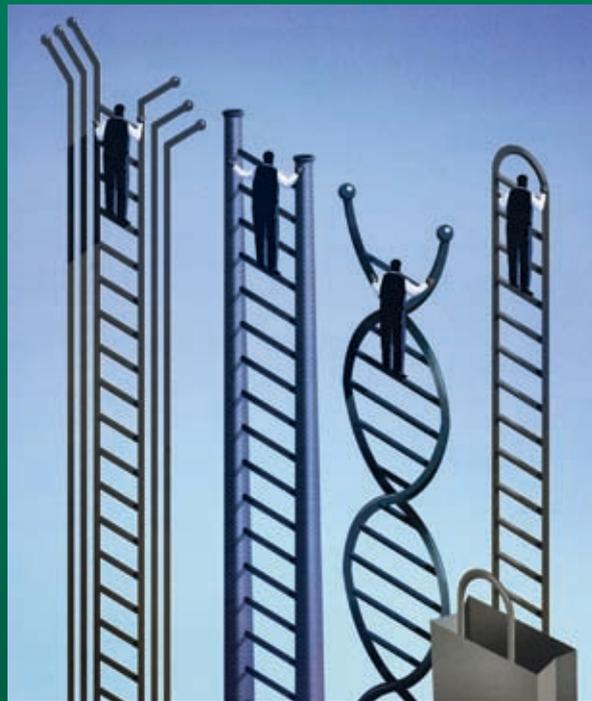


THE MOST INNOVATIVE COMPANIES 2012

THE STATE OF THE ART IN LEADING INDUSTRIES



BCG

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THE MOST INNOVATIVE COMPANIES 2012

THE STATE OF THE ART IN LEADING INDUSTRIES

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INTRODUCTION

INNOVATION HAS MANY FACES, from incremental changes in existing products to entirely new offerings for customers. Companies also use knowledge new to the organization to increase efficiency, ensure regulatory compliance, improve sustainability, and boost profits. But whatever form innovation takes, its goal is clear to successful organizations: to create value from ideas, whether those ideas are new to the world or new to a particular company.

In a turbulent economic environment, innovation is an important driver of the organic growth necessary to generate sustained, above-average returns. To explore the state of innovation, The Boston Consulting Group has fielded annual innovation surveys since 2004. These surveys of more than 1,500 senior executives allow comparisons over time as well as across regions and industries. They capture executives' views of their own innovation plans and also their opinions of other companies' innovation track records.

Among the many indicators of the current and future robustness of the innovation environment, two of the most critical include the relative priority of innovation and the outlook for increased innovation spending over the coming year. This year's survey finds these two metrics at their highest levels in more than five years.

Our survey reveals the 50 companies that executives ranked as the most innovative, weighted to incorporate relative three-year shareholder returns, revenue growth, and margin growth. The list has its share of well-known technology innovators that have long dominated the top ten. But what makes this year's list really stand out is the rise of companies in traditional sectors such as the automotive industry and industrial products and processes, along with a shift toward diversified conglomerates that manage a broad portfolio through a centralized point of view on innovation. These companies have honed their capabilities and taken advantage of their brawn and breadth, muscling onto the list as formidable innovators.

This year we explore in detail the major industry and company trends that have emerged over time in our survey. We map the innovation landscape in four major industries that dominated the list in 2012: industrial products and processes, automotive, consumer and retail, and technology and telecommunications. We also highlight the health care industry, which has failed to place more than one pure-play company on the list since 2007. Finally, we examine five practices that generate value for the most innovative companies—and we explore how those practices have played out at innovative companies in a range of industries.

THE STATE OF INNOVATION

AFTER THE PROFOUND INSTABILITY that has roiled markets since 2007, innovation is once again alive and well in most parts of the world. The list of top-50 innovators continues to be heavily weighted toward technology and telecommunications companies, including Apple, Google, Samsung, and IBM. (See Exhibit 1.) Not surprisingly for such a fast-moving industry, however, technology and telecommunications companies have also shown some of the highest volatility in the rankings, rising and falling dramatically in position and frequently dropping off the list altogether.

According to our 2012 survey, innovation is rapidly moving up the CEO agenda across regions and industries. Seventy-six percent of respondents ranked innovation as a “top-three” strategic priority—the highest level in our survey’s history. (See Exhibit 2.) Twenty-four percent said it was their top priority. CEOs felt even more strongly: 85 percent ranked innovation as a top-three priority, with 40 percent ranking it as the top priority.

This year we also found that companies are planning to put their money where their priorities are. Altogether, 69 percent of respondents said that they planned to increase their investment in innovation in 2012, up from 61 percent in 2010. (BCG did not publish a survey in 2011; see the Appendix.) That is the highest level in six years. Twenty percent of

respondents plan to increase spending by more than 10 percent. There is also considerable regional variation, with companies in emerging markets ascribing higher priority to innovation and increasing their innovation spending. (See the sidebar “Innovation Around the World.”) Companies that stand still will find themselves falling even further behind.

Executives’ priority levels and spending plans offer important signals. Companies that put innovation at the top of the corporate agenda have a strong tendency to generate superior shareholder returns down the road. To learn more about this effect, we compared the three-year and ten-year total shareholder returns (TSRs), including stock price appreciation and dividends, of the most innovative companies in 2012 with those of their industry peers.

The 2012 top innovators earned a 6.3 percent TSR premium over three years. (See the Appendix for details.) Over a ten-year period, they earned a somewhat lower 3.5 percent premium, in part reflecting the challenge of maintaining the advantages of innovation over a long period of time. Companies that have been on the list each year since 2004 delivered a 4 percent premium over ten years, however, indicating that when companies become *consistent* innovators, they achieve greater long-term returns.

EXHIBIT 1 | The Most Innovative Companies in 2012

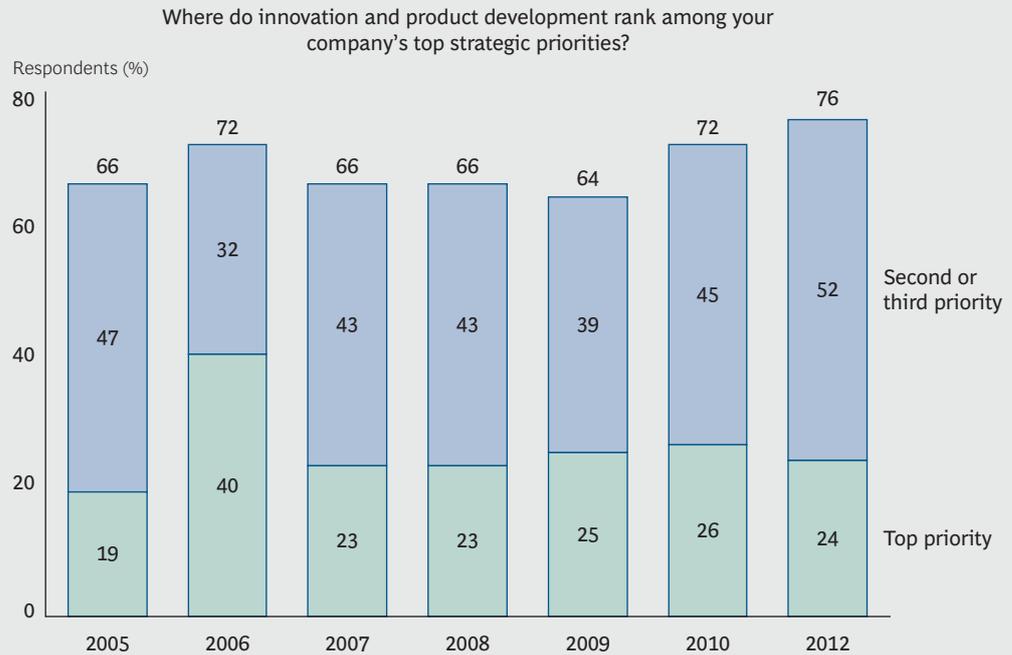
#	Company	Change from 2010	Industry	#	Company	Change from 2010	Industry
1	Apple	NC	Technology and telecom	26	Siemens ¹	↑ 8	Industrial products and processes
2	Google	NC	Technology and telecom	27	Lenovo	↑ 3	Technology and telecom
3	Samsung ¹	↑ 8	Technology and telecom	28	HSBC	↑ 21	Financial services
4	Microsoft	NC	Technology and telecom	29	General Motors	R	Automotive
5	Facebook	↑ 43	Technology and telecom	30	Anheuser-Busch InBev	E	Consumer and retail
6	IBM	↓ 2	Technology and telecom	31	SoftBank	E	Technology and telecom
7	Sony	↑ 3	Technology and telecom	32	Fast Retailing Co.	↓ 5	Consumer and retail
8	Haier ¹	↑ 20	Consumer and retail	33	Philips ¹	R	Industrial products and processes
9	Amazon	↓ 3	Consumer and retail	34	Renault	R	Automotive
10	Hyundai ¹	↑ 12	Automotive	35	Shell	R	Energy and environment
11	Toyota	↓ 6	Automotive	36	Huawei	E	Technology and telecom
12	Ford	↑ 1	Automotive	37	Virgin ¹	↓ 13	Consumer and retail
13	Kia Motors	E	Automotive	38	Boeing	R	Industrial products and processes
14	BMW	↑ 4	Automotive	39	Nike	↑ 7	Consumer and retail
15	Hewlett-Packard	↑ 1	Technology and telecom	40	Caterpillar	E	Industrial products and processes
16	General Electric ¹	↑ 7	Industrial products and processes	41	McDonald's	↑ 12	Consumer and retail
17	Coca-Cola	↑ 2	Consumer and retail	42	DuPont ¹	R	Industrial products and processes
18	Dell	↑ 17	Technology and telecom	43	Twitter	E	Technology and telecom
19	Intel	↓ 7	Technology and telecom	44	China Petroleum & Chemical	E	Energy and environment
20	Wal-Mart	↑ 1	Consumer and retail	45	Volkswagen	↓ 30	Automotive
21	Starbucks	R	Consumer and retail	46	Airbus	E	Industrial products and processes
22	Nissan	E	Automotive	47	Tata ¹	↓ 30	Industrial products and processes
23	BASF ¹	E	Industrial products and processes	48	Inditex	R	Consumer and retail
24	HTC	↑ 23	Technology and telecom	49	Procter & Gamble	↓ 24	Consumer and retail
25	Audi	R	Automotive	50	3M ¹	R	Industrial products and processes

Sources: 2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.

Note: NC = no change; E = entered list; R = returned to list. The change from 2010 is the number of places that a company moved up or down.

¹Diversified conglomerate; categorized by primary industry.

EXHIBIT 2 | Innovation Has the Highest Priority in Our Survey's History



Sources: 2005–2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.

Note: BCG did not publish a survey in 2011.

INNOVATION AROUND THE WORLD

In a trend we spotlighted in 2010, the United States and Europe significantly lag emerging markets in terms of the importance that their companies place on innovation. Ninety percent of Indian companies and 89 percent of South American companies said that innovation was a top-three priority in 2012, compared with only 66 percent of U.S. companies and 80 percent of European companies. (See the exhibit “The Priority Level of Innovation Is Rising in Most Regions.”) European companies have shown a significant increase in the priority level of innovation since 2009.

Interestingly, 81 percent of Chinese companies placed innovation at a top-three priority level—a drop from 92 percent in 2010. The 11-point decline in priority level could be the result of a return to average levels after the end of the Chinese government’s 2010 innovation push at state-owned enterprises, a campaign that could

have had a trickle-down effect on all Chinese companies. While innovation clearly remains a high priority for most companies in China, it appears to be a somewhat lower priority than in 2010.

Results were mixed when it came to executives’ intention to invest more money in innovation. Chinese and Indian respondents reported a greater intention to spend on innovation in 2012 than previously—89 and 95 percent, respectively. This can potentially be attributed to the relatively low historical base of innovation spending in these regions and the understanding among companies that innovation will be a key driver of new growth and business models.

Meanwhile, South American and U.S. executives reported less aggressive spending plans (79 percent and 75 percent of companies plan an increase, respectively). In a reflection of the turmoil in Europe,

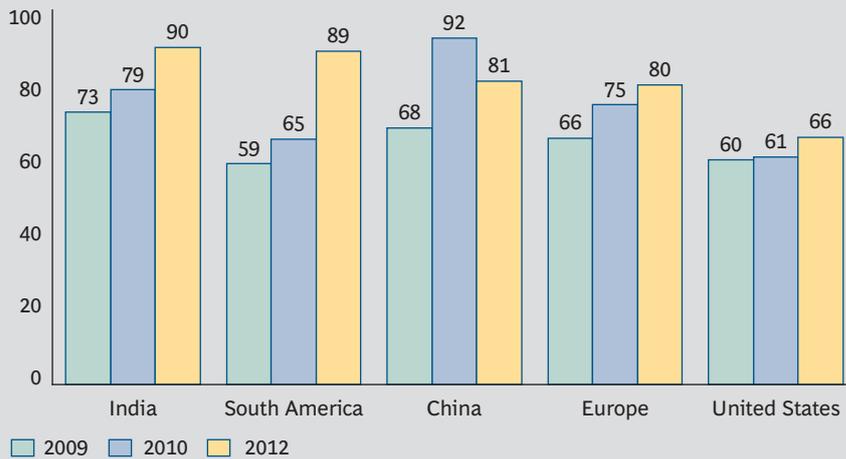
INNOVATION AROUND THE WORLD

(continued)

The Priority Level of Innovation Is Rising in Most Regions

Where do innovation and product development rank among your company's top strategic priorities?

Respondents selecting "top priority" or "top-three priority" (%)



Sources: 2009–2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.

Note: BCG did not publish a survey in 2011.

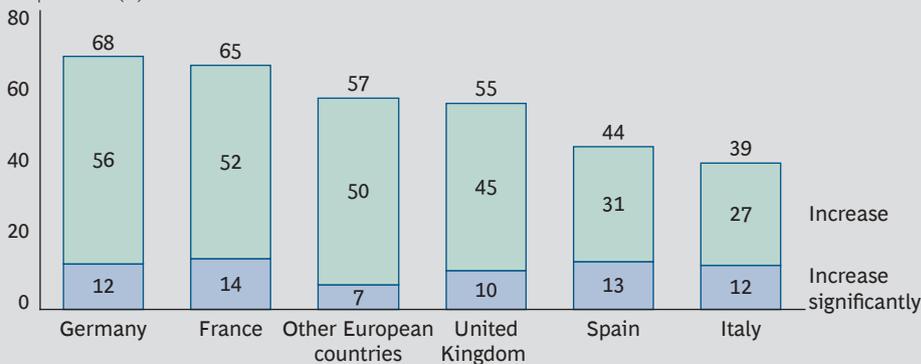
only 57 percent of companies there reported plans to spend more on innovation in 2012. The range of answers among countries was wide, however, with German and French executives expressing a much greater expectation of increased innovation spending than Spanish and Italian execu-

tives. (See the exhibit "Innovation Spending Plans Vary Widely in Europe.") These country-specific effects paint a stark picture of the downturn's impact on the primary group of nations affected at the time of the survey.

Innovation Spending Plans Vary Widely in Europe

Compared with last year, what do you expect your company's investment in innovation and product development to do this year?

Respondents (%)



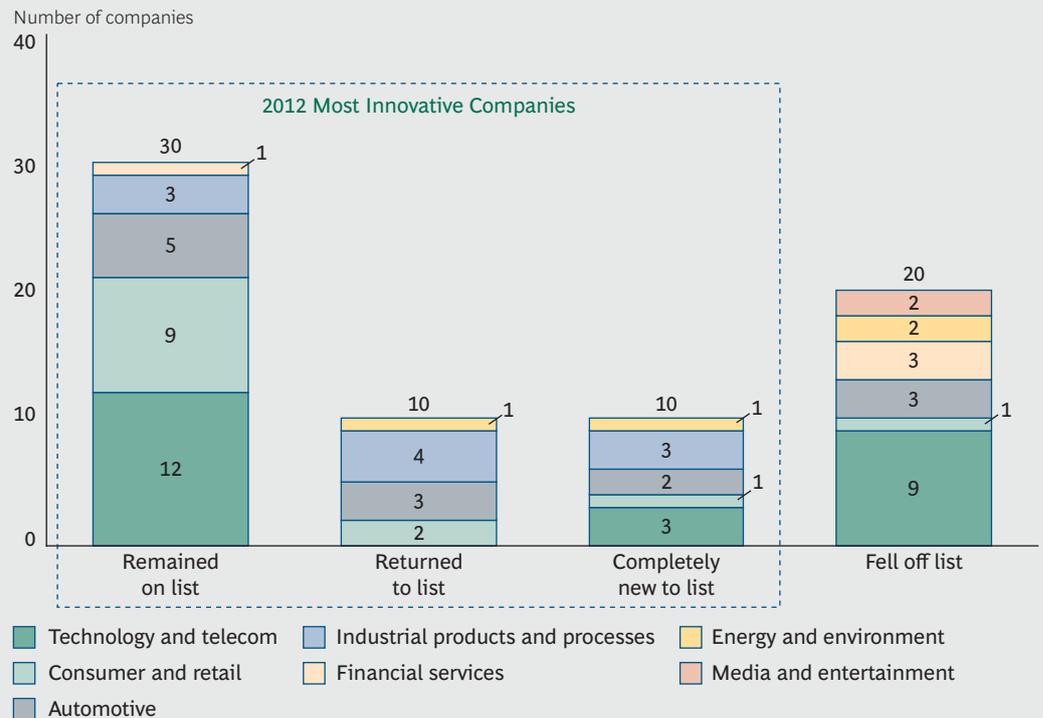
Sources: 2012 BCG Global Innovators Survey; BCG analysis.

THE TOP INNOVATORS

BCG HAS FOUND THAT the upper echelons of innovation can be a turbulent place for those that aim to achieve and sustain a top spot, with companies—and industries—moving on and off the list of BCG’s ranking of most innovative companies. (See Exhibit 3.)

Nowhere has this turbulence been more pronounced than in the technology and telecommunications industry. The number of tech and telecom companies in the top-50 list fell from 21 in 2010 to 15 in 2012. In addition, four of the five companies that

EXHIBIT 3 | The List of Most Innovative Companies Experienced Sharp Shifts from 2010 to 2012



Sources: 2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.

dropped out of the top 25 were tech companies (LG Electronics, Nintendo, Nokia, and Research in Motion). At the same time, new members Samsung and Facebook entered in the top ten, leaping over list veterans. It is also interesting to note that no health care company has placed in the top 50 since 2009. (See the sidebar “The Health Care Challenge.”)

Despite this jockeying for position, the tech and telecom industry continued to dominate the top-ten most innovative companies list, taking seven out of ten places. Many of these

companies have demonstrated impressive staying power in the top rankings:

- Apple has been number one every year since 2005.
- Google has been number two every year since 2006.
- Microsoft has been in the top ten every year since 2005.
- IBM and Sony have been in the top ten nearly every year since 2005.

THE HEALTH CARE CHALLENGE

In 2007, five health care companies made our list of most innovative companies: Amgen, Genentech, Johnson & Johnson, Merck, and Pfizer. Since then, only one pure-play health care company has placed in the rankings, and no company has placed since 2009.

In 2010, long development times were viewed as the biggest obstacle to innovation among global health care respondents. By 2012, having a risk-averse culture had become the greatest impediment. Given the technical challenges of competing in a landscape with fewer blockbuster drugs, as well as significantly more regulatory and commercial uncertainty and the rise of more difficult-to-treat chronic diseases, it is not surprising that 42 percent of health care respondents viewed a risk-averse culture as the top obstacle, compared with 28 percent of respondents from other industries.

We asked respondents to rate themselves on how well they launch new products and on a number of other capabilities related to innovation and product development. For all 29 of these best-practice elements, we found that health care respondents judged themselves to be worse off than respondents from other industries. Clearly, health care companies are not satisfied with their current situation and will need to revamp their innovation strategies and

processes in order to be able to meet their aspirations.

This year’s survey found that health care respondents saw innovation as an important priority in 2012, with 80 percent ranking it as a top-three priority versus 73 percent in 2007. In line with the current industry trend to focus on improving the effectiveness and return on R&D investments rather than continuing to increase the size of R&D budgets, fewer health care companies reported plans to increase investment in innovation (56 percent in 2012 versus 70 percent in 2007).

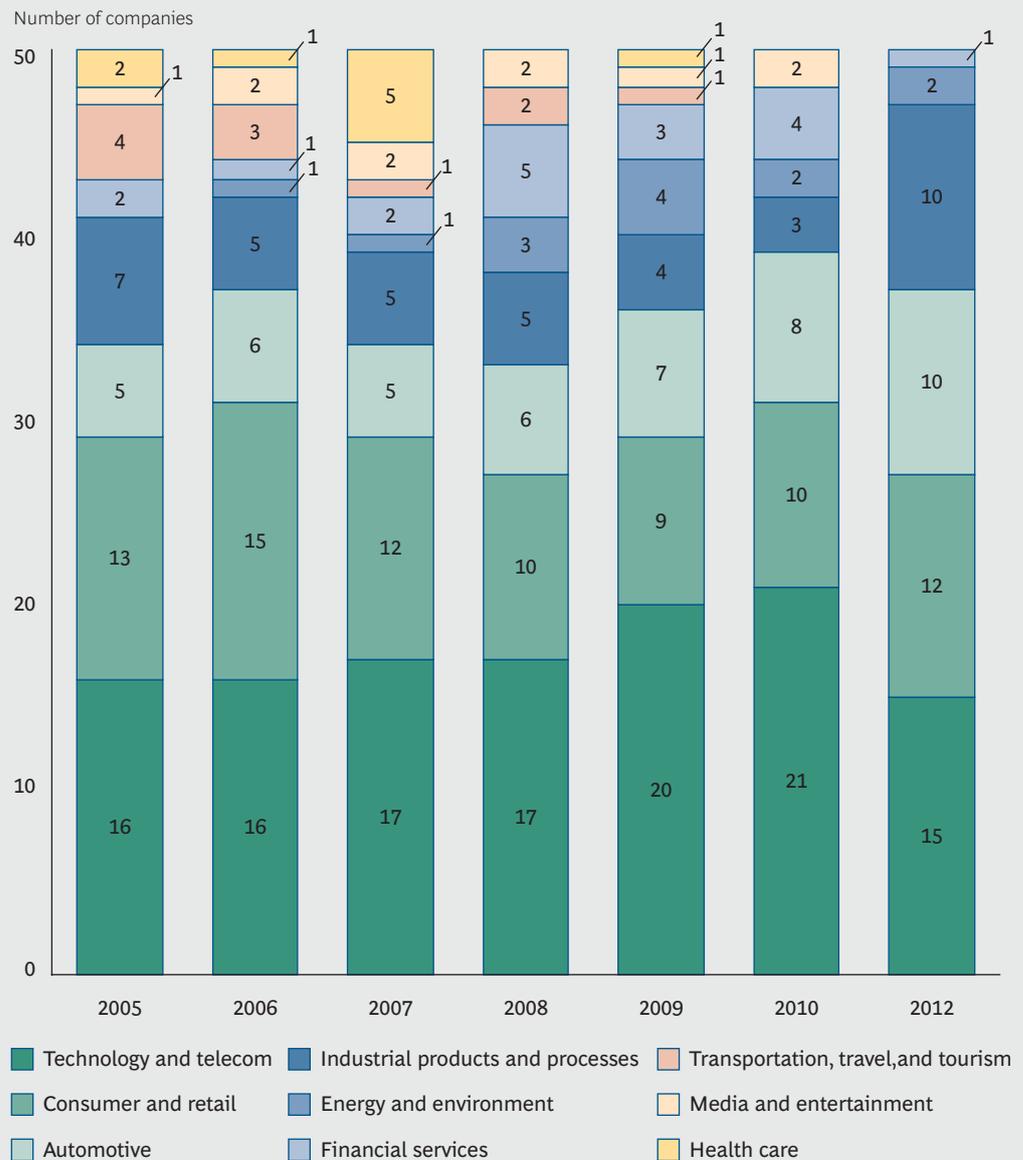
Pfizer, the health care company that survey respondents in the industry considered to be the most innovative, is a prime example of this trend. From 2007 to 2011, Pfizer increased its R&D investment from \$8.1 billion to \$9.1 billion. As a proportion of sales, however, R&D investment fell from 16.7 percent to 13.5 percent. In 2011, Pfizer made a shift in its R&D approach to ensure that each investment provided the highest commercial value to the firm. The change, as outlined in public filings, involved pruning the existing portfolio, relocating R&D centers closer to leading external research organizations, and setting up flexible partnerships with external R&D partners to allow Pfizer to focus on the highest value-added activities.

But the world of bits and bytes no longer comes exclusively to mind when executives think of innovation. This year for the first time, traditional industries such as industrial products and automotive made up 40 percent of the list, similar to the percentage held by technology and telecom in 2010. (See Exhibit 4.) Automotive companies represented 7 of the top 25 companies in 2012, for example.

Nissan, and Renault), while three exited (BYD Company, Honda, and Fiat). Three of the five new entrants to the top-25 list were automotive companies. Five diversified industrial companies entered or returned to the rankings (BASF, Caterpillar, DuPont, Philips, and 3M), along with two aerospace companies (Airbus and Boeing). Finally, we have discerned a noticeable shift in representation on the list toward companies that operate across multiple industries. (See the sidebar “The Rise of the Diversified Conglomerate.”)

Overall, five auto companies joined the top-50 list (Audi, General Motors, Kia Motors,

EXHIBIT 4 | The Most Innovative Companies Are Concentrated in a Few Industries



Sources: 2005–2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.
Note: BCG did not publish a survey in 2011.

THE RISE OF THE DIVERSIFIED CONGLOMERATE

Industry-level shifts do not begin to describe all the changes going on in the innovation environment. The world of innovation may be a place where the small and nimble succeed, but it is also a place where the biggest and most diversified companies generate measurable advantages in scale and scope. These “premium conglomerates” have built their innovation capability so that they add value from the corporate center to the diverse business units they own.

Eleven of the top 50 most innovative companies were diversified conglomerates: BASF, DuPont, General Electric, Haier, Hyundai, Philips, Samsung, Siemens, Tata, 3M, and Virgin. Four of these were new entrants to the list since 2010. Only one diversified conglomerate (Reliance) left the list. In addition, the usual pure-play life sciences companies failed to achieve a spot in the rankings, even though larger diversified companies that happen to have substantial health care businesses did make it (GE, Philips, and Siemens).

BCG’s previous research on this topic has shown that from 2007 through 2009, diversified companies did not have to reduce their innovation investment rate as severely as their focused counterparts did. Instead, the top diversified companies *raised* their investment rate during the crisis, enabling them to rebound more rapidly and robustly. For instance, companies that outperformed in terms of total shareholder return increased their R&D-to-revenue ratio by 6 percent on average; by contrast, the R&D-to-sales ratio of underperformers declined by 3 percent. This may be a time when diversified companies are able to create and harness additional value in innovation through their strengths in allocating R&D investment, sharing best practices, and managing talent across a broad portfolio.

THE STATE OF INNOVATION BY INDUSTRY

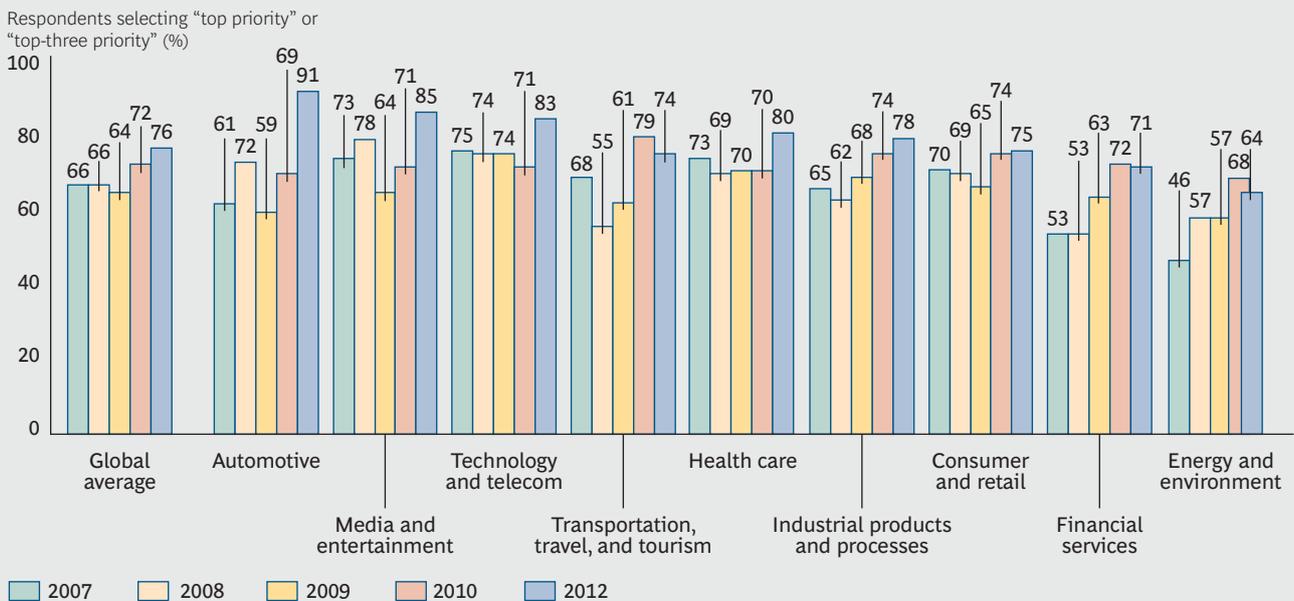
THE IMPORTANCE OF INNOVATION has increased for most industries in recent years. Since 2007, it has grown most markedly for the automotive, financial services, energy, industrial products, and media and entertainment industries. (See Exhibit 5.)

Yet the global financial crisis has had a significant impact on plans to increase investment

in innovation in most industries. After reporting expected declines in innovation spending each year from 2007 to 2010, a higher proportion of respondents in many industries expect to increase innovation investment in 2012 compared with 2007. (See Exhibit 6.) Plans to increase innovation spending in industries such as energy, financial services, industrial products, automotive, and technology

EXHIBIT 5 | The Importance of Innovation Is Increasing Across Industries

Where do innovation and product development rank among your company's top strategic priorities?



Sources: 2007–2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.
 Note: BCG did not publish a survey in 2011.

and telecom have risen since 2007, in some cases sharply.

For this year’s report, we investigated innovation practices in the four industries that constituted 94 percent of the 50 most innovative companies, in order of the change from 2010 in the number of companies on the list: industrial products and processes, automotive, consumer and retail, and technology and telecommunications. We also explored differences among industries in how they viewed innovation practices. These cross-industry variations offer clues about existing and emerging ways of working that all companies might learn from. In addition, on the basis of BCG’s experience with clients in these industries as well as additional research conducted outside the survey, we examine the practices of select companies from the 2012 list of top-50 innovators to learn what sets them apart.

Industrial Products and Processes

The world of heavy machines and industrial production processes might appear slow to change to outsiders, but global competition and technological advances have dramatically

accelerated the pace of innovation in this sector. Innovation is a top-three priority for 78 percent of the industrial companies surveyed and for 84 percent of industrial-company CEOs. In 2012, industrial companies ranked second highest in terms of their industry’s plans to increase innovation investment, at 74 percent (compared with an overall average of 69 percent). This is the highest level for industrial companies in the history of our survey.

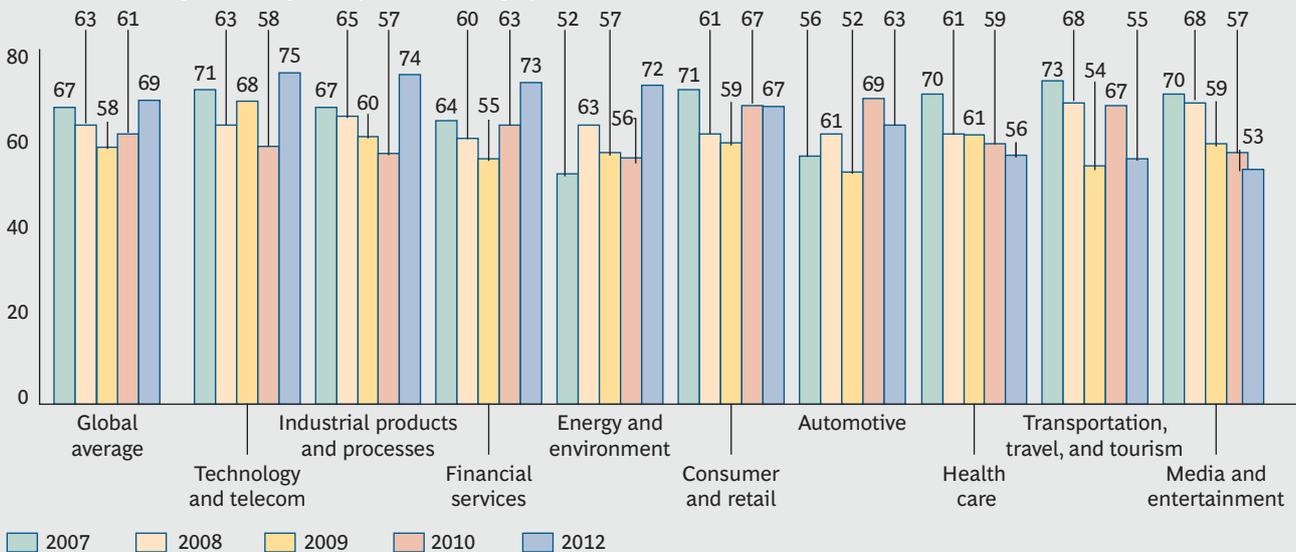
Our survey shows that the long-term journey to become more innovative is starting to yield results. In 2012, 20 percent of the most innovative companies were traditional industrials, including new entrants Airbus, BASF, and Caterpillar. This is the greatest representation of industrial companies in the history of our survey.

To understand what helps drive this innovation performance, we conducted interviews with some of the most innovative industrial companies as well as with BCG experts. We have identified a set of emerging ways in which leading industrial companies are focusing attention so as to maximize the value of their innovation efforts:

EXHIBIT 6 | Many Industries Expect Sharply Higher Rates of Investment Than in Years Past

Compared with last year, what do you expect your company’s investment in innovation and product development to do this year?

Respondents selecting “increase significantly” or “increase slightly” (%)



Sources: 2007–2010 BCG/*BusinessWeek* Senior Executive Innovation Survey; 2012 BCG Global Innovators Survey; BCG analysis.
 Note: BCG did not publish a survey in 2011.

- *Cultivate a deep customer understanding.* Industrial-company respondents were more likely to rate themselves as being focused on incorporating the voice of the consumer than were other respondents (75 percent versus 66 percent). Companies in this industry have purposefully built these capabilities, often modeling them on segmentation and other marketing insights pioneered by consumer and retail companies.
- *Respond to market economics.* Leading industrial innovators invest to deeply understand the supply and demand environment in their markets, and in particular to learn the likely location of emerging profit pools. These companies can therefore target their innovation efforts to the most profitable areas, rather than simply spread innovation spending across markets. Such an approach was reflected in the fact that more industrial-company respondents scored themselves high at market understanding than did respondents in other industries (61 percent versus 50 percent).
- *Engage senior leadership.* Respondents at industrial companies rated themselves as very good or excellent at getting top-management commitment to innovation (66 percent versus 58 percent in other industries) and committing senior-management time to innovation (62 percent versus 51 percent).
- *Staff projects effectively and cross-functionally.* In our experience, industrial companies are at the forefront of inclusiveness in resourcing their innovation efforts. This involves committing experts with the technical skills and experience to projects where they can have the greatest impact—and involving members from other parts of the organization such as finance, operations, and marketing. Industrial-company respondents ranked themselves as highly focused on staffing teams with people who have relevant skills (77 percent versus 68 percent for other industries) and having people committed full-time to innovation and product development (69 percent versus 62 percent).

We saw these and other traits in diversified chemicals company BASF, which was a new entrant on the 2012 list of most innovative companies at number 23. The company has an elaborate innovation network, with nearly 10,000 researchers at 70 global R&D centers working on thousands of projects and cooperative partnerships. It recently opened an R&D campus in Shanghai that will accommodate more than 450 employees.

Leading industrial innovators invest to learn the likely location of emerging profit pools.

The company filed for 1,050 new patents in 2011, earning it the top rank in the chemicals industry. Its 2012 R&D investment of €1.6 billion is up 50 percent since 2005. Top executives have shown strong leadership engagement by announcing an ambitious goal of achieving €30 billion in sales and €7 billion in profits in 2020 from products that have been on the market less than ten years. Company leaders say that research and development will be an even greater priority in the future.

The company targets its innovation efforts at pockets of the market with differential growth and high current or future profitability. The ultimate goal is no longer exclusively to develop individual molecules but also to create systems that combine chemicals, technologies, and application know-how in 13 high-priority growth areas as varied as transportation and plant biotechnology.

- In transportation, BASF has developed and commercialized products that are currently used in millions of vehicles and help customers meet tough emissions-control standards. Its selective catalytic reduction (SCR) filter controls are stable at high temperatures and minimize space and weight in vehicles.
- In plant biotechnology, BASF has set a goal of achieving €1.8 billion in sales from this growth area by 2020. It plans to meet this target through products such as the

first corn genetically engineered for drought tolerance, created in collaboration with Monsanto. The hybrids are expected to provide a vital boost to production in drought-stricken areas around the world.

BASF achieves such results thanks to a holistic system in which all innovation projects go through a “phase gate” process, with go/no-go decisions made at six gates on the basis of predefined deliverables, success criteria, and net present value calculations. According to its “We create chemistry” strategy, BASF also aspires to closely align its innovation efforts with the industries of its main customers.

Auto companies saw innovation as a dramatically higher priority in 2012.

BASF’s recognized track record in innovation demonstrates that being big and diversified can be an asset in the chemicals industry.

Automotive

The automotive industry has largely snapped back from the sharp downturn of 2009 and 2010, a period in which industry earnings declined by about \$50 billion. Companies now have more cash available, and many are thriving again.

In this environment, innovation allows companies to differentiate themselves in a crowded, highly competitive field. Such fierce competition pushes automotive-industry players to continuously offer more features for the same price. Automotive companies optimize sourcing and manufacturing to take out, on average, about 3 percent of the cost of vehicles each year. They reinvest those savings in innovative features that benefit customers and set their products apart.

Auto companies focus on investing R&D resources effectively, not necessarily on increasing R&D spending. Most are allocating a large proportion of their R&D budgets to invest-

ments that they believe will generate the greatest return—in such major areas as fuel efficiency, safety, styling, comfort, and consumer electronics.

As evidence of these trends, survey respondents from auto companies saw innovation as a dramatically higher priority in 2012 compared with the global average (91 percent versus 76 percent)—the highest level of any industry that we surveyed. By way of comparison, from 2007 to 2012 industry respondents placed a higher-than-average priority on innovation in only two years surveyed. Still, the number of respondents planning to increase their investment in innovation lags the global average (63 percent versus 69 percent). From 2007 to 2012, the proportion of industry respondents reporting plans to increase innovation investment was higher than the global average in only one year surveyed.

Our detailed survey analysis found that automotive companies viewed themselves as following three innovation practices more often than in other industries:

- *Apply strategic and financial criteria when selecting ideas for development.* Auto company respondents thought of themselves as highly focused on applying strategic and financial criteria to a much greater extent than those in other industries (78 percent versus 65 percent for strategic criteria and 76 percent versus 64 percent for financial criteria). Now more than ever, after heavy consolidation and government involvement in the industry following the financial crisis, automakers set portfolio targets in line with corporate and innovation goals, regularly review innovation projects, and prune the portfolio to ensure alignment with targets.
- *Follow a standard review process.* A much higher proportion of auto industry respondents reported applying a standard process to review the progress of projects (76 percent versus 66 percent in other industries). These companies have implemented some of the most rigorous development processes in the world, especially considering the complexity and

costs involved in developing a state-of-the-art vehicle.

- *Get a reality check.* More automotive-company respondents report involving manufacturing early in the innovation process (72 percent versus 64 percent in other industries) and using well-defined target product profiles to make go/no-go decisions (74 percent versus 65 percent). Such an approach allows automakers to take manufacturing efficiencies into account early in the design process and also to keep a close eye on the cost of the final automobile. In the high-cost, low-margin automotive world, these practices are critical to launching profitable new vehicles and boosting speed to market.

We saw these and other traits in Renault, which returned to the 2012 list of most innovative companies at number 34. Renault has invested heavily in early bets on the all-electric vehicle category, even during difficult economic conditions, and has kept its R&D spending more or less stable. At the same time, it has shifted spending from development to research, doubling its research budget in constrained times. That shift in the investment mix allows the company to generate more ideas at the front end of the innovation funnel that it can test and evaluate before committing money to development.

At Renault, many projects are terminated to allow the best projects to thrive.

Renault's €4 billion R&D investment with alliance partner Nissan (number 22 on the list) and its joint-development effort with Daimler are beginning to bear fruit. While the Nissan Leaf has made inroads around the world, Renault will have four electric models in Europe by the end of 2012: a compact called Zoe, the Fluence sedan, the Kangoo delivery van, and the Twizy, a four-wheel scooter with a roof. Daimler has announced plans to expand its Smart electric city-car lineup with a four-

seater based on Renault's next-generation Twingo platform.

Renault launched its electric-vehicle effort in 2007 as a result of a thorough review of the environmental, technical, demographic, and consumer forces likely to drive the demand for electric vehicles over the long term. For example, the company realized that 30 percent of cars in the "B segment," such as the Clio, are never driven more than 150 kilometers per day. This means that the limited range of its electric vehicles does not represent an issue for a significant number of customers.

To fuel innovation, the company has strengthened its innovation capabilities over recent years, according to an interview with Rémi Bastien, head of both innovation and the DREAM (research, advanced studies, and materials) division. For instance, Renault applies five clear criteria to innovation projects: value to the customer, impact on the brand's value, cost-to-value ratio, ease of selling for salespeople, and potential for additional volume sold. Executives apply these criteria at four key milestone points to guide decision-making. Projects must earn a 100 percent score on all five criteria at the fourth milestone in order for a project to move to the development stage. An innovation strategic committee cochaired by the executive vice presidents in charge of programs and engineering decides whether to add projects to the lineup according to the criteria—as well as according to the committee members' own conviction.

Many projects are terminated in order to allow the best projects to thrive. The company is developing a lot more ideas, but it is launching fewer—albeit better—ideas out into the world. Ultimately, all these ways of working are continuing to steer innovation at Renault in dramatically new directions.

Consumer and Retail

With global growth slowing in mature categories such as consumer and retail, innovation has become one of the first levers that companies pull to generate organic growth. Add to slow growth the pressure coming from low-

end private-label consumer goods—and expanding levels of service in retail—and companies face even further pressures to push the envelope in features, experience, service, time to market, and business models that help them stand out in a crowded market.

Still, companies in such a fast-moving, fickle industry often find it hard to invest in efforts that will produce benefits years into the future. It is assumed that consumer companies need make only incremental changes to generate news in the marketplace. But companies must also take some of their chips and place bigger bets on breakthrough products and services.

AB InBev finds creative ways to give new twists to an old category.

Reflecting that reality, the proportion of respondents at consumer and retail companies who view innovation as important was in line with the global average in 2012 (75 percent versus 76 percent). From 2007 to 2012, industry respondents placed a higher-than-average priority on innovation in four of the five years surveyed. The proportion of respondents planning to increase investment in innovation slightly lagged the global average (67 percent versus 69 percent). From 2007 to 2012, the proportion of industry respondents reporting plans for increased investment was higher than the global average in three years surveyed.

Our detailed survey analysis found that consumer and retail companies saw the significance of two innovation practices more often than did companies in other industries:

- *Leverage consumer insights.* Consumer and retail companies have invested heavily in their ability to develop deep customer understanding, including open innovation and customer-driven innovation. These processes and structures, which allow consumer and retail respondents to develop market insights from multiple

sources, have led 58 percent of consumer respondents to rate their company as very good or excellent at having deep user or market understanding, compared with 52 percent of respondents from other industries.

- *Allocate resources efficiently.* At the best companies, executives view innovation as a portfolio to actively manage with a company's time and resources. Sixty-one percent of consumer respondents rated their company as very good or excellent at making proper infrastructure available for projects, versus 54 percent of respondents from other industries—and 57 percent of consumer respondents said that their company was very good or excellent at ensuring that projects receive sufficient budgets, versus 51 percent of respondents from other industries.

Consider the practices of Anheuser-Busch InBev (AB InBev), the world's largest brewer. The company has more than 200 brands in 30 countries around the world. Major beer brands include Budweiser in the United States, Stella Artois and Beck's in Europe, Skol in Brazil, and Harbin in China.

Even for a company specializing in the oldest alcoholic beverage in the world, AB InBev still finds creative ways to give new twists to the category. Innovation takes the form of specialty flavors of existing beers, such as Bud Light Lime Lime-A-Rita, Beck's Green Lemon Zero in Germany, and a citrus-flavored Klinskoye Mix in Russia, as well as new non-beer products such as Stella Artois Cidre Apple in the United Kingdom. Innovation also comes by way of size and packaging advances. In China, AB InBev created a 150-milliliter Budweiser can with a fully opening lid, designed to appeal to young drinkers out for a night on the town. In Brazil and Argentina, larger or specially designed bottles appeal to local markets in new ways. And the PerfectDraft system, designed for the home enthusiast, combines a consumer appliance with a lightweight keg.

To ensure that innovation happens at both the global and local levels simultaneously, AB InBev manages a central R&D lab in Leuven,

Belgium, called the Global Innovation and Technology Center (GITeC), focusing on packaging, product, and process development. In addition, the company has similar kinds of development teams located in each of the six AB InBev regions that are focused on short-term advances. The company's entire R&D staff receives an annual briefing on the company's and business zones' priorities.

As noted in a *Harvard Business Review* online article, AB InBev categorizes innovation in its pipeline according to two types: "renovations" that strengthen existing product lines through new marketing campaigns or formulation changes, and "innovations" that create entirely new products. In the article, Patrick O'Riordan, global director of innovation, gave this rationale for the two tracks: "You wouldn't add an extension to your house if your foundation was crumbling." Line extensions, new products, and supporting services work together to form a beverage platform.

Tech industry respondents reported "using the views of key customers to select projects" at a much higher rate.

In addition, the company has clearly defined processes on both the front end and the back end of innovation. Front-end processes involve consumer discovery work, idea formulation, and idea qualification. Because the process is iterative in nature, it does not have fixed "stage gates" for tracking progress. New products are developed and improved in local markets that know customers best. Back-end processes for actual production, on the other hand, are more rigid.

With each of these innovation practices, AB InBev has hit on a recipe for brewing up a potent product pipeline.

Technology and Telecommunications

Given the industry's shorter product life cycles, the ability of leading technology and

telecommunications companies to consistently innovate determines which competitors are able to enjoy outsize market returns. So it is no mystery that tech and telecom companies saw innovation as a higher priority in 2012 compared with the global average (83 percent versus 76 percent). In fact, tech industry respondents placed a higher-than-average priority on innovation during four out of the last five years surveyed. Only the automotive industry and the media and entertainment industry ranked it higher in priority in 2012.

A higher proportion of technology company respondents plan to increase their innovation spending than in any other industry (75 percent versus an average of 69 percent). From 2007 to 2012, the proportion of tech industry respondents reporting plans for increased innovation investment was higher than the global average in three years surveyed.

Our detailed survey analysis indicated that tech company respondents reported adhering to four innovation practices more often than did respondents in other industries:

- *Generate breakthrough ideas.* For an industry in which disruptive offerings such as the smartphone and the tablet computer have upended competition overnight, survey respondents in the industry are naturally much more focused on "new to the world" products compared with respondents in other industries (87 percent versus 76 percent).
- *Involve customers throughout the innovation process.* Technology and telecom respondents predictably said that they source ideas for growth from a number of internal and external sources. But what separated tech respondents from those in other industries was the importance that they placed on using key-customer views when selecting ideas to develop into offerings. Industry respondents reported "using the views of key customers to select projects" at a much higher rate than companies in other industries (72 percent versus 59 percent).
- *Boost speed to market.* Speed matters in an industry in which products rapidly

become obsolete. Tech industry respondents, more than those from other industries, believed that their companies can quickly ramp up from idea generation to initial sales (67 percent versus 55 percent).

- *Proactively manage an intellectual property (IP) portfolio.* The intense battle among top tech companies illustrates the time and money that the industry spends on building an advantaged position in IP. Industry respondents reported using IP as a strategic lever more often than companies in other industries: 72 percent of tech and telecom respondents agreed or strongly agreed that their company does a good job of protecting and leveraging IP, compared with 65 percent of respondents from other industries. Decisions in this area guide everything from whom a company partners with to what it puts in

the public domain. (See the sidebar “Five Ways to Capture the Value of Intellectual Property.”)

IBM excels at these practices, helping it earn the respect of executives at hundreds of other companies—and the number six spot on the 2012 list of most innovative companies. According to a 2012 investor presentation, 60 percent of the research division’s budget focuses on growth areas such as cloud computing, advanced analytics, quantum computing, and “cognitive systems.” The company made a name for itself with the *Jeopardy*-winning Watson artificial-intelligence computer; it is now innovating in new areas of computing, including systems that mimic neural networks to sift through oceans of “big data.”

The company also engages deeply with key customers to develop breakthrough applica-

FIVE WAYS TO CAPTURE THE VALUE OF INTELLECTUAL PROPERTY

BCG researches and tracks the latest trends in intellectual property through our IP Insights Center, which helps leading companies use IP to scout for innovation, explore opportunities in adjacent product or market spaces, and identify and assess potential partners or acquisition targets. Recently, the center observed that top innovators deploy five strategic levers to capture the most value from intellectual property:

- *Produce.* Traditionally, companies use patents to safeguard proprietary knowledge, differentiate new products, extend into adjacent markets, and build strongholds in future key technology areas.
- *Protect.* Companies amass huge patent portfolios to guard against the risk of being sued, allowing them freedom to operate and minimizing licensing costs.
- *Transact.* Many companies maximize the value they hold by licensing or selling IP rights to others either as a

way to exit a market or as an ongoing revenue stream.

- *Project.* Companies use patents as a source of prestige to build a reputation as an innovative company or to attract talent.
- *Shape.* Companies control the competitive landscape by openly giving away IP, facilitating its broader adoption as a standard, and licensing technology to provide incentives for competitors to become “fast followers.”

Still, our survey results confirmed that most companies have a long way to go in optimizing the value of intellectual property. Only about half of survey respondents believed that they excel at leveraging the value of IP within their company. For example, companies viewed themselves as deficient in obtaining proprietary rights through patents and in proactively leveraging intellectual property rights to protect against risk, influence markets, and generate additional revenues.

tions of its technologies. Many of these efforts are located close to customers in fast-growing markets. For example, IBM's Energy & Utilities Solutions Lab announced its opening in Beijing in 2010 to meet the burgeoning demand for smart-grid infrastructure development in China. Data sets have now grown so large that they cannot easily be moved to IBM's labs. Instead, IBM collocates researchers at the customer's business to work side by side with clients. In addition, the company's research lab in Brazil opened in 2010 to focus on smarter ways to manage the country's technology-intensive oil and gas sector. It has assembled a team of world-class geologists in Brazil to assist petroleum companies with oil discovery in the challenging deep waters off that nation's coast.

Services are an important element of the company's innovation strategy. One of IBM's eight key research areas is services science, management, and engineering (SSME). IBM works actively with researchers and academics through its labs around the world to help define research directions and curricula for service sciences. Research topics include business design and strategy, business componentization, service delivery and operations, and service innovation management.

Intellectual property management also plays a big role in supporting and amplifying the long-term impact of the company's rich research ecosystem. According to public filings, IBM inventors were awarded a record 6,180 U.S. patents in 2011, the nineteenth consecutive year that the company has led the annual list of top patent recipients. In turn, the company made \$1.1 billion through sales and transfers of IP, licensing and royalty-based fees, and custom development projects for partners and clients.

In all these ways and more, IBM is creating its own future, today.

INNOVATION IN THE FUTURE

IN SUCH A CHALLENGING environment, the key question has become one of how executives can focus their limited attention on a handful of key levers that drive success. As we look at the most innovative companies, six main factors distinguish these best-practice innovators from the rest. The key to being a successful innovator lies not in being great at all six of these practices, but rather in identifying which ones are critical to your innovation strategy and in ensuring that your company is best in class in those areas.

Get the customer involved early. Effective companies use their customers to help generate ideas and break ties in decision-making. But there is a difference between consumer data and insight. The best companies focus on the insights about what customers want, not just the data.

Best-practice innovators get current and potential customers involved early in the innovation process. Customers participate in ideation sessions, offer frequent input on early concepts in order to help projects “fail fast and fail cheap,” and critique current offerings in the market. The challenge involves how to add external-facing processes that enable companies to capture and efficiently use the voice of the customer.

Use data to drive tough decision-making. Many companies do not have a systematic

way to make tradeoffs. They lack consistent and comparable project-level data across markets and product lines for evaluating investments in the innovation portfolio. As a result, the inevitable tradeoff decisions are often made on the basis of the “gut feel” of executives in the decision-making meeting rather than metrics that align with business priorities and strategies.

Managing in this relative void in data often prevents leaders from making bold and firm decisions regarding projects that should be discontinued—or that should receive disproportionately high funding to speed them to market. This lack of clarity typically reduces the value of the innovation portfolio and lowers the overall return on innovation investments.

To be effective, innovation investments need to be allocated in a differentiated way. Executives at leading innovators are able to make tradeoff and investment decisions with confidence because the decisions are made for the right reasons on the basis of the right data. Of course, that places a huge burden on the data required to make such decisions.

Think strategically about tradeoffs. The rise of diversified conglomerates in our most innovative companies rankings highlights the potential benefits of thinking systematically about tradeoffs. The senior leaders of these

companies make explicit decisions about how to deploy innovation investments across businesses, markets, regions, and other dimensions. Best-practice companies do not make these decisions in reference to last year's budget but rather on the basis of the size of the future opportunities.

Priorities about projects and spending ultimately lead to decisions that upset people. Companies that do this step well understand that they are going to underinvest in some areas in order to direct more resources to the most promising opportunities. Companies will know that they have gotten the process right when many parts of the organization are displeased about their innovation funding levels.

The most commonly cited force driving innovation was the CEO.

Ensure senior leadership commitment. The most commonly cited force driving innovation at companies in our survey was the CEO. When we look at the 2012 most innovative companies, it becomes clear that innovation leaders come in a variety of styles. Leaders range from founders and visionaries such as the late Steve Jobs at Apple, Sergey Brin and Larry Page at Google, and Jeff Bezos at Amazon, to leaders who have taken the helm at well-established companies and have either maintained or renewed the focus on innovation, such as Jeff Immelt at General Electric. All of these leaders have been successful at fostering an innovative culture and driving results during their tenure.

Regardless of their style, top leaders are best positioned to play several key roles to ensure that they foster successful innovation. Two of these involve earlier practices: using data to drive tough decision-making and thinking strategically about tradeoffs. The person at the top frequently—and sometimes uniquely—enjoys an ideal vantage point for choosing between the short term and the long term, and among markets and sectors. Em-

bracing the CEO's role of "decider in chief" ensures that innovation clearly links to and supports the corporate strategy, and that innovation efforts focus on the most important areas in meeting current and future targets for growth.

Envision innovation as a holistic system.

Managers cannot simply optimize one piece of the innovation ecosystem in isolation. In order to ensure successful innovation, companies must take a holistic approach and optimize the parts of the system that are critical to their current and future competitive advantage. (See Exhibit 7.) This approach begins with building a strong case for change that proves to the organization why innovation is so critical to the future success of that organization. Without this buy-in, even an optimized innovation system will fail to deliver the intended results.

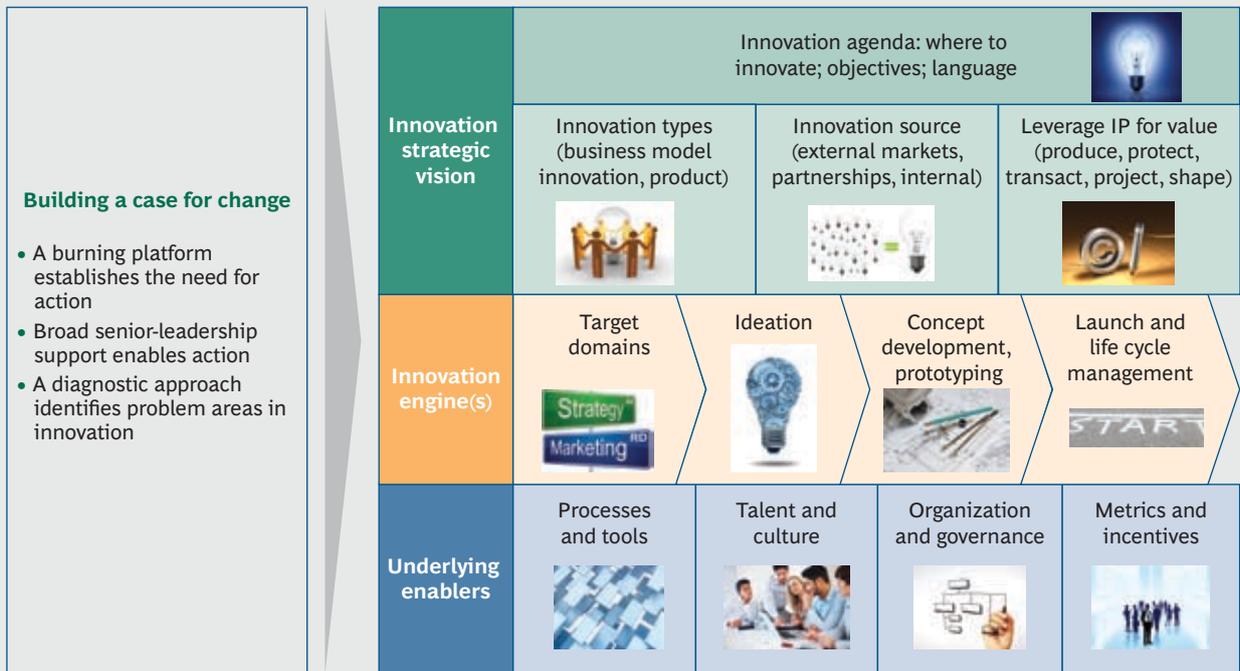
After convincing the organization that innovation is critical, managers can optimize the innovation system by focusing on three main elements. The first is setting the innovation strategic vision, which requires defining the language around innovation, the objectives of innovation, and the "where" of innovation in terms of distance from the business core. The vision is supported by a set of strategic decisions concerning the types of innovation that a company pursues (products, services, business models), the internal versus external sources of innovation, and the ways IP will be leveraged for value.

The second element, the innovation engine, has to do with how innovations are commercialized. This involves identifying opportunities with a customer need, generating ideas in these areas, selecting which ideas to pursue, launching innovations, and managing them across their life cycle.

The final element depends on building the underlying enablers that support the vision and ensure that the engine operates efficiently. Enablers that must be developed include processes, culture, organization, and measurement systems.

Optimize intellectual property to create value. As intellectual property values have

EXHIBIT 7 | Innovative Companies Take a Holistic View to Ensure Success



Source: BCG analysis.

skyrocketed in 2012, major tech companies have locked horns over IP issues, with billions of dollars at stake.

We have identified three strategies that top innovators use to deploy intellectual property as a weapon to support, accelerate, and capture value from their innovation agenda:

- Define the optimal IP value “equation” to measure value.
- Develop the required skills, techniques, and tools to adjust this equation as realities shift.
- Design clear organizational decision rights, role charters, coordination processes, and metrics across the IP life cycle.

BILLIONS of dollars in profits are at stake for innovators that can crack the code and deliver meaningful advantage from innovation, as we have seen from the ever-changing list of most innovative companies. The first step involves understanding the innovation environment in which a company operates, the economics driving decision-making, and the ways to prioritize and accelerate innovation within the organization. Companies that get these initial steps right have the opportunity to unlock the long-term secrets of success from innovation.

APPENDIX

SURVEY METHODOLOGY

THE SURVEY RESPONDENTS ARE senior executives representing a wide variety of industries in every region. (See Exhibit 1.)

Before 2008, our rankings of the most innovative companies were based on a single criterion—respondents’ picks. In 2008, in an effort to make the results more robust and truly reflective of the actual top innovators, we supplemented those choices with three financial measures: three-year total shareholder returns (TSRs), three-year revenue growth, and three-year margin growth. We have used that methodology ever since. Respondents’ votes count for 80 percent of the ranking, share-

holder returns for 10 percent, and revenue and margin growth for 5 percent each. (Note that BCG did not publish a survey in 2011, choosing instead to take a step back and redesign the survey to focus much more on how companies and industries innovate.)

To calculate the return premium for innovation, we compared TSRs, including stock price appreciation and dividends, for the three- and ten-year periods ending on December 31, 2011 for each company on the 2012 list of most innovative companies to the industry average TSR for that company for the same time period.

EXHIBIT 1 | 2012 Survey Respondent Demographics

Industry		Position		Country or region			
Industrial products and processes	422	Chief information officer	162	United States	357	Italy	51
Financial services	240	Chief technology officer	127	China	149	Africa	45
Technology and telecommunications	211	Chief operating officer	89	Japan	133	India	41
Consumer and retail	177	Chief financial officer	89	Other Asian country	127	Russia	40
Health care	89	Chief executive officer	86	Germany	90	Canada	39
Energy and environment	86	Chairman	52	France	81	Spain	39
Public sector	73	President	50	Other European country	79	Australia	30
Professional services	72	Chief innovation officer	29	South America	70	Mexico	29
Automotive	54	Chief strategy officer	11	United Kingdom	67	Other	45
Transportation, travel, and tourism	47	Owner or partner	5			Total	1,512
Media and entertainment	34	Vice president	91				
Other	7	Director	184				
Total	1,512	Manager	433				
		Other	104				
		Total	1,512				

Source: 2012 BCG Global Innovators Survey; BCG analysis.

FOR FURTHER READING

How Fast-Moving Consumer-Goods Companies Use Speed as a Competitive Weapon

A Focus by The Boston Consulting Group, April 2012

Can R&D Be Fixed? Lessons from Biopharma Outliers

A Focus by The Boston Consulting Group, September 2011

(Technology-Enabled) Innovation: A Weapon to Win the Battle for Competitive Advantage

An article by The Boston Consulting Group, September 2010

Innovation 2010: A Return to Prominence—and the Emergence of a New World Order

A report by The Boston Consulting Group, April 2010

Taking R&D Global: Meeting the Challenge of Getting It Right

A report by The Boston Consulting Group, August 2009

Business Model Innovation: When the Game Gets Tough, Change the Game

A White Paper by The Boston Consulting Group, December 2009

Unlocking Growth in the Middle: How Business Model Innovation Can Capture the Critical Middle Class in Emerging Markets

A Focus by The Boston Consulting Group, May 2012

Winning in the Evolving Marketplace of Ideas: Intellectual Property Strategy

A report by The Boston Consulting Group, May 2010

NOTE TO THE READER

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