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# Step Out of the Lab



By Ithai Stern , INSEAD

## **When inventor CEOs should let others lead innovation.**

Back in the early 1980s, plenty was written about the decline of American business on the global stage. One of the main criticisms levelled at US firms was their over-reliance on administrator CEOs. As a famous [1980 HBR article](#) pointed out, these experts in finance and operations were too focused on short term objectives to fully appreciate or embrace innovation's importance to long term success. The result: the United States was left behind by Europe and Japan in the race to remain technologically competitive.

This led to a call for more scientists and innovators to take on lead roles and utilise their commitment to innovation to save US industry. There has clearly been a major shift in this direction since, with the likes of Bill Gates and Paul Allen at Microsoft, Sanjay Mehrotra at Sandisk and Apple's Steve Jobs demonstrating just what can be achieved when you have an innovative leader in charge.

## **Inventors are good for innovation**

The likes of Gates and Jobs were all heads of companies where they played a pivotal, often founding role, that allowed their firm to achieve global success. A number of studies have demonstrated that large established firms with innovative CEOs don't just spend more on R&D, but also submit more patents than firms led by non-inventors.

The reason is that such individuals possess superior skills when it comes to evaluating and selecting innovative opportunities. They also understand how to translate those ideas into tangible, scalable inventions that can benefit the company. Their numbers are growing too: 10 percent of S&P1500 firms and 20 percent of high-tech and R&D-intensive firms are now led by so-called inventor CEOs.

Yet new research I conducted with my colleagues\* found that the influence of inventor CEOs is more complex and might actually not always be in the best interest of a firm's long-term future. Our study looked beyond the scale of innovation practiced by firms to explore the type of innovation taking place.

### **Exploitation vs. exploration**

What we found was that inventor CEOs who continued to take a hands-on approach in the innovation process led their firms to engage in more exploitative rather than exploratory innovation. Exploitative innovations are those incremental advances that exploit or build on existing technologies. They are often less risky and tend to produce more consistent short-term gains, but sometimes at the expense of long-term competitiveness.

Exploratory innovations are more radical breakthroughs that extend beyond the firm's existing knowledge base. They can be more costly, take more time to develop and are often riskier investments, but they can also result in a new product or service that can open up a new market or direction for a firm, or even whole industry, in the long term.

American biotechnology company Illumina is a case in point. Its investment in Solexa in 2007 provided the foundation for the company's development of next-generation sequencing (NGS) technology, a radical departure from traditional DNA sequencing techniques. This innovation has had a profound

impact on healthcare, research and biotechnology, opening up new markets and research directions while positioning Illumina at the forefront of the genomic revolution.

While both exploitative and exploratory innovation are necessary for a firm's success, prior research has shown a strategy that focuses on either form of innovation at the expense of the other can be detrimental, even catastrophic for the firm's future.

Xerox is a good example of the pitfalls of focusing on one type of innovation at the expense of another. It has found plenty of success with its core technology innovations in the fields of photocopying and printing, yet executives also famously failed to spot the commercial potential of more exploratory innovations in the field of personal computing. Many of these breakthroughs, from graphical user interface and the computer mouse to Ethernet networking, were adopted by Apple, and later Microsoft, allowing them to become market leaders in this sector.

## **Influencing innovation**

Our research found that the tendency towards more exploitative innovation was particularly strong among inventor CEOs who had founded the firm. In fact, we found that having a founder CEO involved in the research process resulted in a 20 percent increase in exploitative innovation by a firm.

We suggest a number of reasons for this. The first is perhaps the simplest. The firm's original innovation is what brought the CEO and the firm success, so they retain a strong sense of ownership and connection to it. They also understand the technology and therefore feel comfortable building on that existing knowledge base, especially when it has proved so successful in the past.

Another factor directly relates to founders' wider responsibilities if they are also the CEO. Exploratory innovation takes time and energy for experimentation and learning -time and energy a busy CEO doesn't have if they want to do the other aspects of the role properly. It's therefore easier and quicker to build on the firm's existing knowledge base.

A CEO's involvement in innovation, even if minimal as was the case for many firms in our study, sends clear signals to the rest of the R&D team and the wider organisation. If the boss seems keen to focus on a specific type of innovation or technology, then the organisation as a whole will tend to follow their lead.

### **An insider perspective**

This tendency towards exploitative innovation was most pronounced with hands-on, inventor CEOs who had founded the firms they led. Yet we also saw a similar effect when non-founding innovators were promoted to the CEO role from within the firm. We suggest that an understanding and appreciation of the existing technology is one driver behind this outcome but there are other more subtle factors at play.

A board is more likely to select an internal hire if they approve of the firm's performance and the ongoing strategy. An internal promotion can therefore be taken as a commitment to continuity and stability. It can also be seen as a vote of confidence in the firm's existing technological trajectory and approach to innovation, leading to a greater emphasis on exploitative innovation.

When it comes to scientific or innovation processes, people tend to heavily rely on their network of contacts. No great breakthrough is ever really achieved alone. If the CEO is hired from within the firm, then it stands to reason that their network of contacts will tend to be deeply embedded within the company. Again, this limits the scope for new discoveries and the potential opportunities to bring in novel ideas.

### **Moderating influences**

We observed the strongest influence on innovation by those founder and insider CEOs who were directly involved in the innovation process after their promotion to the top job. However, this influence diminished when they took a hands-off approach. These leaders were well-placed to understand how best to empower and support their R&D teams, but they also managed to resist the urge to micromanage the innovation process and therefore

influence the outcome of that research.

A tendency towards exploitative innovation was also negated when an inventor CEO who had been a founder spent time outside the company. This suggests a broader experience and more extensive network helped them see potential beyond the firm's existing knowledge base.

This was also the case for outsider inventor CEOs for many of the same reasons. A CEO is most likely to be hired outside the organisation when performance is poor. Their hiring can be seen as a mandate for a change in strategy and that includes the approach to innovation. Outsider inventor CEOs will be less familiar with the firm's internal technological competencies and so more likely to introduce novel ideas.

Last but not least, the diversity of board members' industry experience can moderate an inventor CEO's influence on the direction of innovation. The more diverse the experience, the more potential for board members to supplement a hands-on inventor CEO's knowledge and draw their attention to novel technological developments that they might not have the capacity to spot or pursue on their own.

### **Limiting CEO influence**

We are not suggesting all hands-on inventor CEOs should be fired and replaced with administrators, tomorrow. These inspirational and creative leaders can and clearly do have a positive influence on a firm's ability to innovate and develop new technologies.

Yet it's also important for large firms and their leaders to remember that this benign effect is not guaranteed. They need to understand that there are important trade-offs to having an inventor as a CEO. To secure both short- and long-term success, firms must strike a balance between exploiting existing technologies and exploring new frontiers.

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## About the author(s)

**Ithai Stern** is a Professor of Strategy at INSEAD. His research career is devoted to advancing the field of behavioural strategy by studying the social and psychological processes underlying executive behaviours, firm-level decisions, and organisational performance.

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## About the research

"[Inventor CEO Involvement and Firm Exploitative and Exploratory Innovation](#)" is published in Strategic Management Journal.