All Over the Map

What the world **can teach us** about innovation efforts

by Peter Merrill

OVER THE YEARS, the term "quality" has acquired definitions that range from fulfilling needs to delighting the customer. But lately it seems as though the primary focus of quality has become conformance to customer requirements. This focus on requirements and conformance derives from an agreement forged with customers and obscures the fact that upon arriving at that agreement, the customer probably had several needs that could not be met and were not included—either because the organization was not capable of meeting them or because the customer did not even think to request them.

In 50 Words Or Less

- As quality has evolved, it has become more about exceeding customer expectations than just meeting requirements.
- As a result, organizations are placing greater emphasis on innovation.
- By looking at countries from all parts of the globe, it's possible to discover the keys to being a truly innovative organization.

The innovator sees this as an opportunity, goes beyond customer requirements and finds ways to address unfulfilled needs, thus delighting customers beyond their expectations. This is accomplished by finding an offering that enables customers to carry out a task more easily, more quickly or more conveniently.

Take the stage

Innovation can be rewarding, and it's taking on greater importance worldwide. There's no better proof of this than the recent World Economic Forum (WEF) analysis of the innovative capability of countries from all parts of the globe.[1] But to understand that analysis, it's important to first walk through the innovation process, which has two phases:

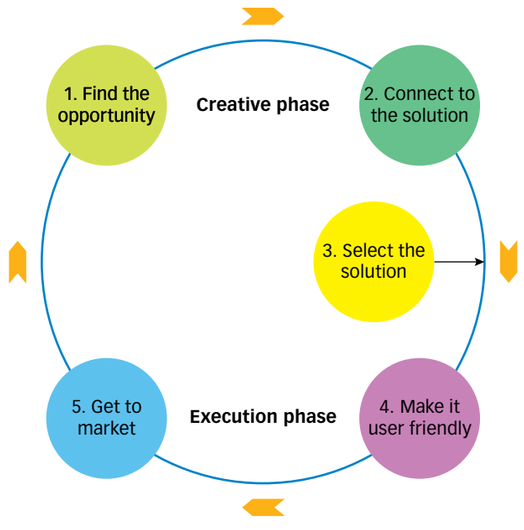
1. **An initial creative phase** in which you see opportunities and find creative solutions.
2. **An execution phase** in which you make the solution work and deliver it to the market.

When discussing innovation, people frequently ask how they can create an innovative culture. The reason this is so challenging is because there are, in fact, two cultures based on the two phases.

A culture is based on behavior, and the two phases elicit quite different behaviors. In the initial creative phase, you need an open network in which you explore, collaborate and experiment. In the execution phase, you need a closed network in which people move fast and work together closely. The two phases combine to form a five-stage process (see Figure 1).[2] The first two steps are the creative phase, the last two are the execution phase, and between them sits the tipping point:

1. **Identify market opportunities.** These are areas in which customer needs are not being fulfilled. This requires creative thinking because customers often do not recognize their own needs.
2. **Create conceptual solutions.** Again, this requires creative thinking, the ability to reject the status quo and the willingness to explore new environments and a world of risks.
3. **Narrow your focus.** A solution is chosen based on the time to execute, cost of the solution and risk attached to whether the solution will be sufficiently radical to separate from the competition. This is the tipping point in the process, after which you can move on to the execution phase.
4. **Create a working solution that is user friendly.** This is the stage at which the phrase "genius is 1% inspiration and 99% perspiration" is particularly relevant. Speed is essential and is achieved through good project management.
5. **Make sure you have an effective quality management system.** It's vital that the system embrace not just operations—whether production or service—but also the sales and marketing activities. Delivery of the working solution depends on it.

Stages of innovation / FIGURE 1



World view

Innovation has become a global practice, and by looking at nations from around the world, it's possible to see the secrets of successful innovation. While the WEF's analysis encompasses 139 countries, let's focus on the top 20, plus China and India.

A word of caution: The WEF focuses on technology as a source of innovation, but it's only part of the equation. It's possible to find solutions through technology (step two of the creative phase), but if you fail to identify the opportunity (step one), you're not in the game.

Also, the WEF analysis doesn't address creative thinking, which is a critical component in identifying opportunities. For example, countries such as France and Italy are highly creative—names such as Dior, Versace, Maserati and Ferrari spring to mind—and yet these countries score poorly.

Innovation scores / TABLE 1

Country	Rank	Population (millions)	Innovation factor	Capacity to obtain technology	Research institute ratings	Company R&D spending	University-industry collaboration	Government procurement influence	Availability of scientists and engineers	Patents/ million people
Japan	1	126	81	83	75	84	70	58	83	**279**
Nordic cluster	2-9	9 (average)	77	77	81	77	77	64	77	116
United States	4	313	79	75	**86**	77	**83**	**67**	81	**261**
Germany	5	81	78	**84**	84	81	74	60	68	109
Taiwan	7	23	75	67	74	71	74	67	78	**287**
United Kingdom	12	62	70	67	**86**	76	80	54	68	*51*
Canada	14	34	70	60	81	60	77	61	80	108
France	16	65	69	72	74	67	57	57	73	*50*
South Korea	18	48	69	61	68	67	67	58	70	181
China	31	1,336	59	60	61	58	65	64	65	1.2
India	42	1,189	56	51	67	51	52	50	74	0.6

Despite this oversight, the WEF analysis has some important lessons to offer, particularly when it comes to creating an innovative culture and organizing for innovation.

The top 10 players in the WEF league table include expected names such as Japan, Germany and the United States. Joining them is a group of less-expected European countries: Switzerland, Sweden, Finland, Netherlands and Denmark. I will call these the Nordic cluster. Taiwan is also in the top 10, while the United Kingdom, France and Canada fall in the top 20.

Table 1 shows the positions of those countries, plus China, India and South Korea. Looking at the column titled "innovation factor," it's clear that Germany, Japan, the Nordic cluster and the United States are the front-runners in innovation capacity. This innovation factor is broken down into seven components:

1. Overall capacity to obtain technology.
2. Quality of scientific research institutes.
3. Company spending on R&D.
4. Extent to which the research institutes collaborate with industry.
5. Government procurement influence.
6. Availability of scientists and engineers.
7. Patents per million people—the end game of the innovation process.

The scores for components 1 through 6 have been converted to percentages from the original WEF scoring, while component 7 is the actual number of patents per million people. Bolded numbers indicate the highest scores among the top 20 countries reviewed. Bolded, red numbers indicate the lowest scoring.

Breaking it down

Let's examine each country individually and see what lessons can be learned from their innovation performance. Bear in mind the comments in this section are, to a degree, subjective and based on personal experience in those countries. But the lessons are still a good learning opportunity for organizations.

Japan's strength seems to lie in company investment in R&D. Although the numbers don't show this, the banking industry works closely with industry. Culturally, there is a strong work ethic, and the society is densely populated and interconnected.

But Japan does not score as well as other countries on its research institutes and collaboration with industry. Scientists and engineers appear to be available, which suggests they are moving quickly into industry. Also note that Taiwan has a similar profile to Japan, with the exception of company R&D spending.

Germany is renowned for its engineering, and the

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survey shows strength in companies' R&D spending and research institutes. But the country appears to be weak in collaboration between industry and institutes, and suffers from a shortage of engineers. Like Japan, Germany is known for its strong work ethic, but it stands above the other countries in its overall ability to obtain new technology.

The United States scores highest in the caliber of its research institutes, where there has always been major investment, and also scores high in collaboration with industry. A third factor that drives innovation in the country is the government procurement influence, which nets it the highest score of all the countries reviewed. Defense spending as the largest item in the U.S. budget is a key factor.

The main weakness in the U.S. innovation portfolio is company R&D spending, especially when compared with Japan and Germany. Questions have been raised about the effectiveness of that spending in the United States. R&D needs to be better integrated with business activity and not be treated as a separate spin-off.

Another area in which the United States falls short of Japan and Germany is in the overall ability to obtain technology. A separate analysis by the Boston Consulting Group has shown that innovative activity is confined to certain areas of the United States—New England, the Pacific Northwest (Washington, Montana and Oregon) and California.[3] This illustrates the importance of effective networking for successful innovation.

For these reasons, the United States has good reason to be concerned about its decreasing lead in innovation. That concern was reflected in President Barack Obama's 2011 State of the Union Address, in which he said, "Innovation doesn't just change [American] lives; it's how we make our living."[4]

European achievement

Much of the success Europe has when it comes to innovation is due to the Nordic cluster. Personal experience reveals Finland as a good representative of that group.

Key businesses in the country openly share ideas and have forged strong links to universities. In addition, with a population of only 5 million, almost everyone in business speaks English, which enables the country to be a global player. This is also true of countries such as Sweden, Denmark and others in the region, which come together to form this Nordic cluster.

Moving on to the countries ranked between 10th and 20th, the United Kingdom's 12th-place standing is somewhat of an enigma. It scores close to the United States for collaboration between industry and academia, company R&D spending is close to the top, and there appears to be good collaboration between business and universities.

Historically, there has been elitism in the U.K. education system, although this has started to erode. More importantly, it is short of engineers, and its patent rate is miserable. Hailing from the United Kingdom, I have an up-close perspective on the country's shortcomings. In particular, the country suffers from a failure to execute. It spends forever arguing and debating instead of getting on with the job.

This is a critical lesson for the innovator. Generate potential solutions, select the preferred solution, and then focus and execute. This is something the United States does well. Meanwhile, government procurement influence in the United Kingdom is the lowest of the top 20. This suggests a strong aversion to risk.

Canada lies in 14th place, has strong research institutions that collaborate with industry, and scientists and engineers are readily available. But company R&D spending is terrible, and technology development isn't much better. The joke goes that it's a nation that exports wheat and imports pasta.

There's an overdependence on mining and farming, and no vision for the future or new business development. After speaking with government ministers, it's clear there's a lack of strategy to develop small to medium enterprises, of which Canada has many. That's where most innovations are born. Canada is good at developing new ideas but—similar to the United Kingdom—fails when it comes to execution. New ideas tend to fizzle and die, or migrate south to the Northeast or Northwest United States.

With a rank of 16, France is worse than anyone in the top 20 in collaboration. Is this a structural or cultural issue? The French have a reputation for being fiercely independent. Is this getting in the way of collaboration?

At the same time, it is one of the most creative nations on the planet—the home of Chanel, Dior and Louis Vuitton. Imagine if the creative abilities of France and the execution abilities of Germany were to coalesce. What a powerful combination that would be.

Rising in the east

South Korea, with a score of 18, is the nation of emerging technology. In some rankings, it scores much higher on innovation. There are no overriding problems other than a narrow innovation focus.

Looking to China, I'm reminded of something Napoleon supposedly said: "Let China sleep, for when she wakes, she will shake the world."[5] This is evident in the increasing government influence being exerted to develop innovation in China. But company R&D spending is still low. In fact, in some circles it's said that R&D in China stands for robbery and denial. This will change because China is poised to graduate more new engineers in one year than exist in all of Canada. This indicates a country with an incredible desire to learn.

Wrapping up the country-by-country analysis, India at 42 has a serious problem. Its universities are turning out scientists and engineers who have nowhere to go because company spending on R&D is dismal. In addition, the government corruption for which the country is well known results in the government procurement process having little influence on innovation.

What did we learn?

This analysis illuminates seven basic lessons organizations should adopt:

1. **Explore the global market.** In our grandparents' time, competition was from across town. In our parents' time, it was from across the country. Now, it is from across the globe. It's important to remember that someone somewhere on the planet has a need for your knowledge, skills and competencies.
2. **Develop as many ideas as possible.** As scientist Linus Pauling said, "The best way to have a good idea is to have lots of ideas."[6] The countries with the highest innovation ranking had high scores for their capacity to obtain innovation and a high number of patents per million people.
3. **Network and collaborate.** Research in the aerospace industry has shown that the creative phase of innovation is typically 20% of total budget. Get new ideas by investing in networking with universities, research institutions and government agencies linked to your industry.
4. **The execution phase requires time and money.** Have a well-defined business case and budget. Be prepared to take your case to outside investors, whether it's banks or venture capitalists. That way, you can invest in innovation.
5. **Have a well-defined and understood innovation process.** You need scientists and engineers, but ensure everyone in the organization knows how they can make their best contributions to innovation.
6. **Don't ignore the two-culture problem.** Address how to integrate the creative phase of innovation into your organization. Be ready to take calculated risks, and rid yourself of risk-averse thinking.
7. **Execute, execute, execute.** After you've decided what to pursue, focus on it and move quickly. The most effective way to do this is via solid project management and quality management.

There's one more quote you should keep in mind: Think globally and act locally. I'm sure you've heard that applied to several different situations, and it certainly applies to innovation. In fact, it should be the mantra of every innovator. QP

INNOVATION INSIGHTS

For more of Peter Merrill's analysis of innovation and the important role it plays in the global marketplace, watch for his new column, which will debut in QP early next year.

REFERENCES AND NOTE

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