

Innovation: measuring it to manage it

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Many executives struggle to manage innovation as they would other business processes. Most exasperating is the lack of a practical way of measuring innovation effectiveness and efficiency. In this article the authors provide a success formula to design and deploy meaningful key indicators to drive innovation and business performance now and in the future.

“Managers are people who like order. They like forecasts to come out as planned. In fact, managers are often judged on how much order they produce. Innovation, on the other hand, is often a disorderly process. Many times, perhaps most times, innovation does not turn out as planned. As a result there is a tension between managers and innovation.” This, in the words of Lewis L. Lehro about the first years of 3M, is the classic dilemma of innovation management: how to effectively manage creativity-based and multi-dimensional innovation for predictable creation of value?

Unlike many other core business processes such as manufacturing and logistics, the output of the innovation process, with creativity at its source, is rather unpredictable – and should be, up to a point. That may be where many executives give up: if the output is unpredictable or, even more so, if you want it to be unpredictable, why bother to measure it, even assuming you could? And since we are unable to capture innovation in plain indicators and targets, these executives may further argue, we had better leave innovation management in the hands of R&D specialists.

Fortunately, there are numerous examples of companies that have successfully fought this impulse and have been able to harness the power of innovation as a manageable and company-wide process with significant paybacks. These benefits have included greater returns from new products and services in the marketplace, significant market share increases, successful entry into new markets and greater prioritization of in-house improvement initiatives. There are many different instruments that companies use to make this happen, including creating roadmaps, implementing “end-to-end” processes and rotating functions. But in the end, just as with every other business process, if you can’t measure it, you can’t manage it.

From our experience we know that companies that develop and implement practical, consistent and transparent inno-



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vation key performance indicators (KPIs) have accessed innovation productivity increases of between 20 and 50 %. In this article we will first explore the challenges companies face in measuring innovation performance. We will also present our solution: better management of innovation through a smart use of KPIs, benchmarking and deployment.

Challenges to measuring innovation

So what are the challenges that companies face when they try to manage innovation as a business process and measure innovation performance more effectively? What is stopping companies matching the results obtained by other leading companies? Our experience and research shows that there are three challenges.

First, innovation performance is difficult to measure and interpret. Most companies have some form of KPI system to show performance and help manage innovation. However, few companies believe their KPIs are the right ones. Our research – in our Global Innovation Excellence Survey conducted in 2009-2010 among more than 400 companies from all industry sectors – shows that 72 % of companies rate their innovation performance indicators as weak. They find that they are not able to systematically obtain credible data for benchmark companies or even from their own organization. This often results in long debates over data robustness and credibility and leads to a gradual loss of confidence in the KPI system altogether.

Also, companies face difficulties in discriminating between cause and effect of innovation such as market share increase, gross margin improvements or shortening time to market. For example, if your average time to market is 14 months, should it go down because your execution is simply too slow compared to competitors', or should it go up since you are only considering incremental low-return innovations?

The second challenge is that even useful KPIs can be hard to turn into meaningful improvements. Where KPIs are measured and interpreted, companies struggle with setting shared priorities for improvement. An R&D manager may

correctly conclude from benchmarks that the company should innovate more in partnership with its suppliers, but may have trouble finding common ground with a procurement officer who has to meet yearly savings targets. And even if there is a consensus about priority improvements, how do you know you are focusing on what matters most for the company as a whole?

The third challenge is that incidental improvements rarely mature into a system and culture of continuous improvement. Regularly changing KPIs and priorities often hinder companies in tracking innovation performance and trends over time, and demonstrating the success of the implemented improvement actions. Senior leadership support for actions can also be lost or less forthcoming because the business case is rarely proven, often despite improvements in innovation performance. For example, a chemical company embarked on a one-year innovation improvement programme comprising a balanced set of 10 initiatives, based on a robust assessment of gaps in R&D performance. It failed, however, to translate this improvement potential into benefits to the business heads. As a result, business units refused to commit resources when the time came to implement the improvement measures.

A formula for success

To address these challenges and overcome the concerns of many CTOs, innovation directors or innovation managers about truly demonstrating performance and improvement, companies need to address four critical requirements (Table 1).

1. Design the framework

“What gets measured gets done,” the saying goes, but how to measure what must be done? Finding practical and credible KPIs specifically around innovation output causes most of the headaches and consequently is blissfully ignored. This is because executives look at innovation output merely through an R&D or a financial accounting lens, when they should be using a business lens. If one of the innovation goals of a consumer goods company is to create a “buzz” with end-users, why not track it through

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Table 1 **Four requirements for demonstrating innovation performance**

	1 Design the framework	2 Measure performance	3 Manage for success	4 Sustain deployment
What to avoid	<ul style="list-style-type: none"> Managing R&D rather than innovation Focusing on what seems urgent while having a blind eye for what is truly important 	<ul style="list-style-type: none"> Lacking clear sense of direction Missing 'leap-frog' opportunities Getting stuck in nitpicking 	<ul style="list-style-type: none"> Achieving only limited improvement over time Losing interest from non-specialist stakeholders 	<ul style="list-style-type: none"> Having many dormant KPIs with no ownership Pursuing one-off rather than continuous improvement
How to avoid	<ul style="list-style-type: none"> Apply business lens Learn from best practice Monitor company weaknesses and vulnerabilities 	<ul style="list-style-type: none"> Monitor a balanced set of benchmarks Challenge constructively 	<ul style="list-style-type: none"> Link output and performance gaps to improvement cycle Use dashboard pyramids 	<ul style="list-style-type: none"> Secure 'end-to-end' ownership Enforce regular usage of KPIs at all management levels and throughout the yearly planning cycle

Source: Arthur D. Little analysis

social media tools? If reducing the weight of mechanical components is of key importance to your customers, why not use it as a target output KPI for product development? If your main innovation bottleneck is around engagement and culture, why not follow employee satisfaction? We know of an R&D executive at a large coffee producer who tracks sick leave as his main innovation KPI.

Consequently, there is no such thing as a fixed menu of indicators that companies can or should use. Rather, companies are advised to order à la carte, based on their own needs and strategy. They should apply three different perspectives when developing a set of KPIs:

A best-practice perspective. Finding good innovation KPIs can be challenging but you are not alone and you are certainly not the first to try. Companies may consider indicators used by competitors, industry peers and innovation leaders from other sectors. The list of possible KPIs is nearly endless but we have found that there are two basic rules of thumb for the types of indicators companies should use. First, collect information at the input, the process and the output side of innovation. Second, ensure that the KPIs to-

gether span the main goals of innovation: to yield financial returns, create competitive advantage and develop the people in your company. Table 2 shows examples of various types of indicators applied at companies we have worked with. It is important to note that there are many ways to measure, track and use each of them. For example, a popular way to measure revenues from innovation is to track the Vitality Index (i.e. the percentage of revenues stemming from products developed in the last few years). Some companies, however, find that this KPI favors incremental innovations that do not necessarily create any value. They may prefer to compare their sales with a (declining) product life-cycle baseline by which they can account for cannibalization and work out which part of their revenues is attributable to innovation. The real challenge therefore is to customize best-practice KPIs so that they become meaningful, actionable, comparable and measurable.

A business and innovation perspective. If you want to measure innovation success, you should articulate what success will look like in innovation terms. In other words, what are the innovation imperatives that will drive ultimate

Table 2 **Common types of innovation indicators**

	Input	Process	Output
Financial returns	<ul style="list-style-type: none"> Absolute and relative spend (e.g. as percentage of revenues per area) 	<ul style="list-style-type: none"> Productivity Predictability Speed 	<ul style="list-style-type: none"> Revenues and growth Margins and costs Innovation success rate Pipeline value
Competitive advantage	<ul style="list-style-type: none"> Clarity of innovation targets 	<ul style="list-style-type: none"> External collaboration (customers, suppliers, knowledge institutes, technology providers, etc.) 	<ul style="list-style-type: none"> Market share per area Product/service performance Customer perception IP positioning
People development	<ul style="list-style-type: none"> Headcount per area Skill levels Time spend & dedication 	<ul style="list-style-type: none"> Internal collaboration Process excellence Employee satisfaction 	<ul style="list-style-type: none"> Competency development Talent attraction & retention

What to aim for ← What to measure →

Source: Arthur D. Little analysis

business success? In pharmaceuticals, for example, this used to be all about “finding the (new blockbuster) needle in the haystack” and killing other candidate drugs fast. Today, big pharma innovation bosses also need to worry about – and therefore measure performance in – extending patent lifetimes and finding the hottest biotech start-ups to replenish their R&D pipelines. Limiting measurement to KPIs such as project pipeline value and attrition rates would almost certainly be a recipe for disaster.

A company innovation health perspective. To balance the external perspective, companies must also consider where they believe they are in their innovation performance. It may be pleasantly reassuring to measure where you are strong but it is certainly more motivating to monitor where you seriously lag behind targets and/or competitors. The senior managers at a manufacturing company we recently worked with were concerned that the company was not quick enough in bringing breakthrough innovations to the market. We jointly developed a “delay-to-first-inventor” KPI based on historical performance vis-à-vis major competitors. As the measurement values confirmed their hypothesis, we developed targets for the next 10 years based on desired breakthroughs in select technology areas.

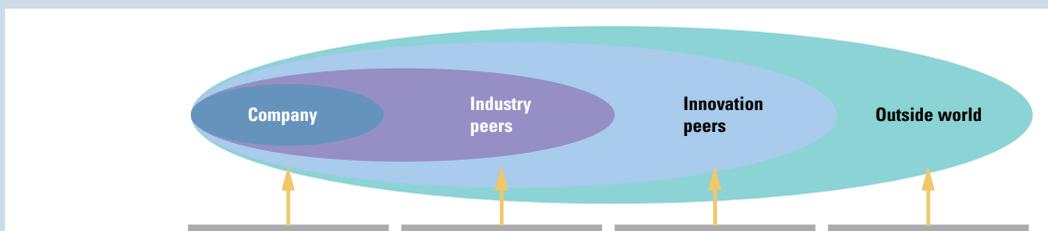
2. Measure your performance

Without an external perspective on the innovation performance of your peers, it is difficult to interpret the significance of performance and output KPIs. Knowing whom you should benchmark against and how to derive meaningful comparisons from the data are key success factors for any benchmarking. Companies aspiring to make leapfrog improvements in innovation performance must not limit benchmark candidates to direct competitors but pick a meaningful and practical set of diverse sources (Table 3).

Looking at historical performance within your business unit or other business units of your company is often a practical way to collect detailed and credible data. To identify innovation approaches that could be disruptive in your industry and provide your company with a head-start, it is helpful also to consider adjacent industries with similar characteristics or the same innovation engine. The latter term refers to the

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Table 3 Whom to include in benchmarking



	I	II	III	IV
Profile	Internal	Direct competitors	Companies similar in how they innovate	Any company offering relevant lessons
Caveats	<ul style="list-style-type: none"> ■ Limited view on big opportunities ■ Comparability (e.g. between business units) ■ 'Sense of direction' often unclear 	<ul style="list-style-type: none"> ■ Compliance ■ Willingness to cooperate ■ Replicability 	<ul style="list-style-type: none"> ■ Not suitable for industry-specific challenges 	<ul style="list-style-type: none"> ■ Meaningfulness ■ Credibility

Source: Arthur D. Little analysis

way companies innovate: driven primarily by idea generation (e.g. consumer goods), R&D-driven (e.g. chemicals) or analysis-driven (e.g. automotive). Finally, you could consider innovation leaders from outside your industry who can articulate your aspirations and goals – in other words, what really good innovation at your company could look like.

3. Manage for success

Why do many sound conclusions from innovation measurement fail to materialize into significant business improvements? There are three reasons why companies that know they are lagging behind in innovation performance still struggle to give this the attention it deserves.

The first reason is that they cannot articulate how their gap in innovation performance (i.e. the difference between how others perform in innovation and how their own company performs) relates to their gap in innovation output (i.e. the shortfall in what innovation delivers compared to company targets). Simply concluding that you file fewer patents than competitors may not be perceived as an emergency topic by senior management, but showing how rivals are eating away at important platforms for future growth will certainly receive attention.

Second, while R&D specialists may acknowledge gaps in innovation performance and output, these gaps are addressed by singular fire-fighting initiatives rather than through a shared and well-designed improvement program based on best-practice examples from other companies or units. This often makes such initiatives less effective and credible to the rest of the company.

Third, responding to the conclusions of innovation measurement, executives may implement some good improvement initiatives. Too often, however, the initiatives are one-off events, rather than part of a process and culture of continuous improvement.

The more effectively companies address the points above, the faster they will get ahead of their rivals. To keep track of this improvement cycle, they may use innovation dashboards that provide the right KPIs to the right audiences. They start with a dashboard at executive board level, focusing on just a handful of key business KPIs with a longer-term focus, and cascade it down to the various functional or business management levels, each time becoming more operational and more specific.

4. Sustain deployment

Key for any business process is to make it work and keep it that way. The best way to make the process of innovation measurement work is to ensure it stays simple and effective and that it is owned not just by R&D but also by the marketing function and other stakeholders.

The optimal way to ensure that it is kept alive is to use it. Meeting agendas should allocate time to innovation measurement. Senior and middle managers should ask for updated information regularly. And key conclusions should make it into the company's strategic dialogue or review. Should we change anything in our strategy if we see we are not reaching innovation targets? Should we invest in innovation capabilities, networks or capacity?

Interestingly, some companies have introduced shared ownership of innovation KPIs to secure their deployment. For example, a supplier of medical imaging systems made

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both marketing and R&D responsible for R&D productivity, which brought both parties closer together in translating changing customer needs into a stable development program. By the same token the company made R&D jointly accountable for customer satisfaction, an indicator that was previously the exclusive domain of marketing.

The insert gives an example of how Solvay uses the formula for success in measuring innovation performance.

Example of the application of the success formula at Solvay

Solvay is among the world leaders in the chemical sector, offering a diverse range of products and services. Its innovation activities have a broad scope, encompassing value creation for all parts of the business. The company found that its previous corporate KPI scorecard for innovation did not truly demonstrate the value and performance of its innovation activities, particularly in view of their heterogeneous nature. Neither did it engage the whole business in innovation. There was a need to differentiate between innovation activities in different parts of the business, while still allowing global comparisons and sharing of best practices.

To that purpose, in 2006 the company followed a structured process to select and develop a scorecard of 10 global innovation KPIs, supported by common definitions and published on the company's corporate website. They included input, process and output measures of performance. Each business unit implemented the KPIs, while weighing them so that they were aligned with their specific business goals. The KPIs were incorporated into scorecards and dashboards that were directly relevant to their business, while also allowing a global comparison of performance.

Today this menu of 10 global innovation KPIs drives consistency and allows aggregation and comparison of performance. It also engages individual business units in demonstrating innovation excellence where it matters most to them. Solvay has enjoyed improvements in

innovation performance through greater manageability, proactively targeted goals and greater sharing of best practices across operations. It has also raised awareness across the company of the importance of innovation. As the business evolves, Solvay is reviewing and evolving its innovation KPI scorecard. This is an integral part of its KPI management to ensure relevancy and alignment of the KPIs to the changing needs of the business and market.

Insights for the Executive

Few business processes are more critical to a company's continued performance than innovation. But because of its broad reach, unpredictable nature and dispersed ownership, many executives struggle to manage innovation as they would other business processes. Failure to develop and implement a practical way of measuring innovation effectiveness and efficiency is often at the heart of the problem. Executives have difficulties in finding practical indicators that clearly measure what is important. Then they find it hard to turn such measurements into actions that effectively fix what is broken. Last but not least, they stumble when trying to implement innovation measurement as a self-sustaining process of continuous improvement.

Fortunately, there is a success formula that executives can apply to address these challenges. It starts with the design of a customized business-oriented framework of input, process and output KPIs inspired by best practice. It continues with measurement vis-à-vis not only historical performance and industry peers, but also innovation leaders in other sectors. The next step is to use a cascade of KPI dashboards to maintain a continuous cycle of translating measured performance gaps into improvement actions at all levels of the organization. The final ingredient is the ingrained use of the KPI framework in the company's daily management processes and practices. By applying this formula, executives will be able to drive innovation and business performance now and in the future.

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