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The Mix That Matters

Innovation Through Diversity



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The Mix That Matters

Innovation Through Diversity

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AT A GLANCE

That management diversity might be linked to innovation isn't a new concept. But it is a difficult thing to prove. In a new study, BCG and the Technical University of Munich use statistical methods to quantify the impact that different types of diversity have on companies' ability to generate new sources of revenue. The study shows a clear link between diversity and innovation.

THE DIVERSITY-INNOVATION LINK

Four types of diversity—country of origin, career path, industry background, and gender—positively correlate with innovation. However, the four don't have the same impact on every kind of company. Large companies and complex companies consistently show innovation benefits from management diversity. For companies that are not as large or complex, the impact tends to be small or nonexistent.

WORKPLACE ENABLERS

Diversity produces the biggest innovation benefit at companies that value openness in their work environments and explicitly encourage different perspectives. This can come from something as informal as a culture of participative leadership or something more formal like the rollout of tools to facilitate communications.

ONLY ONE OF COCA Cola's last six chief executives grew up in the United States. Deutsche Telekom set out to increase the representation of women in its management ranks in 2010; 40% of the people on its supervisory board are now female. The Japanese beverage company Suntory didn't promote an insider when it was looking for a new president to oversee a geographic expansion effort; it recruited the former chairman of Lawson, Japan's second-largest convenience store chain.

When companies undertake efforts to make their management teams more diverse by adding women and people from other countries, other companies, and other industries, does it pay off?

In the critical area of innovation, the answer seems to be yes. A study of 171 German, Swiss, and Austrian companies shows a clear relationship between the diversity of companies' management teams and the revenues they get from innovative products and services.

The study comes at a time when diversity's business benefits have become a topic of intense discussion. In the past, the indirect benefits of diversity were sufficient—an expansion of the job candidate pool at all levels, or an increase in social and political status for the company. Direct financial benefits weren't needed to justify diversity initiatives—no one could even say for sure if such benefits existed. This study shows they do.

BCG and the Chair for Strategy and Organization at the Technical University of Munich conducted an empirical analysis to understand the relationship between management diversity (defined as all levels of management, not just executive management) and innovation. Although the research is geographically concentrated, we believe its insights apply globally. Here are the major findings:

- The positive relationship between management diversity and innovation is statistically significant, meaning that companies with higher diversity levels get more revenue from new products and services.
- The innovation boost isn't limited to a single type of diversity. Having managers who are foreign, female, or from other companies or other industries are all forms of diversity that can increase innovation.
- Management diversity seems to have a particularly positive effect on *complex* companies' ability to innovate—that is, companies that have multiple product

Companies with diverse management teams are often more innovative, an analysis shows.

lines or that operate in multiple industry segments. Diversity's impact also increases with company size.

- To reach its potential, gender diversity needs to go beyond tokenism. In our study, innovation performance only increased significantly when a non-trivial number of women (more than 20%) were in management positions. Having a high percentage of female employees doesn't do anything for innovation, the study shows, if only a small number of women are managers.
- At companies with diverse management teams, openness to contributions from lower-level workers and an environment where employees feel free to speak their minds are crucial in fostering innovation.

STUDY METHODOLOGY

BCG and the Technical University of Munich surveyed diversity managers, HR executives, and managing directors at 171 German, Swiss, and Austrian companies. The survey was conducted during the second half of 2016. Among the companies that took the survey, one-third have fewer than 1,000 employees, a quarter have more than 10,000, and 42% have between 1,000 and 10,000.

The companies represented a wide range of industries including chemicals, technology, consumer goods, finance, and health care.

The links between diversity and innovation levels were calculated as Pearson's r correlation coefficients, which use a range of +1 for completely positive correlations to -1 for completely negative correlations. (A correlation of zero means there is

no relationship at all between two variables.)

For certain parts of our analysis, we provide the coefficient of determination, R^2 , which describes the extent to which changes in one variable (in this case, innovation revenue) can be explained by another variable (in this case, a particular type of management diversity). R^2 is the square of the correlation coefficient, r , and can range from 0 (0%) to 1 (100%).

We also examined relationships for statistical significance—the likelihood of results being repeated in other large data sets. In this report, correlations with p values of $<.01$, $<.05$ and $<.1$ have “very high,” “high,” and “low” degrees of statistical significance.

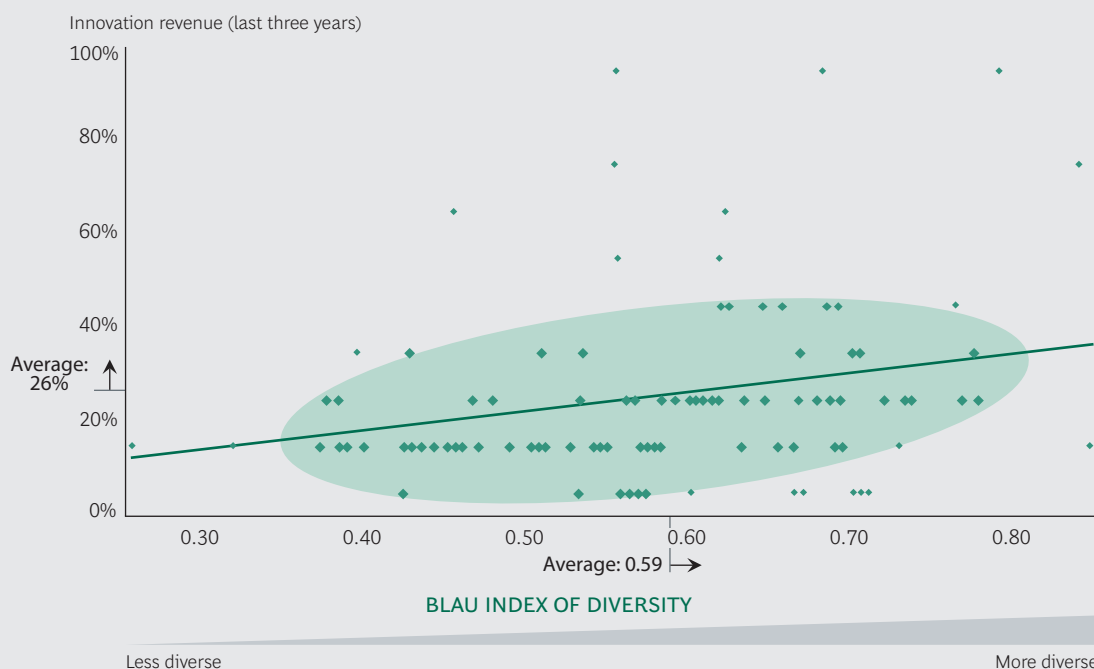
Diversity's Positive Link to Innovation

That management diversity might be linked to innovation isn't a new concept. It's rooted in the assumption that diversity leads to different perspectives and novel solutions. This is, however, a difficult thing to prove. Unlike with other innovation “accelerants”—R&D spending, for instance, or a specific strategy emphasizing innovation—the link between diversity and innovation is indirect. To date, most of the research about it has been more qualitative than quantitative.

The BCG-Technical University of Munich study uses statistical methods—correlations and regression analyses—to show not just that a relationship between diversity and innovation exists. Our research also shows the types of companies that get the biggest innovation boost from diversity, the steps companies can take to increase diversity’s power, and the types of diversity that matter the most. This last area of inquiry is important because many companies’ diversity strategies are no longer focused solely on inherent forms of diversity like gender and nationality; they have expanded, under the catchphrase “2D Diversity,” to include so-called acquired diversity, including people with cross-industry expertise and non-linear career paths.

The study provides clear evidence that many of these types of diversity increase innovation. The companies were first analyzed using the Blau index, a statistical approach, to aggregate their levels of diversity in six areas. The resulting diversity score was plotted against each company’s innovation level. We found that innovation—which we define as revenue from new products and services in the most recent three-year period—rises with diversity. (See Exhibit 1.)

EXHIBIT 1 | The Relationship Between Diversity and Innovation Is Positive and Statistically Significant



- BCG and the Technical University of Munich plotted 98 companies according to two variables: their diversity (expressed as a Blau index number) and their innovation revenue.
- The diagonal line shows the relationship between those two variables—that is, the average innovation revenue associated with each diversity number.
- The diamonds represent the 98 companies’ individual diversity number and innovation revenue, and show how innovation revenues deviate from the general trend.

Source: 2016 survey of German, Swiss, and Austrian companies by BCG and Technical University of Munich. Ninety-eight of the surveyed companies provided the necessary information for this analysis.
Notes: The shown relationship is positive (Pearson’s $r = .253$) and statistically significant ($p < .05$). See Appendix for explanation of statistical analysis and terms. “Innovation revenue” is revenue attributable to a new product or service.

There isn't a one-to-one relationship, the way sales of umbrellas by a street vendor are higher on a rainy day; diversity and innovation affect each other in more complex ways. Moreover, there are quite a few factors beyond diversity that can affect a company's ability to innovate—such as the creativity of its R&D department, the executive team's attitude toward risk-taking, and the support that new ventures have among shareholders. Still, management diversity is an innovation-influencer of its own. Diversity and innovation move together, and the relationship is statistically significant—meaning there is a high probability of its repeating in any large population of companies.

HOW DIVERSITY AND INNOVATION ARE DEFINED IN THIS REPORT

The BCG-Technical University of Munich study looked in detail at six types of diversity:

- **Gender diversity**—the percentage of women who are in management (at any level, not just executive management)
- **Country of origin diversity**—the percentage of managers who are foreign-born or who are the children of foreign-born parents
- **Career path diversity**—the percentage of managers who have worked at other companies
- **Industry diversity**—the percentage of managers who have experience in sectors other than the surveyed company's
- **Age diversity**—the extent to which managers are evenly distributed across age groups. This is calculated through the Blau index, which pinpoints the amount of heterogeneity in a sample
- **Academic background diversity**—differences in university degrees and other aspects of academic training among members of management. Done using the Blau index

“Innovation revenue” in this report refers to the share of revenues that companies have gotten from enhanced or entirely new products or services in the last three years. For all companies in our study, 26% is the average amount of innovation revenue.







An initial sense of diversity's innovation impact can be derived by comparing more-diverse companies with less-diverse companies. In our study, companies above the median on diversity (with Blau index scores above .59) have gotten 38% more of their revenues, on average, from innovative products and services in the last three years than companies below the median.

The study's numbers become even more instructive when they are broken down along other dimensions. This more nuanced analysis provides insights about how to get the most out of diversity and about which types of diversity offer the biggest advantage.

Of the six types of diversity analyzed in the study, these four: country of origin, ca-

reer path, industry background, and gender diversity, all positively correlate with innovation. Age diversity (the extent to which managers are evenly distributed across age groups) is actually associated with *less* innovation. A sixth type of diversity, academic background, appears to have no impact at all on innovation, either positive or negative. (See Exhibit 2.)

EXHIBIT 2 | The Four Types of Diversity That Bolster Innovation—And Two That Don't

DIVERSITY DIMENSION		RELATIONSHIP TO INNOVATION	
		Direction of relationship	Statistical significance of relationship
	Industry background	↑	Very high
	Country of origin	↑	Very high
	Career path	↑	Very high
	Gender	↑	High
	Academic background	~	None
	Age	↓	High

↑ Positive significant relationship ↓ Negative significant relationship
 ~ No significant relationship

Source: 2016 survey of German, Swiss, and Austrian companies by BCG and Technical University of Munich.
Note: "Innovation" reflects the percentage of revenue from new products or services in the last three years. See Appendix for explanation of statistical analysis and terms.

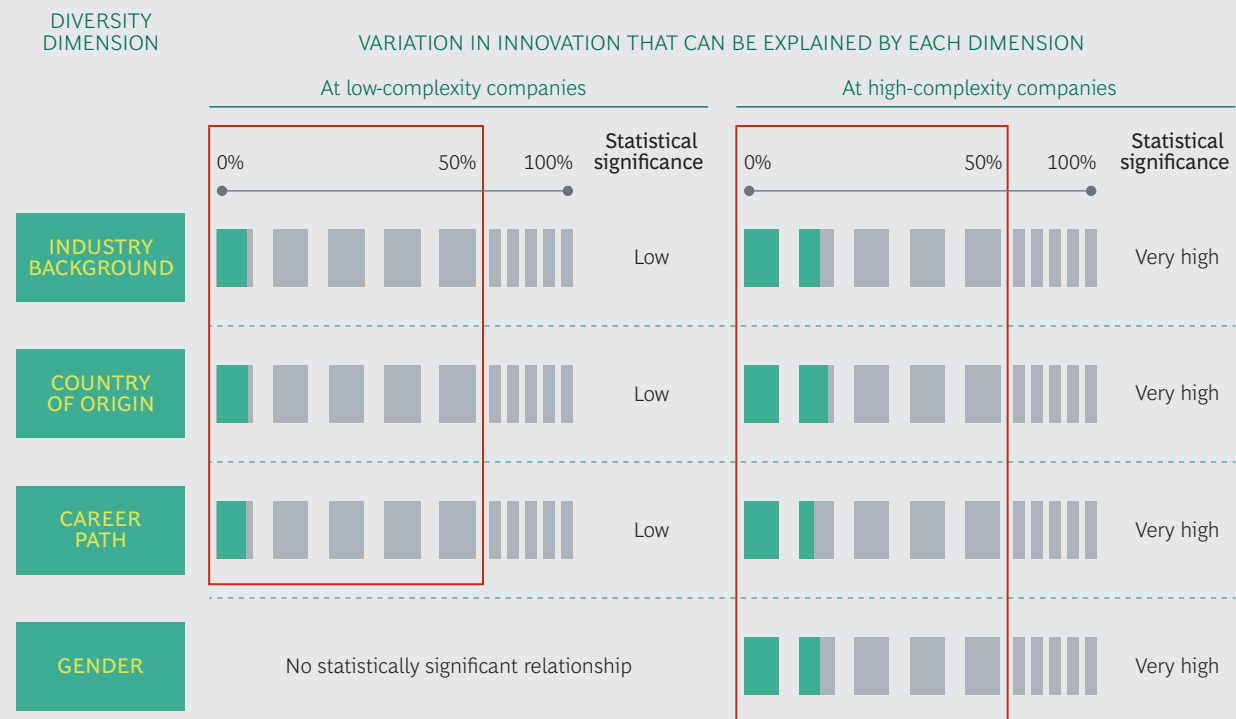
Complex Companies and Large Companies Get the Most Benefit

Diversity has an especially positive impact on complex companies—those with multiple product lines or that operate in multiple industry segments. In many ways, complexity nowadays is less a choice than a necessity: the number of risks companies face means they can't afford to be tied to just a single source of revenue. It also means that having a management team whose members all have the same background (even if the team's pedigree and skills are world-class) is less than optimal in terms of decision-making.

In short, the perfect management mix to enable innovation may not be the same at every complex company, but there does need to be a mix.

In complex companies, there is a significant positive relationship between innovation and four dimensions of diversity: industry background, country of origin, career path, and gender. The magnitude of the relationship is similar across these four dimensions, explaining up to 18% of the variation in innovation. In low complexity companies, the relationship only exists for the first three dimensions—and never explains more than 9% of the variation in innovation. (See Exhibit 3.)

EXHIBIT 3 | In Complex Companies, Relationship Is Positive and Highly Significant



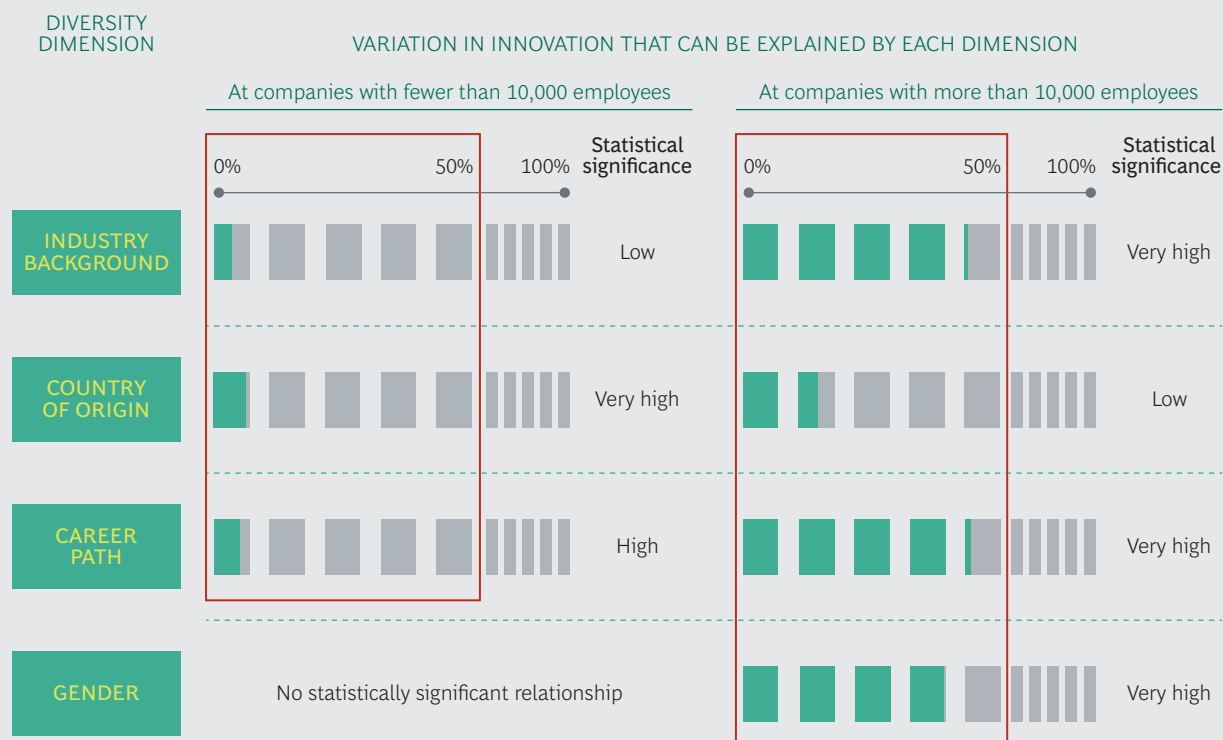
Source: 2016 survey of German, Swiss, and Austrian companies by BCG and Technical University of Munich.

Notes: In the exhibit, the determination coefficient, R^2 , expressed as a percentage, is depicted. The percentages are calculated independently and can't be added. See Appendix for explanation of statistical analysis and terms. "Low complexity" refers to companies that operate in no more than one main industry sector and one secondary sector. High complexity companies get revenues from more than two sectors. The sample of low complexity companies varies from 34 to 37. There are 48 companies in the high complexity sample.

Successful complex companies seem to recognize the value of diversity in their management ranks. Take the German conglomerate Siemens which has more than 350,000 employees, operations on every continent, and nine divisions in areas including power and gas, renewable energy, and building technologies. Roughly a decade ago, Siemens set an objective of becoming significantly more diverse at a management level. The company has made considerable progress toward that goal. Its 20-person supervisory board now includes 13 people who don't currently work at Siemens or who came to it after starting their careers elsewhere, people with at least ten different educational backgrounds, six women, and four people born outside of Germany. Siemens' supervisory board also reflects a range of ages, with the youngest board member being 44 and the oldest 74.

In addition to complexity, organizational size is relevant to understanding the impact of management diversity. There's a sort of slipstream effect at big companies, probably because of the resources that they can marshal to make diversity pay off for them, in areas including innovation. In companies with more than 10,000 employees, a larger amount of the variation in their ability to innovate can be explained by management diversity than at companies with fewer than 10,000 employees. For instance, up to 41% of big companies' variation in innovation can be explained by the diversity of industry backgrounds or career paths of their managers. (See Exhibit 4.)

EXHIBIT 4 | Big Companies Get a Bigger Innovation Boost From Diversity



Source: 2016 survey of German, Swiss, and Austrian companies by BCG and Technical University of Munich.

Notes: In the exhibit, the determination coefficient, R^2 , expressed as percentage, is depicted. The percentages are calculated independently and can't be added. See Appendix for explanation of statistical analysis and terms. In the smaller-company categories, the sample size is between 69 and 75. In the larger-company categories, the sample size is 22 to 23.

The Hot Button of Gender Diversity

Gender is the area of diversity that has undoubtedly gotten the most attention in recent years. Some countries now mandate a minimum representation of women on corporate boards, including Iceland and France (40%), Norway (40% or more, depending on the size of the board), Italy (33%), and Germany (30%). These laws about board diversity weren't written with the express purpose of increasing innovation—their agendas are broader. But if increasing innovation had been their sole purpose, the laws would still have made sense. (See sidebar, "Impact of Women's Participation on National Innovation.")

The companies in our study that have the most gender diversity (with 8 out of every 20 managers being female) have gotten about 34% of their revenues from innovative products and services in the last three years, the study shows. (See Exhibit 5.) That compares with innovation revenues of 25% for companies that have the least gender diversity (with only 1 in 20 managers being female). The evidence also suggests that having a high percentage of female managers is positively correlated with so-called disruptive innovation, a type of innovation in which the new product, service, or business model comes to be seen as a full replacement for what existed before (like what Netflix has done to DVD rental stores and what Amazon is doing to retail.)

IMPACT OF WOMEN'S PARTICIPATION ON NATIONAL INNOVATION

Every year, Cornell University, INSEAD, and the World Intellectual Property Organization (the entity that awards patents) rank countries by how innovative they are. We looked at the 2015 ranking in relation to women's labor force participation to get a sense of how women's participation can affect innovation.

It turns out that some of the most innovative countries also have extremely high levels of female labor-force participation. This includes Switzerland (76% female workforce participation rate, No. 1 among all countries in the 2015 Global Innovation Index), Sweden (74%, No. 2), and Iceland (82%, No. 13).

In light of the positive effect that women's participation has on national innovation, countries may want to know how they can get a higher

percentage of women into the workforce. The political framework of a country (including tax policy and laws relating to anti-discrimination and pay equality) can have a big impact on women's willingness to work, our study shows. So can structural factors like the availability of childcare, and societal values such as support for women who are career-oriented.

Less important are marketing-oriented initiatives, including attempts to celebrate individual companies' diversity initiatives at the national level. While they may shine a light on the practices of leading companies, in most countries such awards don't seem to have any real bearing on women's workforce participation or on other substantive issues such as women's ability to receive fair pay or advance into management.

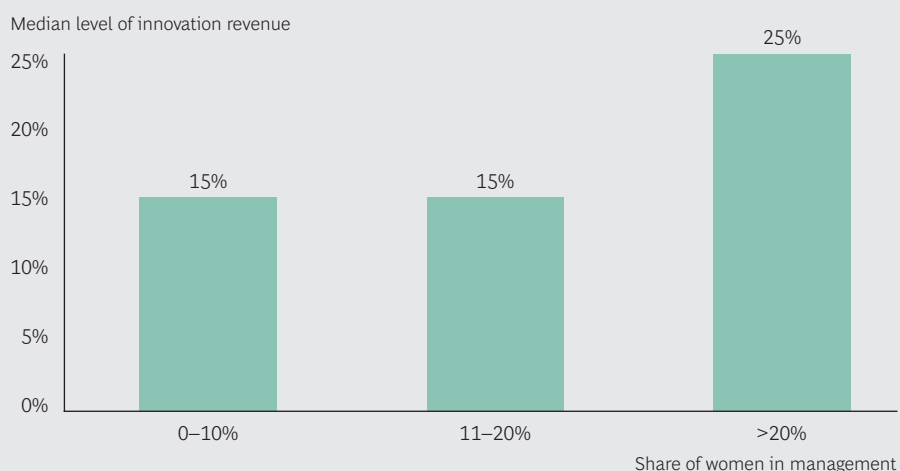
EXHIBIT 5 | Innovation Increases as Proportion of Female Managers Rises



Source: 2016 survey of 171 German, Swiss, and Austrian companies by BCG and Technical University of Munich.
Note: "Innovation revenue" reflects the percentage of revenue from new products or services in the last three years.

One thing that doesn't seem to have any effect on innovation is the overall percentage of a company's workforce represented by women. Only when women occupy management positions does the innovation premium become evident. And it can't be a small number of women; innovation revenues only start to kick in when at least 20% of managers at a company are female, our survey shows. (See Exhibit 6.) Below that threshold, organizations remain male-dominated and it's harder to capture the innovation potential of gender diversity.

EXHIBIT 6 | Innovation Jumps Once Female Managers Rise Above 20%



Source: 2016 BCG survey.

Notes: "Innovation revenue" reflects the percentage of revenue from new products or services in the last three years. In this analysis, the sample size in the three categories varies from 28 to 34.

The survey also highlights at least one sizable gap in companies' efforts to put women in management positions and keep them there. The gap has to do with senior leaders' commitment to gender diversity. The importance of this is obvious: even small gestures from senior leaders can have considerable influence. "You are very dependent on leaders' behavior; you have leaders who pay attention to inclusion and leaders who don't," a top HR executive who participated in the survey said in a follow-up interview. While approximately two-thirds of all companies say visible commitment on the part of senior leaders is most effective in promoting gender diversity at a management level, only half say such commitment is evident at their companies.

Another area where companies have some work to do is in diversity relating to age. The results of the survey (with greater age diversity being linked to *lower* innovation) suggest that companies haven't learned how to leverage different levels of seniority on their staffs. Some companies are making strides, however. The German software company SAP has put "cross-generational intelligence" on its diversity and inclusion agenda, recognizing that, for the first time in its history, it has five generations working together, with different expectations for how they want to be led, how they want to work, the kinds of flexibility that are important to them, and what constitutes satisfactory compensation. The company is trying to accommodate these different needs in order to ensure that intergenerational collaboration works and accrues to SAP's benefit.

LGBT: JUST STARTING TO APPEAR ON THE RADAR

Most of our survey respondents (79%) say they don't know the sexual orientation of the people who hold management positions at their companies. Most also don't have any initiatives in place to help lesbian, gay, bisexual, or transgender (LGBT) workers attain such positions.

Those that do have such initiatives, however (usually policies that existed for other minorities, and that have been updated to include LGBT work-

ers) tend to have a higher focus on innovation.* This may be because such companies are more open to new ideas and new ways of thinking, and have a generally more expansive world view.

NOTE

*"Innovation focus" is derived from respondents' answers to a set of qualitative questions. It is different from innovation revenue, which is a quantitative measure.

Besides encouraging top managers to be more inclusive, companies can also use cultural and structural changes to attract and retain a diverse workforce. A number of the companies in our study already experiment with different structures. For instance, IXDS, a German design and innovation agency, has used part-time (80%) work contracts since its formation in 2006. The non-traditional schedule makes IXDS attractive to an inherently more diverse group of professionals, such as those who have interests outside of their day job (including research, teaching, and start-up work). At the same time, this flexibility positions IXDS as an accommodating employer at many phases of employees' lives. The resulting diverse workforce has a creative strength that IXDS's clients appreciate when they are trying to solve digital and organizational transformation challenges.

Five Environmental Factors that Amplify Diversity's Impact

Our study provides clear evidence that having a diverse management team is a valuable asset when it comes to innovation. But as with any valuable asset, it needs to be developed to reach its potential.

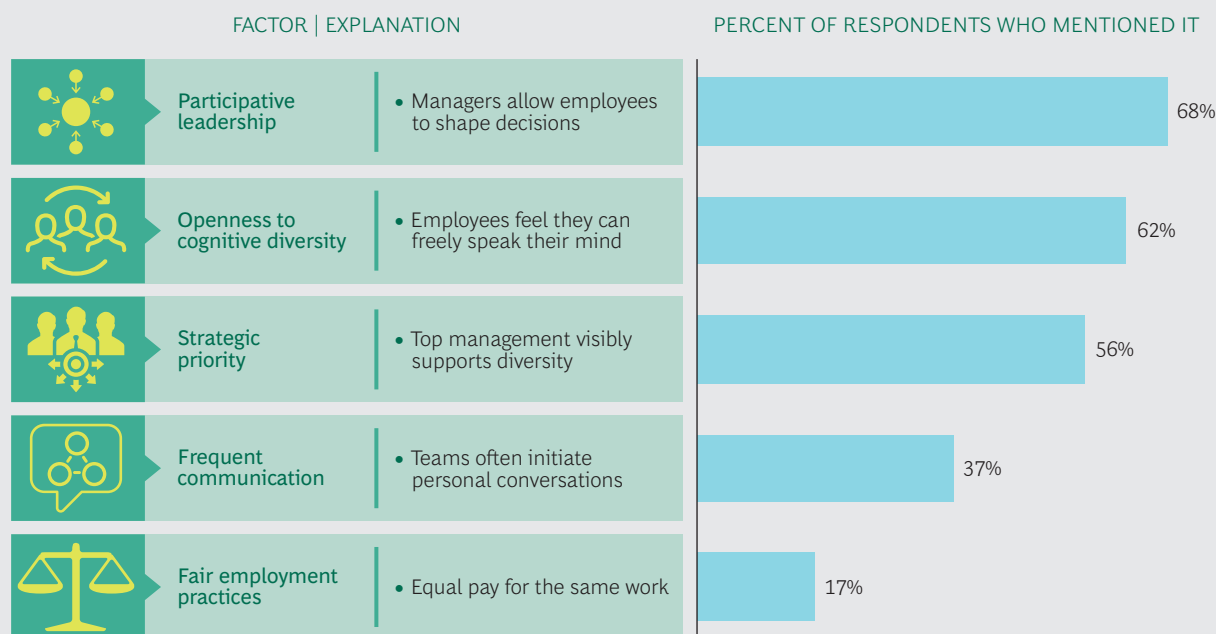
Diversity has the greatest impact on innovation at companies that reinforce diversity through five environmental conditions.

- **Participative leadership behavior.** When managers genuinely listen to employees' suggestions and make use of them, diversity's benefits multiply. Swarovski, the Austrian manufacturer of cut crystal, uses what it calls "nudges" to remind executives that their meetings will be more productive if attendees actively participate instead of deferring to those who are more senior. The nudges take different forms, including posters in hallways and whiteboard reminders in conference rooms.
- **Openness to cognitive diversity.** This describes a dynamic in which employees feel free to speak their minds. The German cable company Unitymedia, which

participated in our survey, supports openness to cognitive diversity by encouraging opposing ideas and “constructive conflict,” both in discussions between peers and in discussions between employees and managers. A culture where change starts with a question, not a decision, “allows us to capture the potential of diversity,” an HR executive at Unitymedia said in a follow-up interview.

- **Strategic priority.** At some companies, diversity has considerable top management support. An example is France’s Airbus Group, whose “Balance for Business” initiative (aimed at increasing gender diversity at the largely male aeronautics company) has been endorsed by the top executive team, including the company’s CEO.
- **Frequent interpersonal communication.** When companies find ways to facilitate dialogue between people with different backgrounds, it can provide a creative spark and bolster innovation. Google does this through its Google cafes, which allow for spontaneous conversations between people who may have different education, work, and national backgrounds, and vastly different expertise.
- **Equitable employment practices.** There’s nothing new or complicated about this concept, but it is still not universally implemented. Some companies are further ahead than others, however. The US apparel company Gap Inc. has won praise for eliminating the pay differences between its female and male employees. The apparel company’s commitment to gender diversity is also evident in the number of women on its senior leadership team and in the fact that a majority of its store managers are female.

EXHIBIT 7 | Participative Leadership Is Key in Diversity-Led Innovation



Source: 2016 survey of 171 German, Swiss, and Austrian companies by BCG and Technical University of Munich.

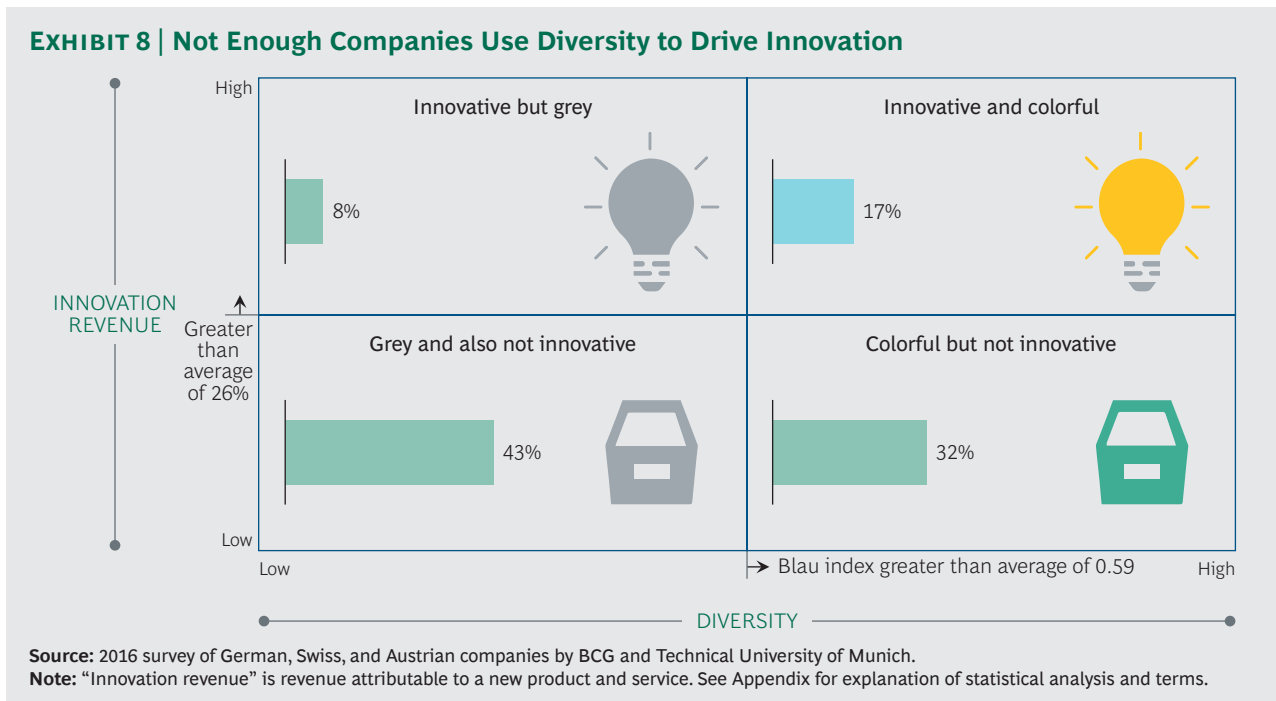
For many companies, a crucial tactical question (over and above the impact of environmental conditions as a whole) is the influence of each individual environmental condition on innovation. Of the five environmental conditions, participative leadership behavior appears to be the most important. Sixty-eight percent of companies say it is a prerequisite to diversity-led innovation. The next most common prerequisite to innovation is openness to cognitive diversity, cited by 62% of companies. (See Exhibit 7.) The importance of these two conditions suggests that companies will have to look beyond formal initiatives and embrace “softer” tactics if they want to reap diversity’s innovation benefit.

On average, companies that ensure the existence of favorable environmental conditions get 33% of their revenues from innovative products and services; companies that don’t, get less than a quarter (24%). There seem to be other benefits too: companies that create favorable environmental conditions have 17% EBIT margins and 3.9% revenue growth; those that don’t have 13% EBIT margins and 3.4% revenue growth.

Strong environmental conditions are particularly helpful in amplifying the innovation impact of three types of diversity: country of origin, career path, and industry background. With strong enabling conditions, these three areas of diversity positively impact innovation. By contrast, when environmental conditions are weak, these types of diversity don’t lead to more innovation.

Creating More Diversity-Led Innovation: A Five-Step Process

Our analysis shows that only 17% of all companies are above average in both diversity and innovation. Moreover, approximately one-third of companies are above average in diversity but lag in innovation. (See Exhibit 8.) Clearly, there is room for improvement.



In order to get more diversity-led innovation, companies should follow a five-step process.

Step 1: Analyzing the status quo. The goal of this initial step is to understand the status quo for all three dimensions: innovation, diversity, and enabling conditions. For instance, a company might come out of Step 1 realizing it has below average innovation revenues (compared with others in its industry), diversity levels that are slightly above average overall (but below the average in gender diversity), and weak environmental enablers (including management behavior that's not particularly participative and ineffective communication mechanisms). Being clear about these starting points is an important part of developing a sustainable target state and roadmap for implementation.

Innovation is the first variable to look at, especially the company's performance as an innovator (as reflected in revenues from new products and services) and anything that may be hindering that. Through this analysis, companies may find they have innovation-related deficiencies, such as product designs that appeal to too small a segment of the market or products that fail altogether, at rates well in excess of the industry average. Diversity comes next, as the company tries to pinpoint the amount, and type, of management diversity it has in different departments. One department that is especially important to look at is R&D, because of the role it plays in innovation and the contributions that diverse viewpoints can bring to the development of new products and services. (Too little management diversity in R&D can lead to blind spots in the product portfolio.) Finally, the company needs to look at its environmental conditions. In doing so, a company might come to understand, for instance, that it is too hierarchical, not inclusive enough in its decision-making, or is inadvertently sending the message that only certain people's opinions count.

Step 2: Defining the target. This is the most important step. It involves looking at what's happening in the market and at what's happening with competitors, in order to get a sense of whether one is behind, ahead, or at parity on innovation.

This outward-facing analysis (along with the company's own sense of which areas of its business best lend themselves to innovation) can help the company identify the organizational changes it should make, the partnerships it should pursue, and the incentive programs it should put in place. The innovation assessment could also help the company figure out where it could benefit from a more diverse set of managers. For example, a company might decide it needs more women running market research, more cross-industry managers overseeing commercial development, and more outsiders supervising manufacturing and production. That in turn could help the company determine which aspects of its environment need to change—from the flexibility of its working hours to managers' listening skills.

IT tools could help with these efforts by reinforcing the ability of leaders to be participative in their decision-making, facilitating employee-to-employee communications, or supporting other key environmental conditions. (Google, for instance, uses a homegrown "moderator" tool in company-wide meetings to determine which questions to address based on employee "votes.") It's in this step that the benefits of new IT tools should be identified and their functionality spec'd out.

Companies must look at how environmental conditions influence innovation.

Finally, the new targets need to be reinforced by key performance indicators (KPIs). For a company looking to increase its level of innovation, a key performance indicator might be doubling the percentage of customers who upgrade to follow-on products. There could be diversity KPIs too, such as being top-quartile in fair employment practices, in order to attract and retain top talent.

Step 3: Identifying the gaps. In this next step, a company needs to identify what it is missing to get from its current state to a target state of innovation, diversity, and enablers.

Comparing the status quo and the target can help with this. For example, if a company has a greater-than-average number of patent grants but still lags in innovation revenue, that suggests that its commercialization skills are deficient. Or a company may be losing ground in a fast-growing foreign market, and conclude it doesn't have enough local managers in place.

In most cases, there won't be two gaps—there will be dozens or hundreds. The trick is figuring out which gaps are most important and making them a priority.

Step 4: Setting a roadmap for action. Here, the company sets a plan for closing the gaps based on the priorities it has identified. The plan will inevitably be complex—with multiple parts, interdependent milestones, and clear timelines. The quality of the implementation is key. Pilot programs can be very helpful, especially in areas where the plan is likely to encounter resistance. These pilots give the organization a chance to learn and get its footing in a context that is low risk and high return.

Step 5: Institutionalizing the process. An important opportunity is lost when companies treat the steps as a one-time activity. A far bigger innovation benefit will come if the process is ongoing and becomes a permanent part of company operations, with target- and goal-setting evolving in response to new tools, new insights, and new market realities. Moreover, diversity-led innovation can't just be a pet project of the HR department. The whole company has a role to play in making it happen and capturing the value.

The five steps should become a permanent part of a company's operations.

The Path Forward

When new statistics come out in business, people often get caught up in the details. The temptation is to look for evidence that validates a company's current approach or (depending on where one sits in the organization) casts doubt on it. Diversity and innovation are complex areas of corporate activity, and we would expect that very few executives looking at this new data will say that their companies do everything right in either area—or everything wrong.

To us, the study's most important finding is also its highest-level one: management diversity boosts innovation. That one fact will allow the discussion to move from the realm of "whether" to "what now?", which is when progress begins.

APPENDIX

Here is an explanation of the statistics we used in our exhibits.

Exhibit 1

The Blau index in this chart is an aggregate based on six areas of diversity. The index ranges from zero (no diversity) to maximum diversity of 1.0.

In this exhibit, the Pearson's $r = .253$ and the degree of statistical significance is high ($p < .05$). Statistical significance indicates how likely it is that the same relationships would be observed in any large data set. The $p < .05$ here means there is a 95% chance that the same relationship would be observed in any large data set.

Exhibit 2

In this exhibit, "very high" statistical significance means a p value $< .01$. "High" statistical significance means a p value $< .05$.

Exhibit 3 and Exhibit 4

Companies are seen as "low complexity" if they have a maximum of one primary Standard Industrial Classification code and one secondary SIC code. Companies with more than two SIC codes are seen as "high complexity."

In Exhibit 3 and Exhibit 4, "very high" statistical significance means a p value $< .01$. "High" statistical significance is a p value $< .05$, and "low" statistical significance is a p value $< .1$.

Exhibit 3 and Exhibit 4 show the coefficient of determination, R^2 . The percentage indicates the variation in innovation that can be explained by diversity. So for instance, in Exhibit 3, up to 16% of the variation in high complexity companies' innovation performance can be explained by the diversity of industry backgrounds in their management ranks. For low complexity companies, industry background diversity only explains up to 8% of the variation in their innovation revenues.

Here are the rest of the R^2 -derived percentages for low and high complexity companies:

- **Country of origin:** 9% (low complexity), 18% (high complexity)
- **Career path:** 8% (low complexity), 14% (high complexity)
- **Gender:** 16% (at high complexity companies – the percentage associated with low complexity companies isn't statistically significant)

Here are the R^2 -derived percentages for smaller and larger companies (below and above 10,000 employees) in Exhibit 4:

- **Industry background:** 5% (at smaller companies), 41% (at larger companies)
- **Country of origin:** 9% (smaller companies), 15% (larger companies)
- **Career path:** 7% (smaller companies), 41% (larger companies)
- **Gender:** 40% at larger companies – the percentage associated with smaller companies isn't statistically significant

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If your company is interested in participating in future studies on diversity, please contact one of the authors.

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