

Creativity and Innovation

- Creativity and innovation are becoming more important as global competition heats up and technology takes over routine jobs.
- HR plays a central role in promoting innovation through building a creative environment where new ideas are given a chance to grow.
- Employer practices that encourage creativity and innovation may also help boost employee engagement.

As technology absorbs many jobs once done by people, creativity and innovative thinking are increasingly thought of as an important source of not only competitive advantage but also future jobs. Along with automation, the offshoring of routine work is leading many business forecasters to predict that the majority of jobs remaining in developed countries like the United States will emphasize a new set of skills. Though the ability to think logically and analytically will remain important, they predict that organizations will also place greater importance on “right-brained” capabilities such as big-picture thinking and the ability to bring together disparate ideas to create new synergies, products and services.

While the management practices that support creative and innovative thinking may be less straightforward than managing task-oriented, routine jobs, their use may ultimately turn out to be more rewarding for managers and human resource professionals not only because these practices highlight the importance of effective human capital management as a driver of value, but also because constructing an environment where creative skills and abilities thrive may lead to greater employee engagement, motivation and success.

The environment for innovation grows more competitive

Although the words *innovation* and *creativity* are often used interchangeably, most researchers who specialize in the study of creativity and innovation treat them as separate issues. Many define creativity as an ability to produce original, inventive and valuable work, ideas or concepts, and innovation as the process of bringing these ideas into use. So whereas creativity may result in new approaches to solving problems, innovation is the

process of turning these ideas into products and services that will actually be used. Organizations that want to be innovative must therefore build an environment where employees can be creative—but this is not enough to lead to innovation. In addition to giving structure and purpose to creative endeavors, in order to innovate, organizations must also establish processes that put creative solutions to practical use.

While global competition is emphasizing the importance of creative work as a buffer against job loss due to offshoring, competition within the creative economy itself is also heating up. One of the consequences of greater investment in emerging markets through the use of offshoring is a new generation of entrepreneurs and technical innovators, particularly in Asia, developing as a result of close proximity to major overseas investors.

When the first significant waves of offshoring to emerging Asian economies such as India and China began, business leaders focused on the advantages of large pools of low-cost labor and, particularly in the case of China, access to huge consumer markets. However, some business forecasters predict an “innovation blowback” effect as a result of these investments. The idea is that as new businesses develop around the hub of foreign operations and investments in Beijing and Bengalooru (formerly known as Bangalore), the products and services they produce may eventually represent even more serious competition. Though currently there are strong regional differences in spending on research and development (R&D)—with companies in India and China spending only 1.0% of revenue on R&D compared with 4.9% for North America—worldwide investment in innovation is expanding quickly, and much of this expansion is through

new partnerships and R&D centers in markets far from North American headquarters.

Along with multinational corporate investment, workforce skills and education are also often cited as major factors that are creating more intense global competition, especially in relation to research and development. Because new technologies often originate in university labs, large universities that specialize in science and engineering are often centers of innovation. While the U.S. higher education system continues to remain highly competitive, many business leaders are concerned about primary and secondary education, especially in regards to preparing students for college. High-tech business leaders such as Bill Gates have long expressed their concern at the comparatively lower numbers of U.S. students in the science and engineering fields (see Table 1). Though this trend has mainly been viewed in the context of the future workforce in these fields, it may also influence the growth of the university-based “knowl-

Table 1 | Global Skilled Labor Young Professionals in Thousands (2003)

	Engineering	Finance/Accounting
China	1,589	945
United States	667	1,615
India	528	2,273
Russia	486	1,082
Japan	317	702
Philippines	290	423
Brazil	158	355
Britain	150	165
Germany	128	137

Source: Council on Competitiveness, using data from the McKinsey Global Institute; Tom Brown. From Trumbull, M. (2006, November 14). Will the US be competitive in 10 years? Christian Science Monitor.

edge hubs” that have traditionally acted as breeding grounds for invention and innovation.

In addition to more innovation—and thus competition—coming from emerging markets, there have been reports that venture capital firms in the United States are having a harder time selling their companies, leading some business analysts to question if we are heading into an “innovation drought.” In this environment, smaller companies that are pushing new kinds of technologies, products and services are less likely to go public. Instead, many are being bought out by larger companies. This may have several implications. First, smaller companies may be more quickly crowded out of markets, leaving less time for new ideas to develop before being given up on. Secondly, many of these ideas for products and services may be absorbed into larger companies, which may be less quick to react to new opportunities or less invested in the success of innovations developed in the smaller companies they have acquired. Though there are no guarantees that the ideas generated through acquired smaller firms would have taken off, many venture capitalists worry that these kinds of acquisitions will result in the loss of countless innovations as smaller projects and key talent are shed.

Even with these problems, startups that have been bought out increasingly consider themselves lucky. The mergers and acquisitions market for startups recently slowed, and according to the National Venture Capital Association, the rate of startups going public has also been low for five out of the last six years. Some tech leaders are concerned that more conservative investments in technology will mean that most companies will be focusing on adding new features to existing technologies rather than creating radi-

cally different technologies that will act as gateways to entirely new fields of technological innovation (see Figure 1).

HR and the “return on innovation”

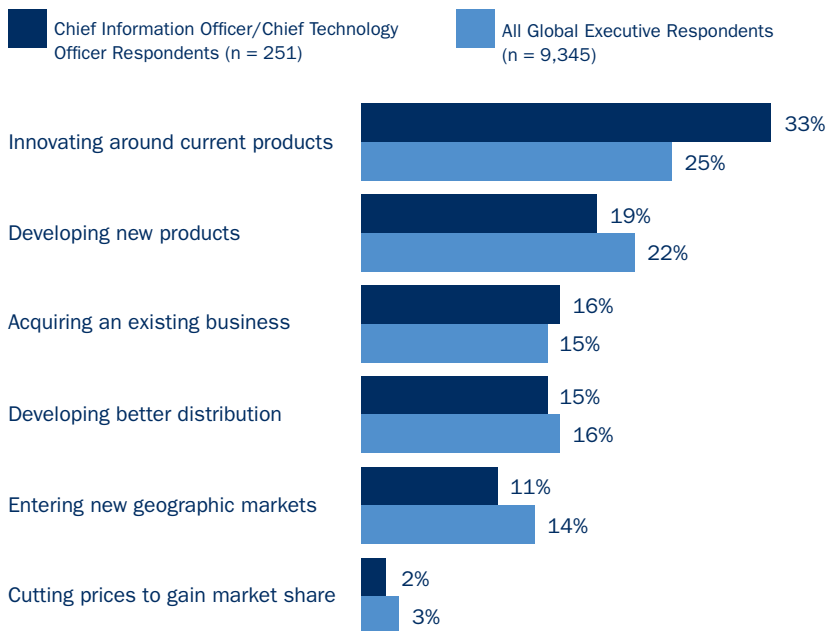
Given the climate of global competitiveness and current constraints on investment in innovation, organizational practices that support creative thinking and new ideas are more important than ever. For one thing, studies have shown that lavish R&D budgets do not necessarily guarantee higher returns and better performance. A Booz Allen Hamilton study of the world’s biggest R&D spenders indicates that nonmonetary factors are the most important drivers of a company’s “return on innovation” and that R&D spending actually has no correlation with profitability growth, enterprise profitability, market capitalization growth and total shareholder return. So if monetary

investment isn’t the main driver behind return on investment in research and development, what are the main drivers? And how is HR involved in supporting these drivers? Two of the most critical factors in the study were the quality of the organization’s innovation process and the organization’s ability to build effective collaborative teams. HR, therefore, makes a major contribution to a more innovative business environment through human resource management practices that enhance individual creativity and encourage successful team collaboration.

In addition to a better understanding of *current* drivers of innovation, *future* skills needs are also emphasizing the financial return on an environment that supports creativity and innovation. In a recent collaborative report from the Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills

Figure 1 | Innovating for Growth

Most important action for growth over next five years



Note: All data weighted by GDP of constituent countries to adjust for differences in response rates from various regions. Source: What global executives think about technology and innovation. (2005). McKinsey on IT: Innovations in IT management, 5.

and the Society for Human Resource Management, corporate leaders were surveyed on the emerging content and skills areas they considered “most critical” over the next five years. Creativity/innovation was ranked fourth, and the other skills areas in the top five—critical thinking/problem-solving, information technology application, teamwork/collaboration and diversity—also relate to innovation and creativity in some way, either as tools that enhance creativity and innovation or as the environment that encourages them (see Table 2). The importance of creativity/innovation, according to corporate leaders, rose in relation to the educational attainment levels of predicted future workers, meaning that employers rated creativity/innovation skills as far more important for college graduates than for high school graduates. However, when asked to rate entrants on their creativity and innovation skills, only 21.5% of employers gave incoming college graduates a rating of “excellent.” The ability to think creatively has therefore become an important issue in the debate on workforce readiness and future skills requirements. But even as attempts are made to improve the creative skills of today’s students in preparation for the future workplace, much of the work to be done to improve workforce creativity both now and in the future will fall to employers and HR professionals.

HR and the drivers of creativity and innovation

With nonmonetary factors so important to current levels of “return on innovation” and creativity and innovation considered such critical skills for future success by corporate leaders, HR clearly must consider strategies to improve the creative environment of the workforce both now and in the future.

In doing so, HR professionals will need to take into account a number of factors, including the best ways to measure creativity and innovation, team versus individual creativity, motivation, training for creativity, and the influence of broader demographic and societal trends on access to creative workers.

Measuring creativity

Measurement of creativity has been the subject of much study and debate, a great deal of which has been devoted to better understanding the creative potential of individuals. The development of creativity tests over the past few decades was driven by the aim of evaluating mental abilities that were not being measured by traditional intelligence tests. In fact, beyond a baseline of average intelligence, researchers have not found a strong correlation between scores in creativity tests and intelligence tests, which means that individuals with the highest scores on creativity tests do not necessarily have the highest scores in IQ tests. This led to the development of many different types of creativity tests,

and researchers continue to debate the accuracy and effectiveness of different approaches. In spite of the multiplicity of creativity tests, most of them generally focus on at least one of the following four areas:

- *Divergent thinking*, which is the ability to generate multiple ideas and possible solutions to a given problem.
- *Convergent thinking*, or the ability to correctly identify the single best solution to a problem.
- *Artistic assessment*, or the assessment of the creativity of artistic products created by an individual.
- *Self assessment*, which is based on the person’s own view of the level of creativity he or she possesses.

Depending on the requirements of the job, some organizations use creativity tests during the recruitment process as a way to identify candidates with the most creative potential. But though creativity tests can be helpful, they present several challenges. Choosing the appropriate tests for each specific organization and job role is difficult, given the large quantity of

Table 2 | Top 10 Knowledge and Skills Expected to Increase in Importance Over the Next Five Years

Rank	Basic Knowledge and Applied Skills	Percentage
1	Critical thinking/problem-solving	77.8%
2	Information technology application	77.4%
3	Teamwork/collaboration	74.2%
4	Creativity/innovation	73.6%
5	Diversity	67.1%
6	Leadership	66.9%
7	Oral communications	65.9%
8	Professionalism/work ethic	64.4%
9	Ethics/social responsibility	64.3%
10	Written communications	64.0%

Source: Casner-Lotto, J., & Barrington, L. (2006). *Are they really ready to work? Unites States: The Conference Board, Corporate Voices for Working Families, Partnership for 21st Century Skills and Society for Human Resource Management.*

measures. And even if job candidates or employees with high creative potential are identified, there is no guarantee that individual potential for creativity will lead to better performance down the road. Even more of a stretch is linking individual creative potential with overall rates of innovation at the organizational level. For this reason, although measuring individual creative potential is one approach to building a more creative workforce, organizations are increasingly looking for ways to assess the impact of the work environment on employee creativity.

Creativity and the work environment

Some of the leading researchers specializing in the study of creativity are challenging the assumption that individual creativity is solely a question of talent and are looking at how the environment influences creative outputs. The findings from these types of studies could have important implications for human resource management. For example, the importance of talent management as a cornerstone of strategic HR management has frequently emphasized the identification of highly talented individuals. As the measurement of creativity-supporting environments develops, a better understanding of the external factors that support creative success could lead to more efforts to improve the work environment for creativity. This will be even more important when attempting to gauge the link between creativity and innovation. Whereas individual creativity may lead to new ideas and even breakthroughs, innovation occurs only when the organization has the capacity to take these ideas further and to create new products and services that will be put to use. An innovative organization is one that is able to gather multiple threads of individual creativity

into coherent strategies that can be implemented—and this ability relies on effective HR management that goes above and beyond the imperative to nurture individual talent.

Given the emphasis on innovation as a significant source of organizational and even national competitiveness, more empirical research on organizational culture and creativity and innovation will be valuable. Leading scholars such as Teresa Amabile, Rosabeth Moss Kanter and the Minnesota Innovation Research Program have taken different approaches to studying and measuring the relationship between the work environment and creativity and innovation. In the late 1990s, Amabile et al. developed the KEYS instrument for assessing the organizational climate for creativity. KEYS includes scales that measure organizational supports for creativity as well as obstacles. In discussing this kind of business creativity, as opposed to artistic originality, Amabile emphasizes that the expression of highly original ideas is not enough—ideas must also be appropriate and useful. They must be actionable—that is, it must be possible to implement ideas. She argues that many business leaders hold a view of creativity that is too narrow and emphasizes only creative-thinking skills. Though creative thinking is important, Amabile contends that it is only one ingredient in the components that comprise business creativity—with expertise/knowledge and motivation as the other two necessary factors.

The six support scales identified in KEYS include the following:

1. Organizational encouragement.

The HR function is deeply involved in several aspects of this first support. Perhaps the most important contribution HR makes to organizational

encouragement is through recognition and rewards for creative work. Another is the communication of a shared vision of what the organization hopes to achieve and how each person's role contributes to that vision. Not only is organizational encouragement the support that HR may have the most influence on, it also encompasses the greatest number of business processes and could therefore be considered the support with the most overall influence on business creativity.

2. Supervisory encouragement.

This includes the setting of appropriate work goals and demonstrating how both individual and team contributions are valued. Many of the other supports depend to a great extent on managers' in-depth understanding of the strengths and skills of their teams, because only with this understanding can tasks be appropriately matched to teams and individuals. HR plays a crucial role in promoting supervisory encouragement through communicating organizational goals and values to managers and through line-manager training efforts.

3. Work group support.

One of the central factors in work group support is diversity, in particular diversity of skills and experiences—another factor that HR has a significant influence over through its recruitment and training strategies. The blending of different perspectives and backgrounds appears to lead to more combinations of ideas and insights—divergent thinking at the group level. But in addition to diversity of ideas, ease of communication—where people are open to new ideas and exhibit respect for and trust in one another—was also found to be of critical importance.

4. Sufficient resources.

Two of the most basic resources are time and money. Though tight deadlines may sometimes spur creativity, false or impossible deadlines appear to have a negative effect. Access to the basic materials, information and facilities required to do the work was found to be an important support, but only up to a minimum baseline. Beyond that level, more resources do not necessarily lead to superior outcomes. While more money does not always lead to better results, as illustrated in the findings on monetary investments and the R&D return on innovation, insufficient monetary investment appears to have a negative effect because under a certain threshold, employee creativity gets diverted into securing more resources and away from the task or project at hand.

5. Challenging work.

Matching individuals with assignments that give them a sense of having to work hard on important projects and tasks is one of the most effective ways that managers—and HR professionals—can stimulate creativity. A good match means that the project or task remains challenging but is not so difficult that the employee feels frustrated and overwhelmed. Though managers are mainly responsible for assigning tasks, it is HR's role to work with managers to match the right people to the right jobs, making this another support HR has a strong influence over.

6. Freedom.

While clearly stated goals and strategic and appropriate matching of individuals and teams to specific tasks are important components of organizational and supervisor support, research indicates that a

sense of individual control over how to approach a problem or task—that is, freedom over the process of work—is a foundation of creativity. Laying the groundwork for a sense of individual autonomy is another support that HR can powerfully influence. Specifically, HR is involved in setting policies that shape flexible working practices, especially in relation to time, such as compressed work weeks or flexible schedules, and work location, such as telecommuting policies and support.

Another support factor identified by researchers studying the impact of work environment on creativity and innovation is an integrative organizational structure, especially collaboration within and among teams. This is similar to the work group support in that team communication seems to be of central importance. The way organizations make decisions has also been found to be significant. Open communication flows about key decisions and power based on expertise rather than company position/hierarchy seem to be most important in organizations operating in volatile business environments such as the high-tech sector because they speed up the decision-making process.

If “challenging work” is one of the most important organizational supports of creativity, today's fast-changing business climate—not to mention the challenges of the 21st century in general—is likely to give rise to many creative achievements. The idea of innovation under challenges and constraints has recently become a focus for discussion in relation to broader business strategy and global trends. An example frequently given is how the need to shift away from nonrenewable energy resources to alternative energies is likely to spur the creation of profitable new green

technologies. The auto industry is often used to illustrate this point—automakers in countries with greater constraints on access to inexpensive gas are developing more fuel-efficient cars and profitable hybrid vehicles than those in the United States, where there are fewer constraints on gas prices. Another example frequently used is the potential of new consumer markets at the so-called “bottom of the pyramid,” that is, the world's billions of potential consumers who are living at the lowest income levels. In this case, price is the major constraint that calls upon businesses to innovate in order to create products and services that are affordable but scalable enough to be produced in very large quantities.

Barriers to creativity

Though challenges and constraints can lead to creative problem-solving, both quantitative and qualitative studies have identified other factors that are clear barriers to creativity. Research indicates that overly controlling, hierarchical structures have a detrimental effect on business creativity. Other barriers to business creativity tend to be the opposite of the behaviors in the KEYS supports identified above. Whereas organizational support and supervisory encouragement recognize and reward creativity, organizational barriers act to punish or ignore creative problem-solving or have inadequate methods of capturing individual creativity and using it for innovative purposes. Insufficient resources or the poor utilization of existing resources also act as barriers to creativity. Frequently, the most underutilized resources are employee skills and expertise. Yet, studies of highly productive and creative achievers found that one of the most important qualities they share is the in-depth knowledge and expertise of their subject

matter, developed through a combination of years of study and practical experience. Investment in employee expertise through training and the opportunity for learning at work is therefore essential.

Some of the most harmful barriers to employee creativity are those that pose a danger to employee motivation and engagement. But because business creativity is so reliant on motivation, organizations that are able to build a culture of creativity and innovation are also likely to strengthen employee motivation and engagement at the same time. Amabile identifies two forms of motivation: extrinsic and intrinsic. Organizations obviously have much more control over external, or extrinsic, motivators such as recognition and rewards. However, research demonstrates that intrinsic motivation, such as passion or intense interest in a subject or task, tends to have a much greater effect on creativity. While intrinsic motivation may seem more difficult to influence than external drivers, HR once again plays a central role in encouraging this important driver of creativity. By clearly identifying the content and purpose of each job role and finding the right people to do these jobs, HR improves the odds that individual employees will be matched up with the kinds of roles that tap into their intrinsic motivation. And by working with line managers to communicate the strategic goals of the organization, HR helps ensure that managers do the optimal job of assigning the right tasks to the right individuals and work teams.

The influence of demographics and society on the creative environment

Beyond the individual and organizational level, some academics are

looking at creativity from the societal level. The work of Richard Florida on the “creative class” is perhaps the most well-known. According to Florida, because the creative sector—that is, the proportion of the economy made up of individuals doing highly creative work—has grown exponentially over the course of the 20th century, countries with a robust creative sector are most likely to perform well economically. He estimates that in 1900 approximately 10% of the U.S. workforce was working in creative occupations and that this number has grown to be about 30% today. In addition to the growth in the number of individuals working in creative occupations, Florida argues that the creative sector is also now responsible for the most new wealth generation when compared to the manufacturing and service sectors.

The wealth-generating potential of the creative class has led many cities and regions to consider ways to attract and support creative workers, particularly young professionals. Cities that are centers of higher education are considered to have a major advantage because they draw in young people as students, many of whom eventually remain as workers. Not only do high concentrations of colleges and universities lead to a more well-educated population, but as mentioned previously, they also create the kinds of knowledge hubs that lead to the expansion of new entrepreneurial activities based on the innovations and professional connections developed through university-based research and other activities. These personal and face-to-face connections continue to matter even in a world of high-speed communication, as frequently pointed out in places like Silicon Valley, where the “20-minute rule” is still said to guide

many venture capitalists to only invest in startups that are within a 20-minute drive from the venture capital firm’s own offices.

The factors Florida identifies as attracting creative workers at the urban or regional level reflect many of the factors identified by Amabile and other researchers as supportive of creativity at the organizational level. Diversity is a good example. At the organizational level, diversity within work groups appears to lead to more successful creative outcomes. Likewise, more diverse regions or urban locales appear to be associated with higher levels of creative workers. In addition, ease of communication and high levels of trust and respect between team members were found to be strong supports of creativity at the organizational level. This notion is similarly reflected in Florida’s assertion that more inclusive and tolerant societies are more likely to both attract members of the creative class and build creativity from within the existing local population.

Some researchers of creativity are also beginning to study the influence of broader cultural values on creativity. Studies looking at whether a more individualistic culture is more supportive of creativity indicate that at least in a group setting, a more individualistic culture may support more creative

Table 3 | The Global Creativity Index Top 10 Countries

1. Sweden	6. Denmark
2. Japan	7. Iceland
3. Finland	8. Netherlands
4. USA	9. Norway
5. Switzerland	10. Germany

Source: Florida, R. (2005). *The flight of the creative class*. New York, NY: HarperCollins.

problem-solving behaviors. But just as the success of Japanese businesses in the 1980s led many Western business leaders, consultants and authors to study the more collective approach to problem-solving associated with Asian business practices, an interest in the cultural factors that influence Asian business practices, particularly in China, could reemerge as these economies rapidly expand.

Some of the theories on the role of society in relation to the creative workforce have proven to be somewhat controversial, but the ideas raised show how far the debate and research on creativity has moved from its beginnings as the study of individuals to the study of creative teams and organizations and the current debate on which countries have the highest creativity rankings (see Table 3).

Conclusion

The movement from the image of creativity as the province of only a handful of special, talented people to the idea that groups, organizations and even

entire societies can influence the creativity of individuals reflects the growing importance of creativity as a driver of innovation and economic success. What may be less recognized is the central role that human resource management and HR professionals have

in encouraging a creative environment that reaches across organizations through rewards, recognition, management practices and the communication of organizational values that respect and support the unique skills and creative potential of every individual. **WV**

Workplace Visions explores developments in society, economics, science and technology, politics and government, and the law to stimulate thought and discussion on new issues and trends affecting the human resource profession. Material for the newsletter is gathered through contacting experts in the field and conducting extensive literature reviews.

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Resources

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