledge and are perceived as not being enough customer-centric (Teece, 2007).

Action items

- Establish pragmatic decision-making criteria and staff decision-making bodies with people who understand the market as well

CASE STUDY

A speciality chemicals producer makes decisions on new business projects using a simple red/yellow/green traffic lights logic

“We were too slow. Decisions got mired down in endless discussions.” That was how the Head of New Business Development described the situation at the outset. Today, we select a handful of criteria when evaluating new business ideas and discuss them as a team. The criteria are weighted according to predefined benchmarks and automatically assembled into a portfolio. Success was immediate. From 40 business ideas, four were selected and piloted. After a few weeks, one idea was dropped when further market intelligence failed to confirm its promised market potential, and the other three have developed into new business fields after three years through organic growth and acquisitions. The team still uses this simplified selection process today and is constantly learning from the accumulated experience.

4.5 Effectiveness of innovation process

Obstacles: Insufficient market and customer focus in innovation process

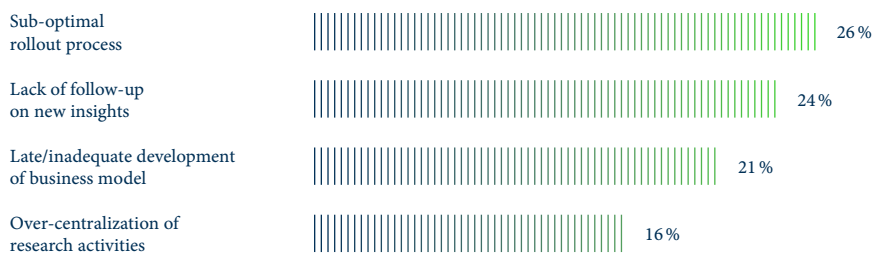
The German industry falls behind especially during the market introduction of new products – especially compared to foreign competitors

More than one-quarter of companies (26 percent) see a major or somewhat major obstacle in their current market launch process for new products (Figure 4-7). Whereas the size of the company does not seem to play a critical role in this obstacle, the industry segment does seem even more relevant. More companies (38 percent) in the pharma and crop protection segment see a major or somewhat major obstacle from weaknesses in the market introduction process than those in other segments.

But for these other segments of the chemical industry, there is another key aspect from the customer perspective. “The industry often relies too heavily on the supposed higher quality of its products and is not as customer-focused in the final marketing phase of initiating business when it comes to samples, testing, and the like – and less aggressive when it comes to the final commercial terms. Sometimes this means orders are lost to foreign competitors.” That is how the Head of Development at an automotive supplier summarizes one weakness shared by many German chemical companies that are suppliers for him. Another customer, the Head of R&D of a consumer goods manufacturer voiced similar sentiments. Without claiming that these views are representative for the entire peer group of the chemical industries’ customers they at least deliver strong indications.

Figure 4-7:
Key obstacles to innovation around effectiveness in the innovation process

Percentage that sees a major or somewhat major obstacle



New insights from the marketplace are often not sufficiently incorporated in the development procedures for new products

The division of labor along the innovation process and the sometimes very long development periods often lead to an occasional disconnect between innovation projects and current market developments. Businesses may still be convinced, however, that they generally respond very quickly to market trends (see the self-assessment of strengths in Figure 4-1). But changing customer requirements, the successful launch of competitors' products, or a shifting price structure may result in innovations being already obsolete by the time they hit the market. In nearly all cases, these new products may do a fine job of meeting the specifications. But success on the market proves elusive, because the customer is not prepared to pay the required price for the extra technology or because the competing product seems "good enough," or because a government subsidy has been abolished lately. Consequently, 24 percent of those surveyed see this lack of follow-up on new insights from the market place as a major or somewhat major innovation obstacle.

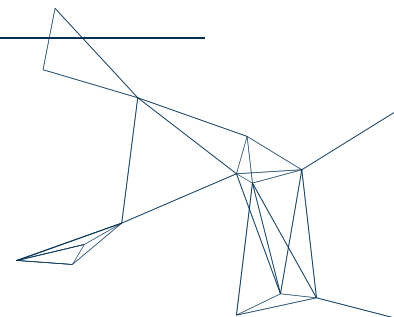
A feasible business model for an innovation is often developed too late

Another reason that an innovation proves ineffective at the time of its market introduction is that companies are often late in developing the future business model intended to enable the new product succeed on the market. Some 21 percent of those surveyed rank this as a major or somewhat major obstacle to innovation. An excessively or even exclusively technical focus not only leads to inadequate feedback on changes in the market, as described earlier – it also leads to innovations frequently being marketed with the traditional approach as raw materials or semi-finished products, even though the actual or sole potential of the product may lie in licensing, in an application-related combination, or in direct marketing through a dedicated, specialized sales team.

The appropriate business model is often lacking, especially when approaching new customer segments. A supplier for the display industry, for example, had the idea that its technology could open up new functionalities for the windows of buildings. The first attempts to market this through the construction supplies industry failed. The response: "Too expensive, and all of this is possible with existing solutions as well," according to the head of the business unit who oversaw the project. "Business took off only after we convinced leading architects and planners of the potential of our product. Today, we are very successful in this niche."

Over-centralization of research entities creates even more distance to market, especially at large enterprises

Over-centralization is another factor in the lack of market orientation at research and development entities (Garcia Pont/Rocha e Oliviera, 2012). Even though large enterprises in particular have the financial resources and the international network to decentralize further, it is a common perception that the historically evolved structures, especially in the home countries, are highly centralized and not adequately localized in growth regions. At the same time we see a number of examples where the decisions to invest were consciously made for existing research sites in Germany in order to bolster the expertise already available in the home locations for the global markets as well.



Improvement initiative: strengthening market orientation and early development of business models

This initiative focuses on enhancing effectiveness: In the end, success on the market determines whether an innovation truly delivers its potential and reimburses prior investments. Despite all the procedural streamlining effects gained by implementing the prior initiative, an innovation may still stumble “on the home stretch” because it was developed without regard to current customer needs, the price was too high, or the selected business model did not leverage the full potential.

a) Begin thinking early on in (new) business models

Many innovations adhere “technically” to the product requirements document at the time of their rollout, but the needs of the market have evolved while the product was being developed (Anthony et al., 2014). Often, too little thought is given too late about which business model will guarantee the highest, most sustainable added value. (Example: New insulating materials for the construction industry offer outstanding technical parameters but at a price level not accepted by the traditional buyer industry.)

The greatest business potential comes from innovations that actually create customer needs. So the type of marketing, the combination of product and service, etc. offer a value-adding potential that goes far beyond the benefit of the individual product to the customer.

Action items

- Use existing knowledge or build up deep customer related intelligence to create a new customer need and define the precise benefit to the customer
- Obtain an early estimate of the target price that can be achieved
- Simulate the future value chain structure of possible target markets and move forward in honing the business model as the product is developed (instead of time consuming and zero-creative business case calculations)
- While new market segments are still evolving, think in new business and implementation models and work alone or with partners to overcome the limitations of the current value chain

b) Define end-to-end responsibilities and establish shared incentives

Another critical factor for increasing the effectiveness of the innovation process is to align the entire organization – along the innovation process from R&D to marketing and sales – to the customer and his business. Let the entire organization understand the customer benefit, the customer problem, and potential future needs of the customer (Välikangas/Gibbert, 2005). That's why end-to-end responsibility and shared incentives are recommended not only for boosting efficiency but also for strengthening market orientation and thinking in new business models.

Action items

- Establish end-to-end responsibility through a comparable structure of personal objectives and the related incentives for developers and sales representatives (attractive bonuses for innovation successes paid out to everyone involved in the specific innovation process, for example)

c) Integrate more market savvy and increase knowledge of the customer along the entire innovation process

Current market trends and looming changes in customer requirements must be communicated regularly and effectively to the development teams (Garcia Pont/Rocha e Oliviera, 2012). Development committees often lack adequate understanding of the market and customer, according to the experts.

Action items

- Check the attendees of innovation committees and analyze if they have sufficient market and customer knowledge and establish ongoing, effective communication and exchange formats between marketing/sales and R&D
- Create platforms for marketing/sales and R&D to share and talk about current trends in the marketplace and among the competition

d) Ensure flexibility, focus, and maximum customer orientation when launching innovations

Customers and experts report that German chemical companies, unlike foreign suppliers, are often inflexible in responding to customer requests (number of tests, speed in obtaining samples, etc.). They reflect the internal limitations almost one to one back to the customers. Foreign competitors were described as more aggressive and thus sometimes more successful in “last mile” sales.

Action items

Bring maximum customer orientation throughout the innovation organization and allow it to take root; sharpen hard selling and value selling capabilities at the entire sales team

- Do not burden customers with internal restrictions (ABC customer classification, allowed level of service, etc.)

e) Ensure synchronized rollout processes

New products are often launched in excessive numbers (lack of focus), with inadequate preparation, and poorly coordinated with sales (inadequate capacities).

Action items

- Implement market introduction schemes perfectly synchronized between development, marketing, and sales teams with convincing documentation and adequate resources

CASE STUDY

At a medium-sized speciality chemicals company, developers and sales representatives share a bonus for the successful launch of their products

To provide greater motivation for collaboration towards a shared success on the market, the development and sales teams meet regularly to talk about the pending new product rollouts and ongoing customer projects. From the setting of individual targets to the individual bonuses, the focus is consistently on market success – even among the development team. “That’s how we achieve even greater cohesion, the actual feeling of shared responsibility, and a total alignment of all parties for the benefit of the customer,” says the Managing Director, summarizing his experience.

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