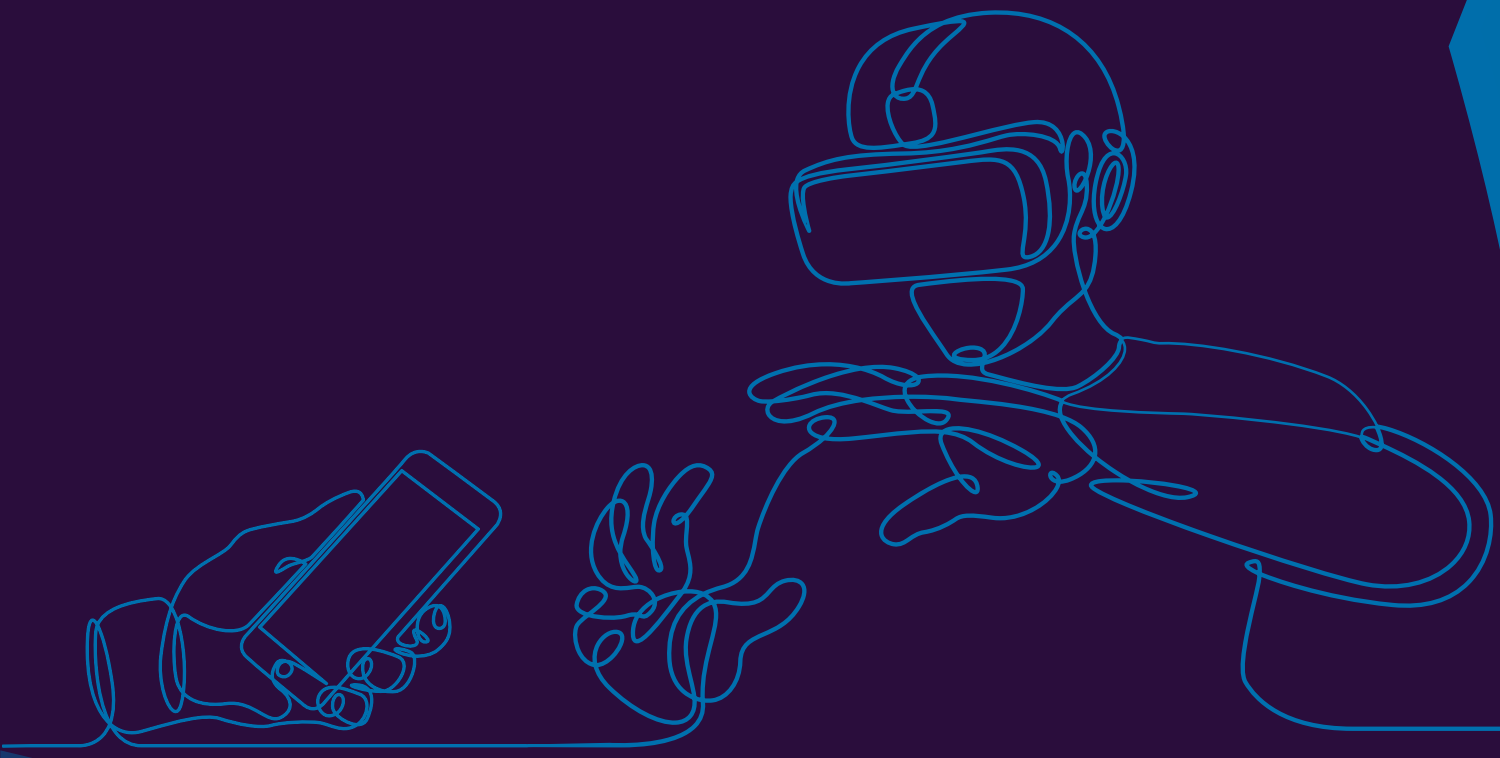
Capgemini invent

MIT INITIATIVE ON THE DIGITAL ECONOMY

LIFTING THE LID ON CORPORATE INNOVATION IN THE DIGITAL AGE



CONTENTS

1

INTRODUCTION

The way that corporations innovate has changed substantially in the last five years. Many of these changes are structural in nature, arising as firms shift their investments towards more digital technology. Such shifts are not new. Since the internet went public in the 1990s, we have seen the convergence of technologies that have opened up digital transformation. What has changed, in the last five years or so, is that we are seeing the emergence of a new class of digital technologies that have a much wider potential application. These general-purpose technologies, such as IoT (internet of things), artificial intelligence (AI), 5G, and others, are opening up myriad business opportunities. But, in relation to corporate innovation, this is a good news/bad news story. The good news is that executives now have powerful new tools to innovate and find new sources of value creation. The bad news is that these emerging technologies rely on advanced technical and analytical skills that are new, rare, and expensive. Because of this, many large firms have struggled, or are still struggling, with their first foray into digital transformation. Some firms have managed to successfully navigate this new disruptive and volatile environment, but many have not.

Why are firms struggling? For many, the challenge is how to graduate from the first wave of digital transformation – digitizing operations by streamlining processes or connecting to customers and suppliers in more digital ways – to the second – creating new sources of value using these new general-purpose digital technologies. To succeed in this second wave will require a profound transformation of corporate innovation systems – processes, capabilities, organization.

So, have firms transformed their innovation systems? Are they sourcing innovation differently? Have they leveraged these new general-purpose digital technologies successfully to create new business opportunities? And have they effectively developed their capabilities to succeed?[1]

[1]This report presents our main results from research found in Thompson, Bonnet and Ye, 2020, *Sloan Management Review* and Thompson, Bonnet and Jaballah, 2020 (upcoming), *Research Policy Journal*

2

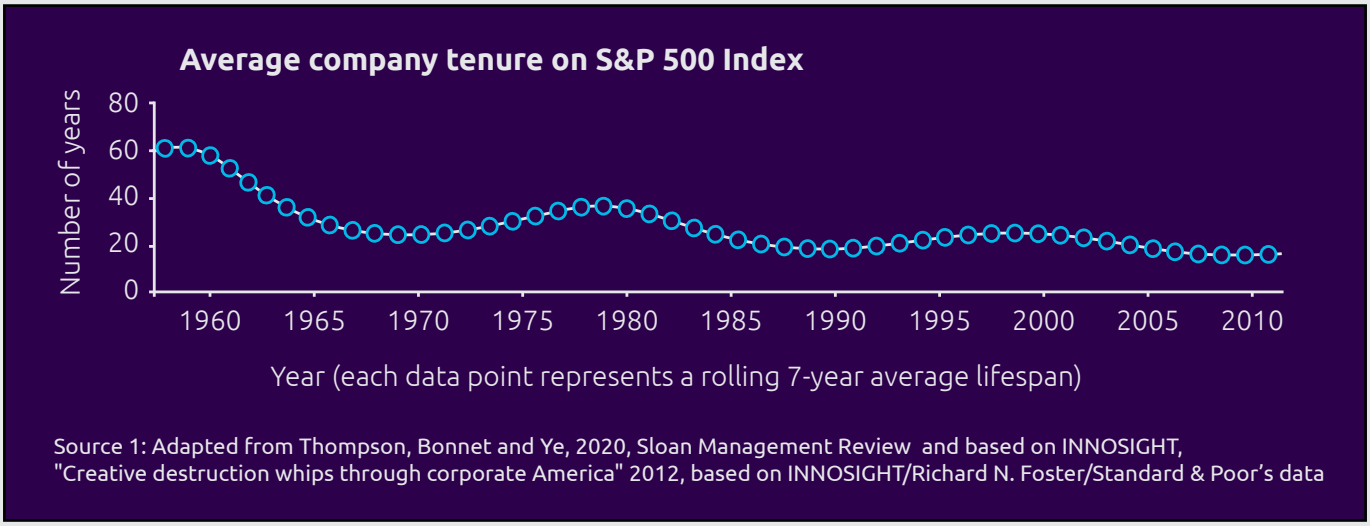
THE MAIN SHIFTS THAT CHANGED THE WAY FIRMS INNOVATE

Disruption is real

For decades, companies have been transforming in order to stay abreast of technological advancement. In the 1990s, we experienced a rapid expansion of the commercial internet and the emergence of new digital technologies. This became an era of disruptive innovation where the survival of many traditional growth models was challenged by new, technology-enabled, business models[2].

This is part of a large trend where, over the past few decades, the average tenure on the S&P Index of the top 500 American companies by market capitalization has drastically decreased. In 1960, the average tenure was 60 years, whereas by 2010 it had dropped drastically **(Figure 1)**.

Figure 1: Average company tenure on S&P 500 Index[3]



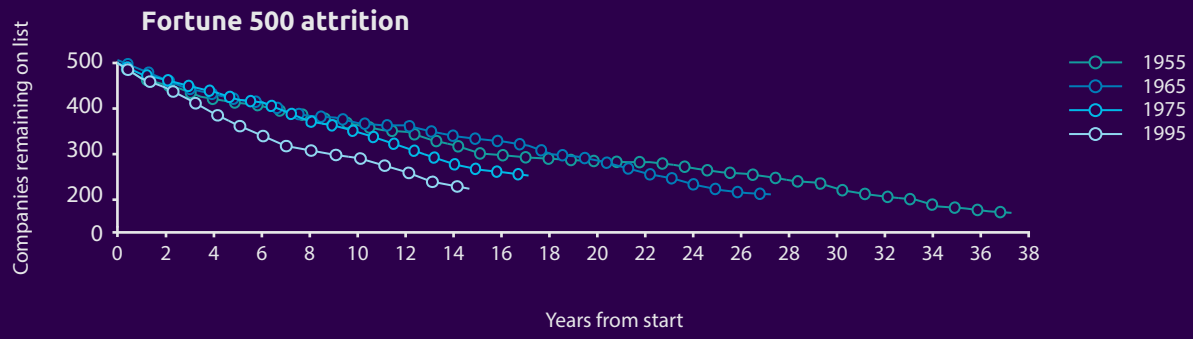
Source 1: Adapted from Thompson, Bonnet and Ye, 2020, Sloan Management Review and based on INNOSIGHT, "Creative destruction whips through corporate America" 2012, based on INNOSIGHT/Richard N. Foster/Standard & Poor's data

[2] The innovator's dilemma, Clayton M. Christensen, Cambridge, *Harvard Business School Press.*
[3] Source: adapted from INNOSIGHT, "Creative destruction whips through corporate America" 2012, based on INNOSIGHT/Richard N. Foster/Standard & Poor's data.

We observe a similar pattern amongst American firms with the biggest revenues, as shown in the Fortune 500 list. Of the 500 companies listed in 1955, it took almost 25 years for half of them to fall off the list.

For the 1995 list, firms exited twice as fast, with half disappearing in 12 years, **(Figure 2)**.

Figure 2: Rapid change in the Fortune 500[4]



Source 2: Adapted from D. Stangler and S. Arbesman, "What does fortune 500 turnover mean?," Ewing Marion Kauffman Foundation, 2012

With the emergence of an era of disruptive innovation, big companies need to defend against new challengers that are using digital technology to find different ways of serving customer needs. So, how have corporate innovation systems evolved to take on these new challenges?

The shift towards transformational innovation

In our previous report[5], we described innovation architecture as the structure that firms build to balance the exploitation of existing core assets (horizon 1) and the exploration of new businesses, markets or customers (horizon 3). Exploration is obviously the riskier of the two, and consequently has a higher failure rate. Conversely, exploitation of existing core businesses has a more reliable outcome but often with less potential upside. Companies must navigate this trade-off between creating potentially valuable, but risky, innovation through exploration and smaller, more predictable, innovation through exploitation.

There are many models attempting to capture the different innovation horizons. For the purpose of our research, we have characterized the three innovation horizons as below **(Figure 3)**:

Incremental innovation: Improvements to existing products or services that require only minor changes to existing business practices; evolutionary rather than revolutionary (e.g., iPhone 7 compared to iPhone 6)

Substantial innovation[6]: New products or services, or re-designs of existing ones, that require considerable change to existing business practices (e.g., changing cell phones to touchscreens instead of physical buttons)

Transformational innovation: A fundamental change to existing products or services that meaningfully changes the business model or value proposition (e.g., cell phones. vs landlines)

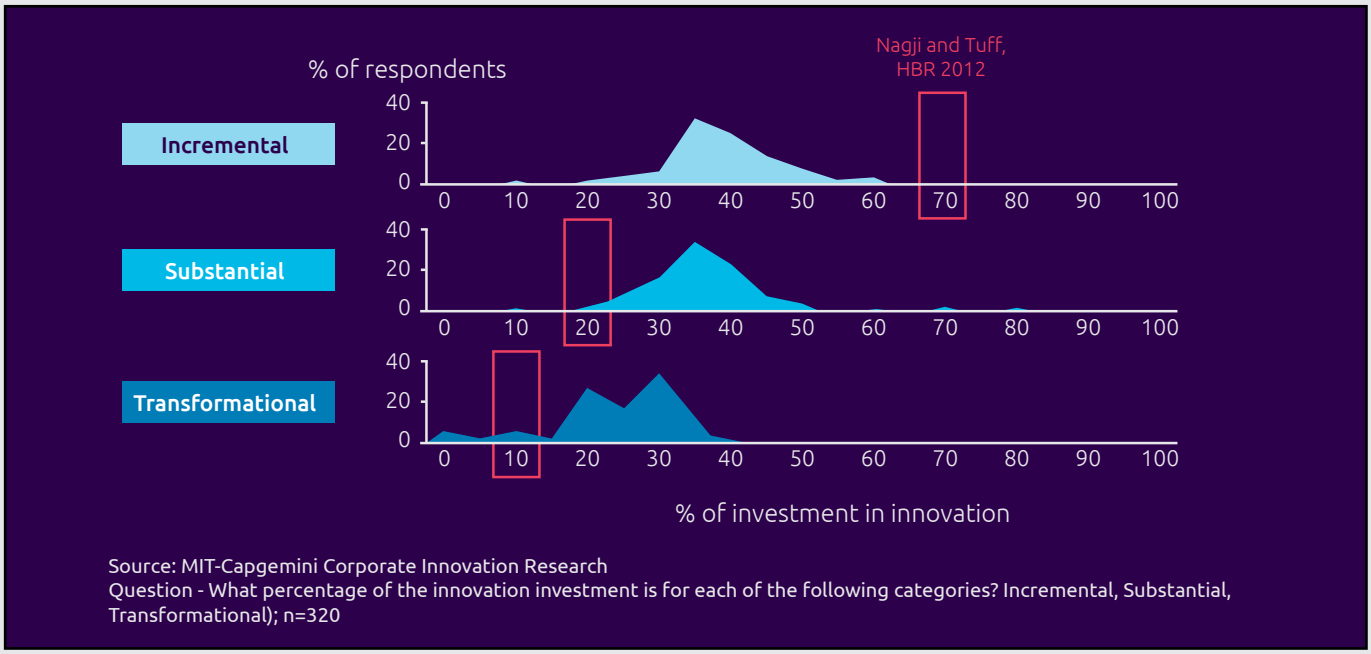
[4] Source: adapted from D. Stangler and S. Arbesman, "What does Fortune 500 turnover mean?" Ewing Marion Kauffman Foundation, 2012.
[5] "The foundation of Corporation Innovation in the Digital Era" – Capgemini report.
[6] Elsewhere also called "adjacent," which can be misleading. We use "substantial" innovation.

Figure 3: Three horizons model

In 2012, Nagji and Tuff[8]conducted a cross-industry study to assess the optimal allocation of resources along the three innovation horizons. The authors found that high-performing firms, on average, allocate 70% of their innovation resources to core innovation (incremental), 20% to adjacent innovation (substantial), and 10% in transformational innovation. And so, the authors encouraged other firms to target these levels.

Our research finds that firms are overshooting Nagji and Tuff's target for being more transformative **(Figure 4)**. This suggests that, in the last six years, corporations have reoriented their innovation investment portfolios towards riskier, substantial, and transformational projects.

Figure 4: Innovation investment portfolio



To be able to take the step towards more transformative innovation, companies need to innovate outside of their core business models. To do that, they generally have to rely on capabilities they do not have in-house.

[8]Nagji and Tuff, Managing Your Innovation Portfolio, Harvard Business Review, 2012.

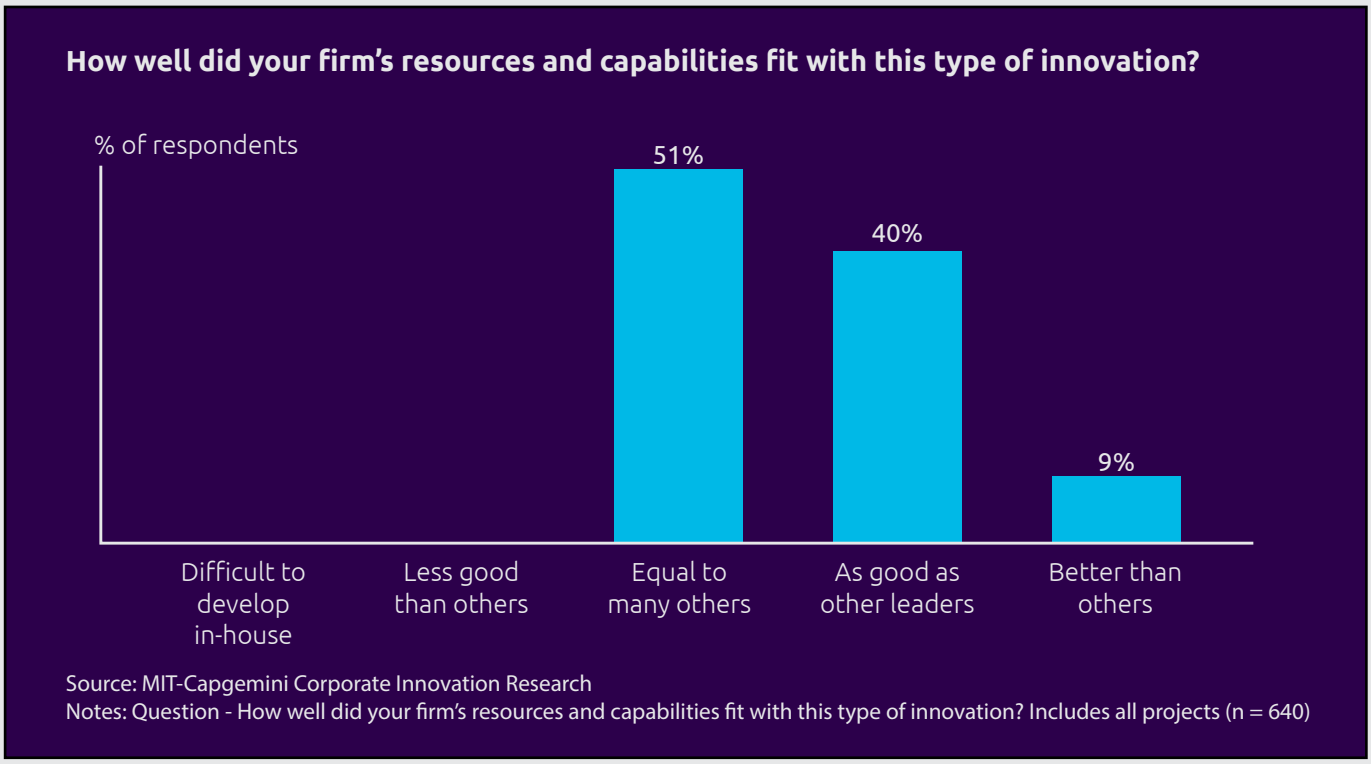
The capabilities shortfall

While incremental innovation focuses on small improvements to existing products, e.g. creating variations to serve different market segments, transformational (i.e. radical) innovation is a departure from existing products and explores new technology, market, process, or business models. Transformational innovation is more expensive and riskier, but it can also be more rewarding[9].

This shift towards more transformational innovation represents a great challenge for companies, especially due to the capabilities needed to foster this type of disruptive innovation. To explore new technologies, markets, processes or business models, big firms need to rely on deep technical or engineering capabilities, which few firms have in-house in any volume.

Innovation executives confirm this challenge. Fifty-one percent of large companies recognized that for the innovation projects that they were pursuing, others had superior capabilities for innovating in that area. At the other extreme, in only 9% of projects that were pursued did executives consider that their internal resources and capabilities were better than those of others **(Figure 5)**.

Figure 5: Internal capabilities



Source: MIT-Capgemini Corporate Innovation Research
Notes: Question - How well did your firm's resources and capabilities fit with this type of innovation? Includes all projects (n = 640)

[9]G. Manoochehri Measuring Innovation: Challenges and Best Practices, California Journal of Operations Management, Volume 8, Number 1, February 2010.

3

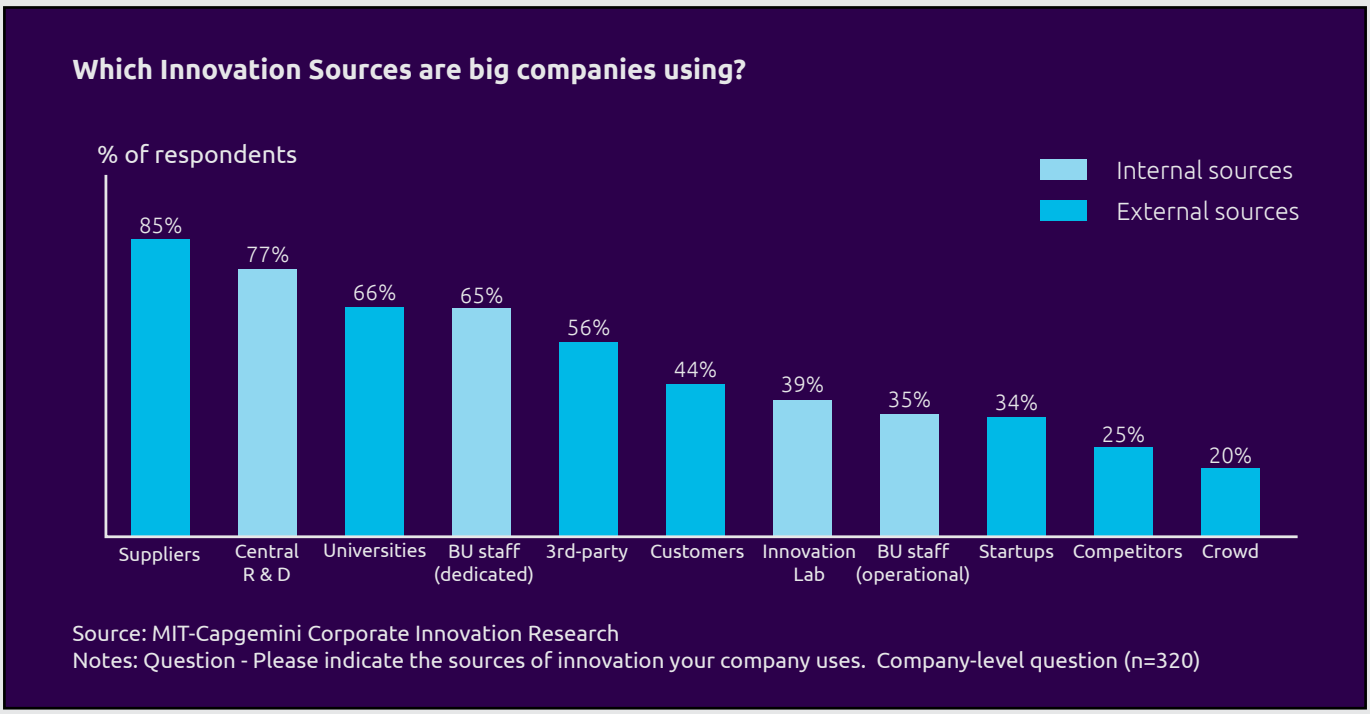
HOW ARE COMPANIES TRANSFORMING THEIR INNOVATION SYSTEMS?

Faced with skill shortfalls, big companies must turn to external innovation sources to find the resources and capabilities that they lack internally. Antti Koskelin, KONE Chief Information Officer confirms this observation: *"We realized that we cannot develop all technologies by ourselves inside our company R&D […] During the past two years, we have taken a lot of actions to partner with different technology companies and startups to capture digitization opportunities."* While this shift to external innovation has been much discussed, there is little data that quantifies the nature and scale of this shift. Our research details the innovation sources that big corporations are using and how their use has evolved over time.

A profound shift in innovation sources used by large firms

Large companies are sourcing their innovations in very different ways than those used in the past. And this change has been both recent and substantial. To understand this change, we first consider the mix of innovation sources that firms are using today **(Figure 6).**

Figure 6: Innovation sources used by big firms



Source: MIT-Capgemini Corporate Innovation Research
Notes: Question - Please indicate the sources of innovation your company uses. Company-level question (n=320)

	Innovation sources	Discription
EXTERNAL SOURCES	**Suppliers**	Firms who are in, or could be in, the value chain of the company, such as the suppliers or channels
	Universities	Universities or independent researchers who are sponsored by the company or whose innovations are licensed or otherwise acquired
	3rd-party	Independent providers of product or services, including technology vendors, consulting/design firms, independent innovators, and opinion leaders; excluding start-ups
	Customers	Customers who provide feedback on innovation by companies, participate in co-creation of proofs of concept
	Startups	Startup who are solicited through innovation scouting, incubators, accelerators, corporate venture capital, acquisition, etc.
	Competitors	Innovations developed by competitors that were open-source, acquired via licensing, brought in by former employees, reverse-engineered, or which arose from industry collaborations/associations
	Crowd	Innovations that originate from crowd-sourcing platforms, hackathons, innovation competitions, or third-party developers
INTERNAL SOURCES	**Central R&D**	R&D entity that is centrally managed by the company and works on a range of innovations
	BU staff (dedicated)	Dedicated innovation staff co-located with a business unit
	BU staff (operational)	Business unit staff who work on innovation part-time in addition to their operational responsibilities
	Innovation Lab	Innovation lab dedicated to the development of a specific technology (e.g. A.I), sometimes collocated with innovation hotspots (e.g. Sillicon Valley)

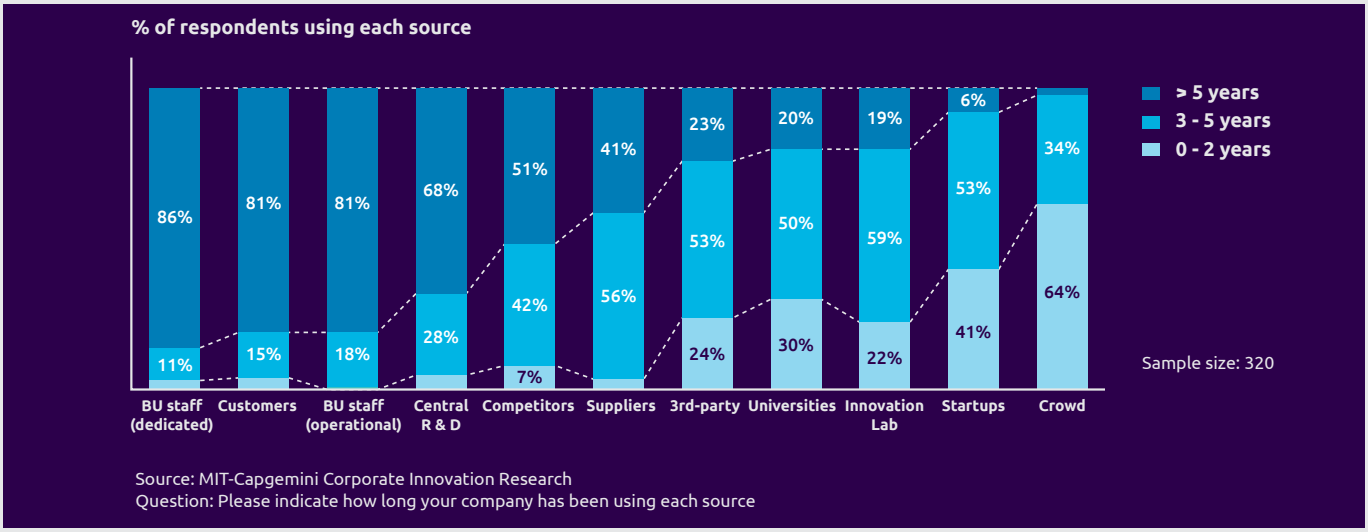
Traditional innovation sources, such as suppliers, are used by 85% of the 300+ companies surveyed. John Pittenger, Strategy and Innovation Lead for Koch industries gives us an example: *"We had to figure out how to make black leggings with Lycra but there are myriad dye and carbon black combinations. We could have spent years doing it, but we said: who knows more about the color black and how it works? So, we selected some more knowledgeable partners and did some Edisonian work until we came up with the right types of black that gave our product the performance it needed."* For these incremental innovations, expertise and capabilities needed can be found in traditional innovation sources.

In addition to traditional innovation sources, which are still widely used, we observe the emergence of new sources such as universities, innovation labs or startups.

This broadening to newer innovation sources is growing fast. For example, of the 20% of companies using crowd as an innovation source (Figure 6) in 2018, almost none of them had been doing so five years ago. Similarly, only 6% of companies using startups as an innovation source today started more than five years ago (Figure 7). So, a substantial part of the broadening of innovation sourcing has happened in the last five years, even though open innovation has been discussed for over 15 years.[10] This shift could be explained by the rise in prominence of digital transformation and the digital skillsets needed to operate new technologies.

[10] H. Chesbrough introduced the term open innovation in his book "Open innovation: the new imperative for creating and profiting from technology," 2003.

Figure 7: How long firms have been using each source

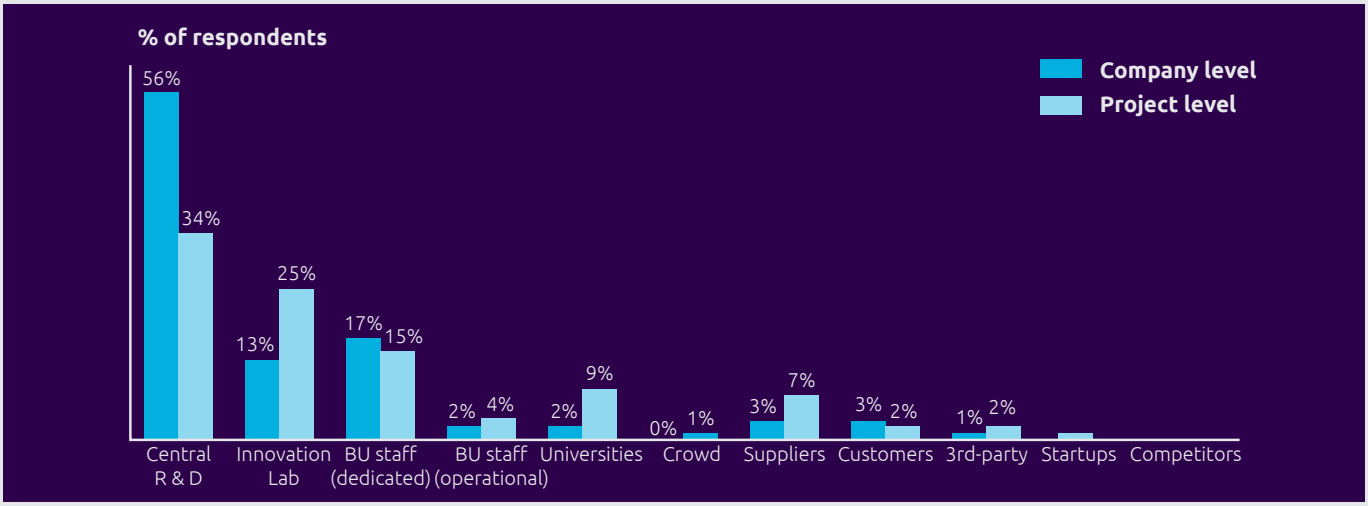


This shift towards open innovation is also visible with the evolution overtime of innovation sources used. For example, 30% of the companies surveyed have only started creating relationships with universities in the last two years – the biggest shift across the companies in our panel. Janelle Sallenave, Head of Customer Support for Uber gives us an insight into the reason behind this shift: *"For the big bold bets, a handful of our executives brainstorm the future. When they find something really interesting, they go and bring in the expertise; they find the universities with advanced laboratories on that topic."*

The most important innovation sources for firms

Interestingly, there are some differences between the innovation sources generating the most successful projects and those that are the most important innovation at the company level (Figure 8). While 56% of the 320 companies surveyed said that central R&D was the most important innovation source for their company, only 34% said that their most successful project had come from central R&D. On the other hand, fast-growing sources such as universities and innovation labs have been producing disproportionately more of the most successful projects than their overall importance to the company would suggest. One potential explanation is that companies are using these newer innovation sources for big bets on projects that use capabilities that are rare in the rest of the company.

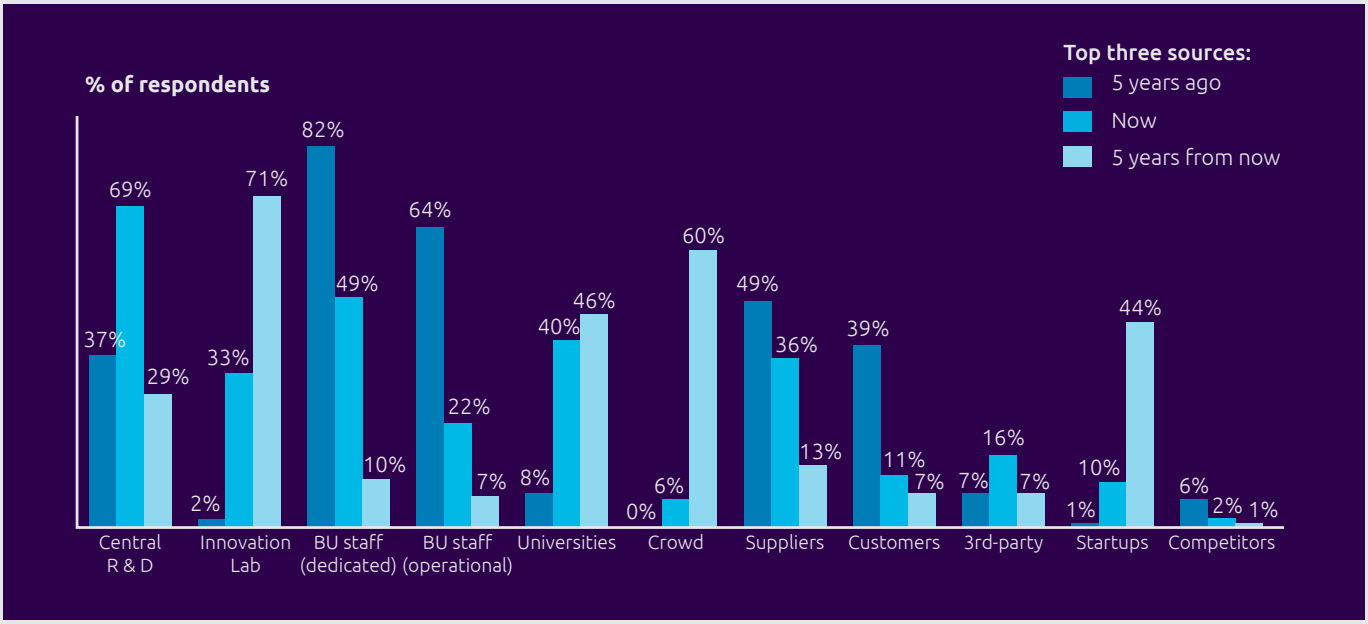
Figure 8: Most important innovation source company vs. most successful project



We see a similar dynamic in how the top-three most important innovation sources for companies are shifting **(Figure 9)**. For example, only 8% of companies agreed that universities were one of their top-three innovation sources five years ago. Today, this number has grown to 40%. At the same time, some traditional innovation sources are becoming notably less important to companies, such as business unit staff, suppliers, or customers.

Some of the projections on what will be important in five years are likely to be based on hype. For example, many more firms believe that crowd will be one of their three most-important sources in five years than are currently using this innovation source! This suggests that many are making this judgment without any direct experience and thus that this projection is less reliable.

Figure 9: Top three innovation sources for companies and evolution overtime

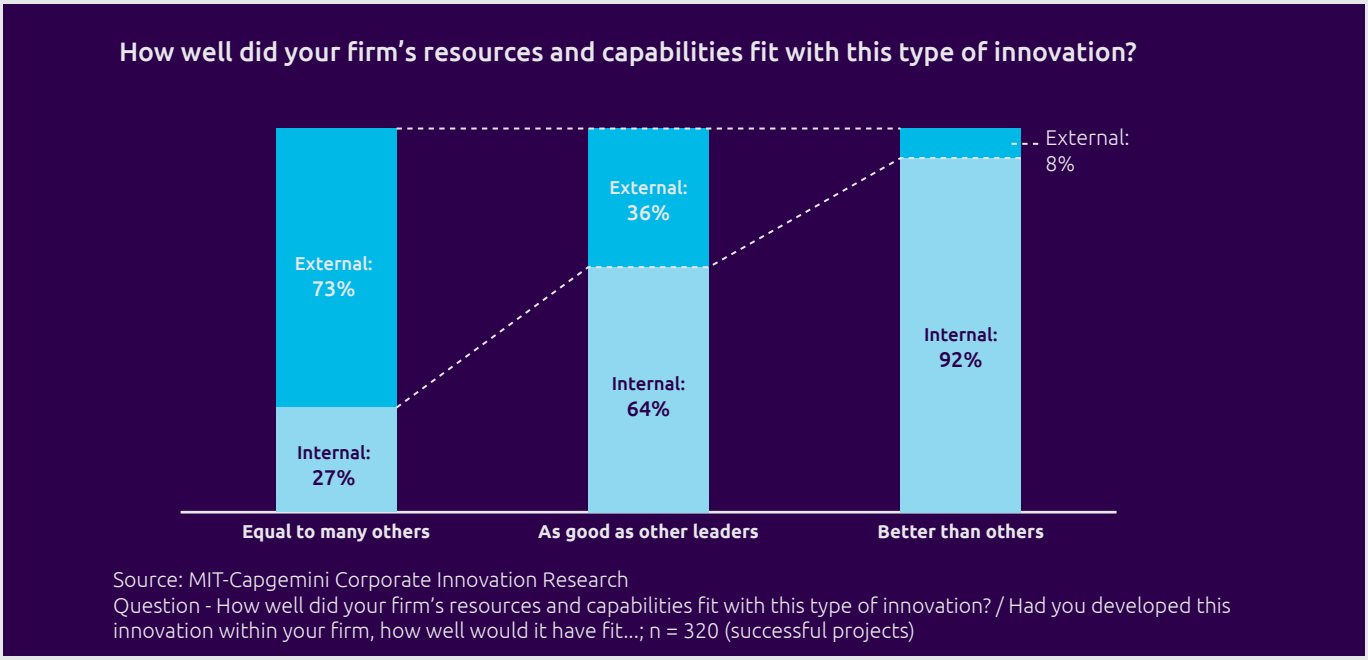


These shifts in sourcing dynamics are steered by one key driver of change – capability.

The answer lies outside

When firms lack critical capabilities internally, it is hard for them to do leading-edge innovation themselves. In such a scenario, they can turn to external innovation sources to access these competencies. We see this clearly in our data; the more a company has a comparative advantage in innovating using their internal resources, the less it will use external innovation sources. Conversely, when a company feels that its internal resources are only as good as many others, they shift towards using external innovation sources **(Figure 10)**.

Figure 10: Internal capabilities and use of external sources



The race to access new and rare resources pushes companies to search outside of their boundaries and borders. This can either be by innovating directly with external partners (e.g. universities or startups) or by building internal sources that more-closely tie in with broader innovation eco-systems (e.g. with innovation labs). This externalization of innovation displays three main characteristics:

- **It is recent**: Thirty-three percent of companies interviewed mentioned innovation labs as one of their top three innovation sources now, and it was important for only 2% companies five years ago **(see Figure 9 above)**.

- **It is broad**: Big companies are expanding their innovation sources. By going external, they are extending the number of innovation sources they use. Our panel uses, on average, three different external innovation sources.

- **It is growing fast**: New innovation sources such as Innovation Labs, Startups and Crowd are growing faster than others **(see Figure 11, below)**.

4

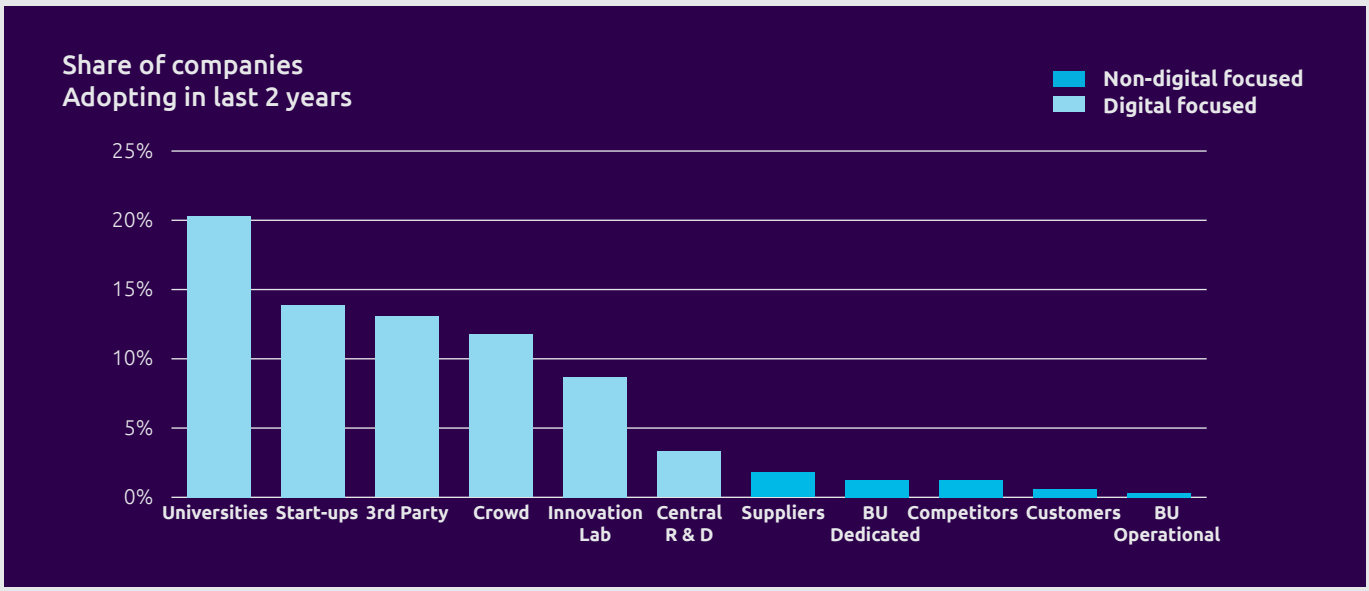
BIG TRENDS IN INNOVATION

Digital Innovation becomes the norm

Digital transformation is no longer a new phenomenon, but firms continue to up their investment in it. 62% of companies told us that they have invested "more" to "a lot more" in digital innovation compared to five years ago. Digital projects are also central to corporate innovation. When asked about the projects that they worked on with various innovation sources, respondents answered that 82% of their projects were "primarily digital". This skew towards digital is even more pronounced among the most successful projects, where executives told us that 95% were primarily digital. This was remarkably consistent across all seven industries that we studied.

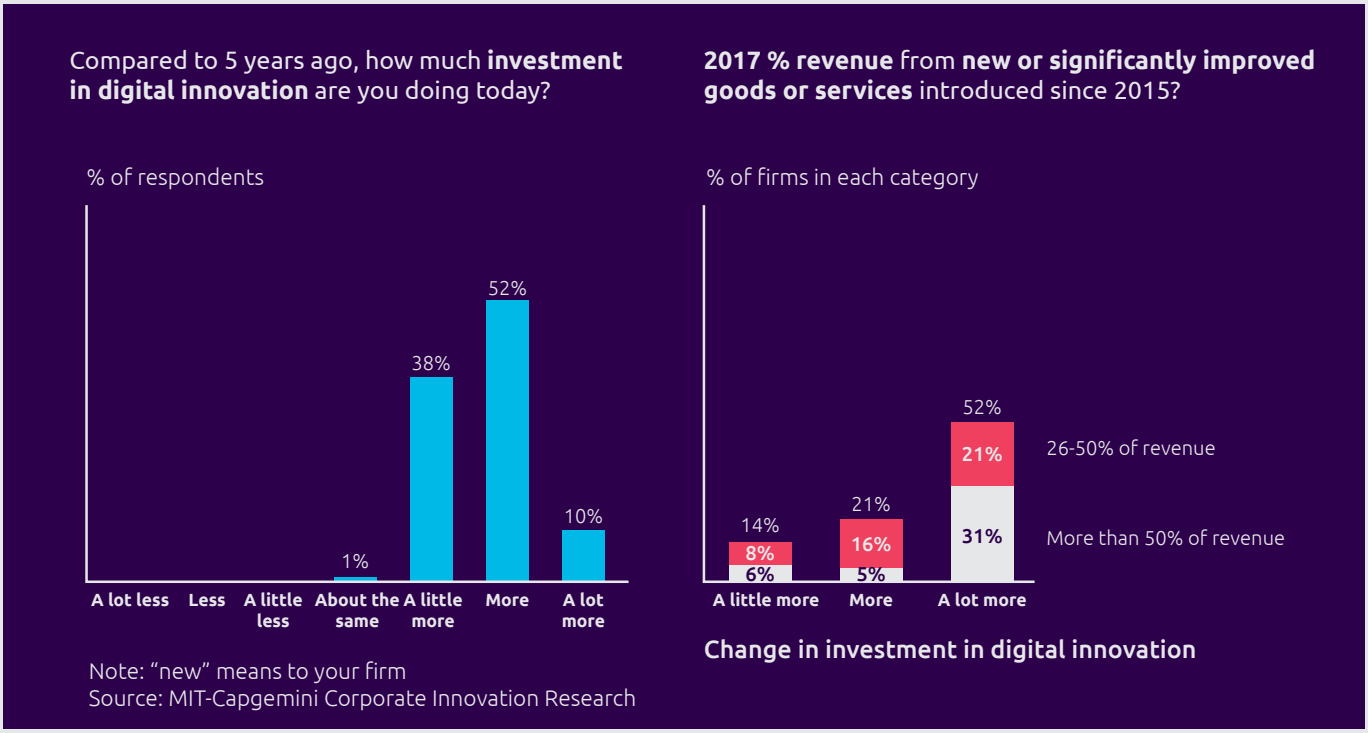
The focus on digital innovation by companies can also be seen in the growth of the innovation sources used. We can see that the most adopted innovation sources in the last two years are digital-focused **(Figure 11)**.

Figure 11: Newly adopted innovation sources are digital-focused



Increased focus on digital has been followed by increases in revenue. Corporations investing more in digital innovation are generating a bigger share of their revenue from new or significantly improved goods or services **(Figure 12)**. It is unclear whether the increase in digital investment generates the increased revenue, or if firms are investing in digital innovation alongside a larger push for more revenue. Either way, digital projects and digital innovation are now core to corporate growth strategies.

Figure 12: Investment in digital innovation



Note: "new" means to your firm
Source: MIT-Capgemini Corporate Innovation Research

A new wave of digital technologies

In recent years, we have seen an amazing array of near-future science fiction technologies (or more often combinations of technologies) opening up endless business opportunities to innovate – VR/AR, IoT with 5G mobile networks and the re-birth of AI.

This new wave of digital technologies presents features of what economists call General-Purpose technologies[10 11]. Bresnahan and Trajtenberg (1996)[12] argue that a general-purpose technology should present the following three characteristics:

1. Pervasiveness – which means it can be spread to most sectors of the economy

2. Improvement – the technology should get better over time

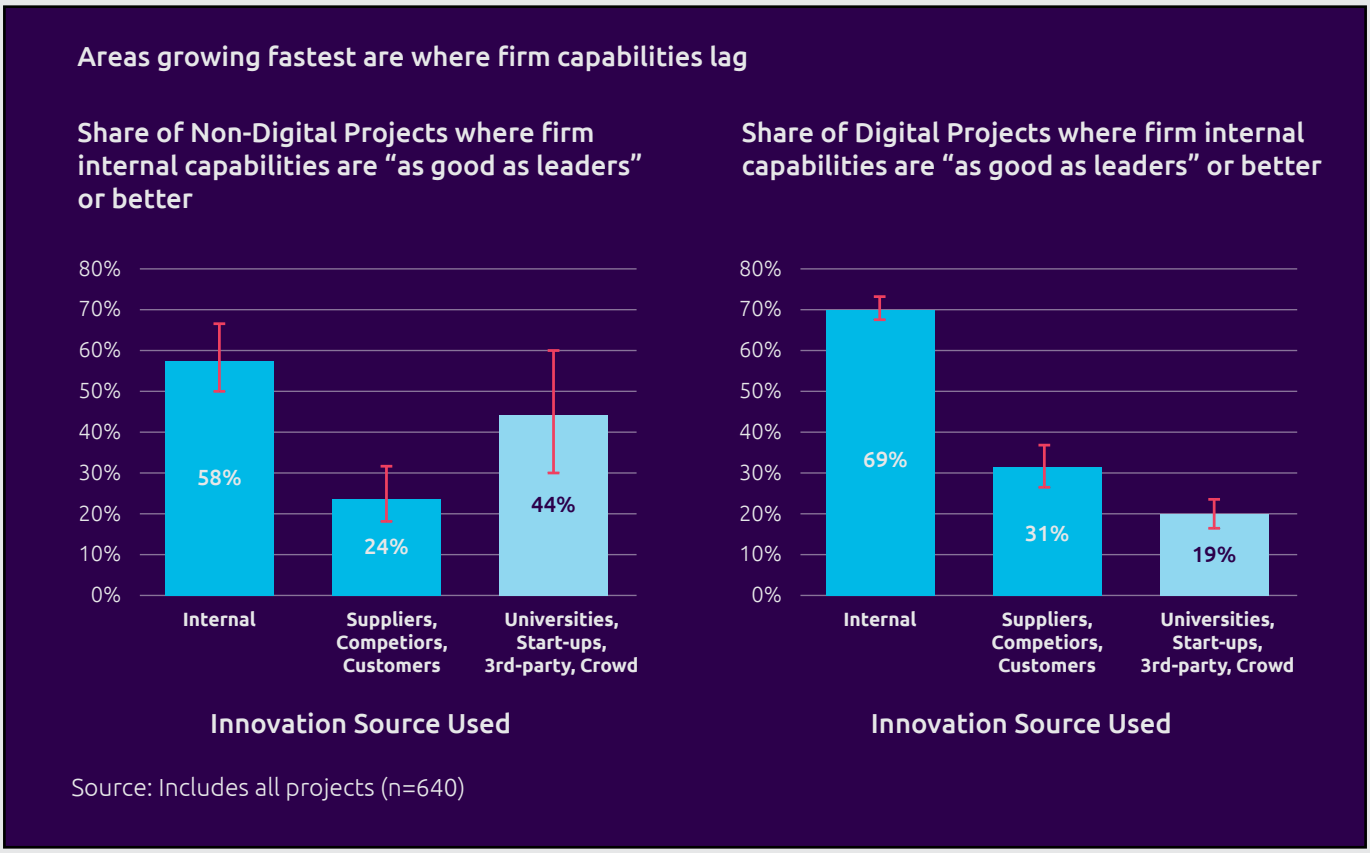
3. Innovation spawning – the technology should foster and ease innovation of new products and processes

While General Purpose Technologies (GPTs) such as AI present a lot of business opportunities, they also bring new challenges. Large organizations need to source new capabilities and resources to use them, but these can be scarce. One solution is to source innovation externally: the digital innovation being outsourced to universities, start-ups and other fast-growing sources are indeed those where firms have particularly weak capabilities (Figure 13). This capability shortfall is even more clear when looking at the difference between digital and non-digital projects. When firms turn to the fastest-growing external innovation sources (Universities, start-ups, third-party, crowd) for non-digital projects, they still rate their own internal capabilities as equal to the leaders in the field 44% of the time. But for the digital projects that they are sourcing from universities, start-ups, third-party and crowd, they only have capabilities equal to leaders in the field 19% of the time.

[11]"Economic Transformations: General Purpose Technologies and Long-Term Economic Growth," Richard G. Lipsey, Kenneth I. Carlaw, Clifford T. Bekar, Oxford University Press, 2006.
[12]"General purpose technologies: 'engines of growth'?," Bresnahan, T.F., Trajtenberg, M., Journal of Econometrics, Annals of Econometrics 65, 83–108, 1996.
[13]Bresnahan, T.F., Trajtenberg, M. (1996). "General purpose technologies: 'engines of growth'?," Journal of Econometrics, Annals of Econometrics 65, 83–108.

However, the digital innovation capabilities of firms are not uniformly poor. When they innovate internally on digital projects, they judge their own capabilities as leader-level 69% of the time. So big corporations do have good digital capabilities internally, but not in all areas. For new digital capabilities, big firms turn to external sources.

Figure 13: Internal capabilities and innovation



The rise of digital technologies, which stretch the internal capabilities of a company, is profoundly changing the face of corporate innovation. To make the most of these business opportunities, large corporations must evolve rapidly. Capabilities are the cornerstone of capturing these opportunities. But the new capabilities required are not always available internally, so large corporations must find and access them wherever they are available.

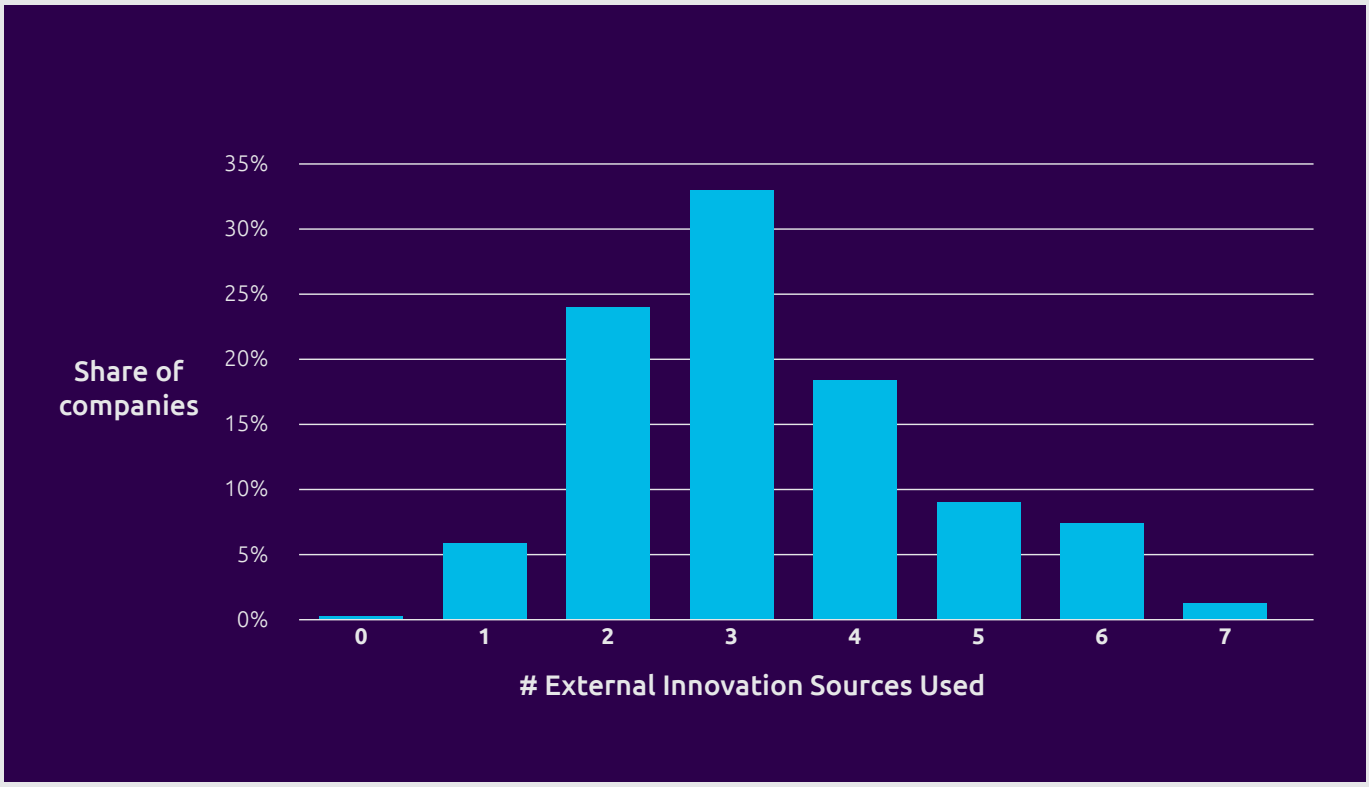
5

BIG LESSONS

The not-invented-here syndrome is dead

The not-invented-here syndrome is the alleged tendency of R&D workers to discount or ignore knowledge from sources external to their organization or work team.[14] In our research, this would have meant that some big companies would rely solely on internal innovation sources. However, nearly all of the 320 companies surveyed used at least one external innovation source. Indeed, sourcing innovation externally has become the norm: firms in our panel use an average of three different external innovation sources **(Figure 14).**

Figure 14: Number of external innovation sources used



[14]Agrawal, A. K., Cockburn, I., Rosell C. Not invented here? Innovation in company towns, 2009, National Bureau of Economic Research.

Internal resources are still important

Internal and external sources are joined at the hip

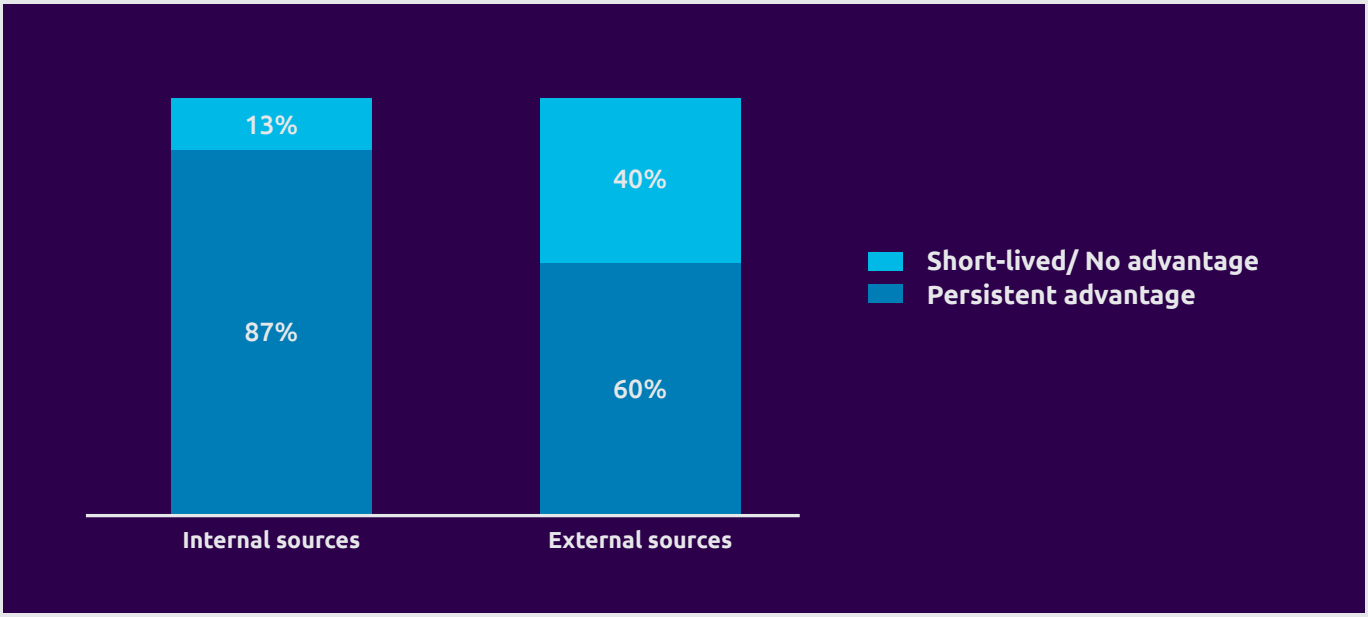
It would be logical to conclude from the data that the explosion of external sources of innovation is a signal that firms are externalizing, or even virtualizing, their innovation systems. However, that would be wrong. The dynamics of innovation in a digital age are more subtle. Our data shows that this shift to harness external innovation sources is not a substitution. Firms are not abandoning their internal innovation efforts to become virtual R&D organizations. Indeed, using internal sources holds a lot of advantages. And, it remains by far the most important innovation source being used by firms. For instance, 69% of respondents have mentioned central R&D as being amongst their top-three innovation sources (see Figure 9 earlier). Our interviewees clearly reinforced the need to build internal capabilities: "*we rely on our employees at all levels for continuously getting better at what we do,*" "*we have very talented people in our research center who work on cutting-edge topics, but for capabilities that we do not have, we identify people from outside and hire them,*" and *"to successfully integrate innovations from the outside world, having the right internal innovation team is key."* Instead, this move represents a broadening of innovation sourcing aimed at accessing the digital capabilities that firms lack internally, where coordination between internal and external sources is the main challenge.

Internal innovation gives a more persistent competitive advantage

Internal sources have an important commercial advantage: they provide more enduring advantage to the company. The logic here was well articulated by Farhan Siddiqi, Chief Digital Officer of Ahold Delhaize who commented *"For the long run, you have to be clear on what capabilities will be strategic, enable differentiation and potential innovation. Invest in building these capabilities in-house, now. Outsourcing these strategic skills will limit achieving differentiation, and mostly provide parity with competitors that are leveraging similar, outsourced partners."*
Over-relying on external sources for innovation increases the risk that competitors, in the same industry, will call on the same external sources, watering down any competitive advantage.

Our research confirms the risk of externalization or outsourcing. When using internal sources, 87% of company projects produced an advantage that persisted. In contrast, only 60% of projects sourced externally yielded persistent competitive advantage, whilst 40% of the time, competitors or outsiders matched or overtook them **(Figure 15)**.

Figure 15: Advantage gained from innovating with different sources



But, while internal innovation may have advantages, companies may not have a choice for the new wave of technologies such as IoT or AI. Using innovation sources outside the firm may be the only way that they can access the capabilities they need. But care is needed. These skills providers are marketing their newer technologies to all market segments and, in many cases, pushing very similar use cases to all their clients. Large firms can still have an advantage through combining these technologies in superior ways, and/or by having better streamlined processes internally. However, on the whole, our research points to innovating internally as being the most effective way to protect innovation and ensure a persistent competitive advantage.

Internal is the primary innovation source for non-digital innovation

The share of non-digital projects is drastically smaller than digital ones amongst important projects. However, almost all those non-digital projects are sourced through internal innovation: 66% of the total of non-digital projects come from BU staff (dedicated or operational). Indeed, these units have a deep understanding of customers and good domain expertise. Moreover, they are familiar with the way teams operate within a company when faced with such innovation projects.

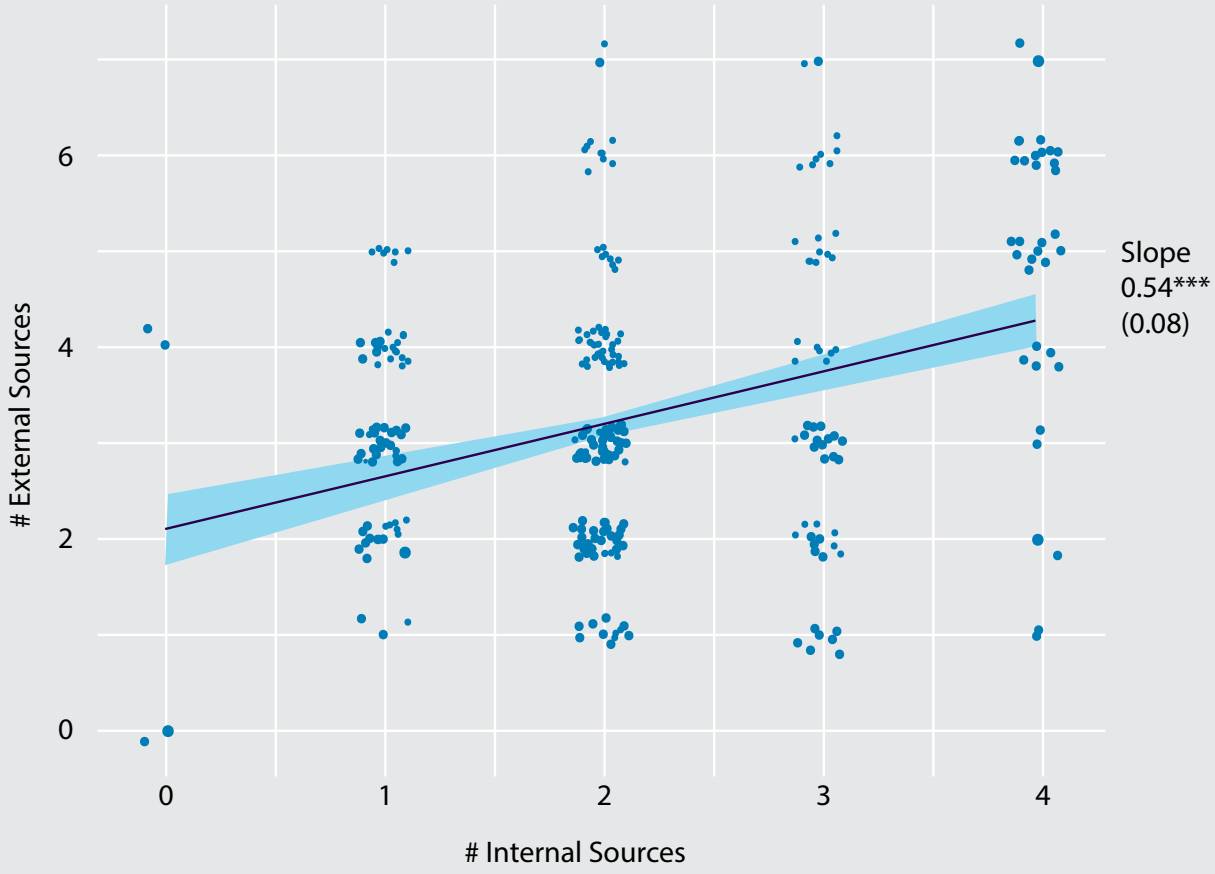
For example, when innovating on ways of working, internal expertise is crucial. As a Transformation Management Office head of an international information technology company tells us, *"Most of our innovation programs are business process transformation programs. Therefore, the vast majority of the internal resources required to make these programs successful comes from the various business organizations where these processes reside. If it is a program to transform the way we source components from a procurement perspective, then we need procurement domain experts to participate in the business process transformation program."*

As a result, internal innovation still holds a predominant place in large corporations, e.g. central R&D is the second-most-used innovation sources in our research at 77% **(see Figure 6)**. The two main advantages that internal innovation offers – a better protection of innovation and specific expertise only gained internally – will remain an important source of competitive advantage for large firms in the digital age.

Resources interdependence

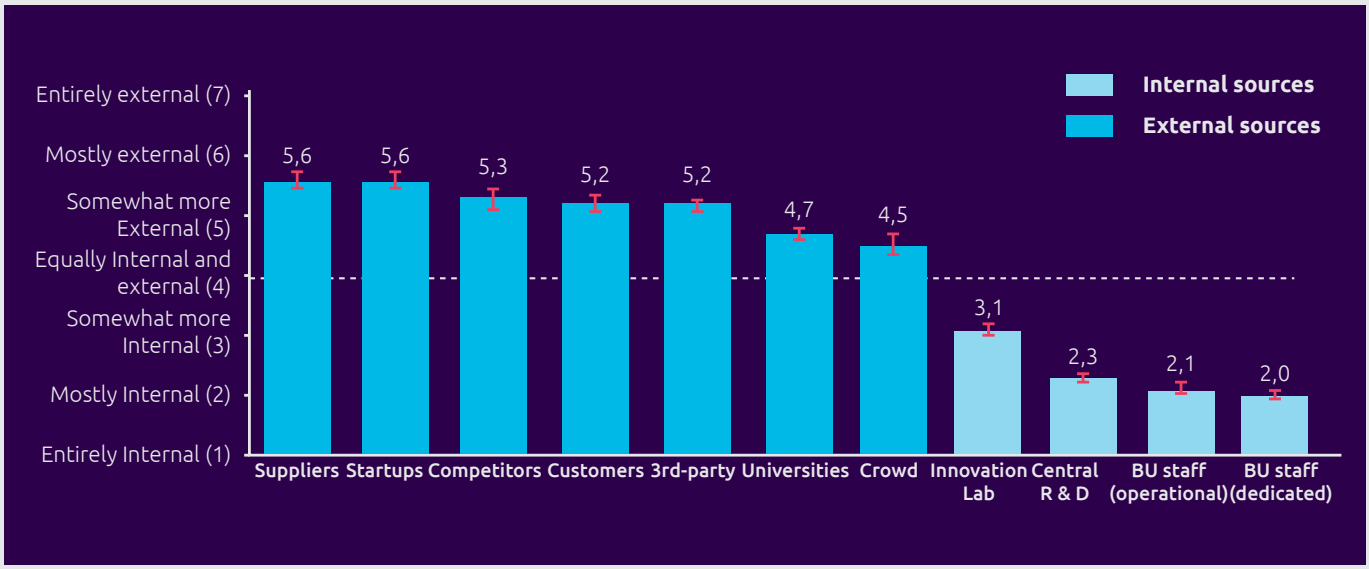
Another subtility of the dynamics of innovation in the digital age is that the coordination of sources and resources (internal and external) is core to innovation success. Corporate innovation in the digital world is broadening, not becoming virtual. If R&D had been becoming virtual (i.e., substituting internal innovation to external innovation sources), there would have been a negative relationship between external and innovation use. However, we found that when firms use external innovation sources, there is a positive relationship with the use of internal ones **(Figure 16)**.

Figure 16: Dynamics of internal/external innovation sources



So, the same firms that have moved to a more open innovation model, are also using more internal innovation sources – perhaps building a specialized central R&D team or an innovation lab. Open innovation is a necessary digital complement to corporate innovation systems. However, relying on internal resources and building solid digital capabilities in-house still matters for competitive advantage. Therefore, companies are working with a mix of internal and external resources; we found that the fast-growing innovation sources were also the ones relying on a cooperation between internal and external sources **(Figure 17).**

Figure 17: Resource interdependence between external and internal sources



Coordination is everything

One of the traditional problems with remote/external sources of innovation is isolation from the core business. Firms have struggled for many years to find effective organizational integration models which ensure that promising digital innovations are integrated into business units and scaled. This is even more pronounced in the case of the new wave of technologies that are fueling digital transformation today. Gambardella and McGahan[15] identified this phenomenon: *"The newest kinds of business problems raised by these trends arise from the distance between general-purpose scientific technologies and the techniques required for understanding how to put them into use effectively. Typically, the development of technology - especially general-purpose technology - requires skills, assets and investments in engineering and scientific disciplines and knowledge, in research, and the like. Understanding which product or service might become commercially successful requires marketing and sociological insight, experimentation with users, and the ability to match needs with technological solutions."*

To manage this coordination, firms have developed new organizational formats to access external innovation. Innovation labs, one of the most popular, present a particularly interesting change in innovation sourcing, as they are a hybrid internal/external source of innovation. Executives tell us clearly that innovation labs are primarily an internal source, but one that is designed to be more outward-facing than traditional sources. This hybrid approach has gained popularity as an innovation model in recent years as it facilitates the identification, the incubation, and/or the partnering with startups and universities. A Capgemini[16] study found that 279 innovation labs were built between 2015 and 2017. This is an increase of 92% in only two years, whereas only 301 innovation labs existed in 2015. In theory, innovation labs should also allow for outside technologies to be more easily integrated into the core operations of a firm. However, in our interviews, many executives pointed out that this depended heavily on getting the right people, processes, and organizational structure in place.

[15]"Business-Model Innovation, General Purpose Technologies, Specialization and Industry Change", Alfonso Gambardella and Anita M McGahan, Long Range Planning, June 2009
[16]"The discipline of innovation: making sure your innovation center actually makes your organization more innovative", Capgemini Invent, 2017.

In his own words,

Nick Kerigan at Barclaycard explicitly connected the growth of their innovation portfolio to startups and their new incubator. In his words, "the acceleration of digital transformation externally, allied with the growth of Fintech, has been one of the drivers of a faster pace of change in our industry. We have responded to that opportunity by evolving the way we innovate and seeking win-win partnerships with startups, through the Barclays Accelerator for example. About a year and a half to two years ago, the narrative was all about how Fintechs were going to disrupt incumbent financial institutions. Now, the narrative is much more of bank – Fintech collaboration."

Open innovation is a necessary digital complement to business innovation systems; but, in the long run, building solid digital capabilities internally still matters for competitive advantage. There are no cure-all solutions. And many innovation labs have failed to deliver a positive business return. Spending time on building the right innovation architecture and aligning the right resources, both internally and externally, is the only way to maximize the chances of success.

6

KEY TAKEAWAYS[17]

Clearly, companies face a challenge in getting the balance between internal and external resources right. On the one hand, open innovation is an effective way to source the capabilities they do not possess, especially in the short run. However, in the long run, building capabilities internally is the best way to gain competitive advantage. That is why, we believe, companies must use a combination of internal and external innovation in order to succeed. For most companies, a three-step innovation approach works best:

I. Identify technological competencies

The first step a company must take is to identify the technological capabilities that are likely to be critical in the future. Some of that happens during the annual strategy planning process; most companies conduct an annual gap analysis of the capabilities they lack, and there are board-level and business-level discussions about whether they should be plugged. Rarely does the exercise result in a roadmap showing the capabilities that companies should develop internally in the medium or long runs, and those that they must source externally immediately – that is the missing link.

The key element in the calculation will, of course, be if the acquisition of the technological capability will help differentiate the company from rivals. The degree to which digital technologies are critical will differ; accessing data science expertise may be critical for a chemical manufacturer, for instance, but not for a real estate management company that only needs to understand sales and rental trends.

The next step must be to find the sources that will allow the company to access the critical technological competences and applications. Companies should reach out to universities, startups, and others to figure out who is conducting the most exciting innovation relevant to them and build a portfolio that can fill their competency gaps (see Figure 4). Keeping abreast of numerous would-be sources of external innovation can be difficult, requiring focused attention and dedicated time by seasoned executives.

II. Create an architecture

Developing new sources of innovation requires companies to rebuild their innovation architectures, so they can manage both internal and external sources of innovation. It is important to get the three building blocks right.

First, most companies will have to refine their organization's design. For instance, if one external innovation source will be start-ups, the company must create a way of managing its relationships – such as an incubator, an innovation sandbox, a venture fund, or something similar – and their investments in them.

Second, the innovation process must change if the company's powerful business units are to buy into and adopt external innovations. One catalytic structure is an innovation lab or center in which a company can co-locate researchers to gain access to the capabilities of the innovation ecosystems in places such

[17]"This section is taken from Thompson, Bonnet and Ye, 2020, Sloan Management Review.

as Silicon Valley or Shenzhen.
These can be staffed by employees seconded from the company's businesses, which helps get buy-in for external innovations.

Finally, companies must develop innovation governance models with appropriate metrics to ensure consistency with their strategy. Many of the companies we studied initially struggled with governance and metrics. They assigned people to innovation projects, but the business units retained control of the budgets and approvals. That resulted in slowing down the innovation unit, which was hamstrung by the bureaucracy. Best practice is often to have a senior level executive overseeing the innovation project to ensure that the growth, innovation strategy and objectives are consistent with the architecture and operating model in place.

III. Develop transfer processes

One of the most common mistakes companies make is not laying down a technology competence transfer strategy from the very outset. By transfer strategy, we mean a roadmap that shows how externally developed capabilities and skills will be brought into the company in the medium or long run. There is no one-size-fits-all solution, though; the circumstances will determine each company's approach.

It is essential to think through different models and develop several paths for bringing externally sourced skills into the company. In some cases, a company will be able to hire technological capabilities from external sources; in other situations, it might make sense to acquire start-ups (a.k.a. acquihire). A third option could be to develop a build-run-transfer partnership. This arrangement will allow a technology firm with the capabilities the company needs to build a dedicated team and manage it initially. Over a period of time, the partner transfers the team, and all its work, to the parent.

7

CONCLUSION

Disruption in companies is real and evident. In order to stay afloat, big firms must change the way they innovate and adapt their innovation sources. In the context of the new wave of digital technologies, capabilities primarily drive the innovation in companies. Indeed, critical capabilities are at the cornerstone of the ability to create value and make the most of the digital tools available today. Our survey shows that companies are looking for those specific capabilities outside of the firm with newer innovation sources such as universities or innovation labs, when they lack them internally. However, the importance of more traditional innovation sources, such as central R&D or suppliers, still remains. We can conclude that R&D is not becoming virtual; firms are not substituting one source for another; they are rather broadening their innovation sources. Moreover, the lines are blurring between external and internal innovation and newer fully hybrid models (such as innovation labs or intrapreneurship) are taking off.

In the next few years, companies will have to adapt their organization and ways of collaborating to support these fully hybrid models. The key to successfully meeting the innovation challenge in the digital era is to identify the critical capabilities needed, find the balance between internal and external innovation sources through a clear architecture and find a way to incorporate critical resources in-house.

8

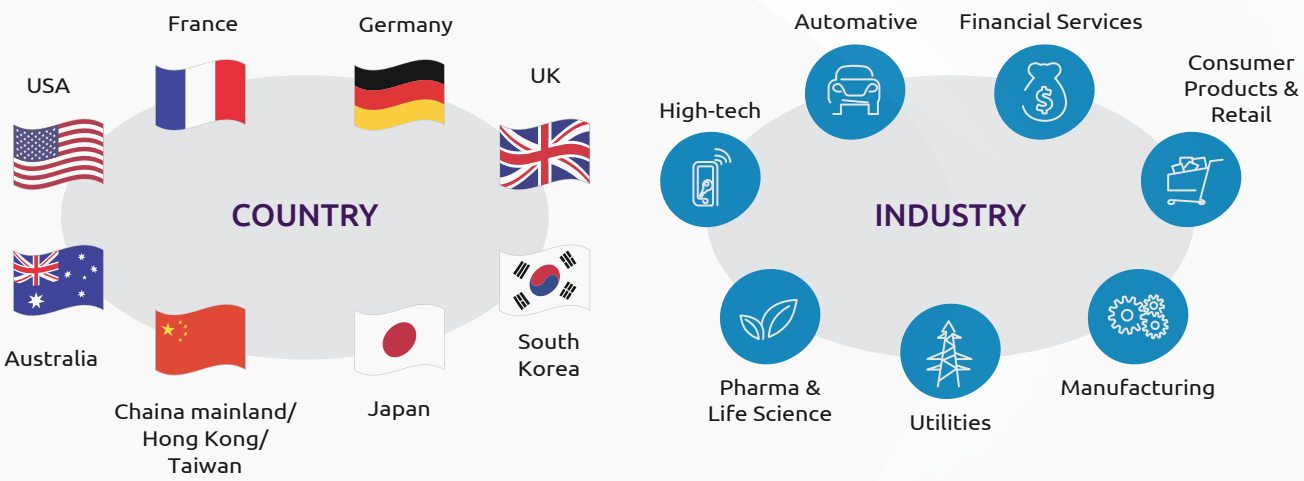
ABOUT THE RESEARCH

The MIT-Capgemini Corporate Innovation research was conducted in 2018-19. We conducted in-depth interviews with some 30 large corporations across industries and geographies to obtain a granular understanding of their innovation practices and systems. We then structured and administered a survey to quantify these innovation practices and systems. Through Phronesis Partners, we polled innovation leaders at 320 large firms ($500M+ revenues/year) and gathered data on 640 innovation projects. The sample covered firms from the U.S., China, UK, Germany, France, Australia, Japan and South Korea across seven industries.

This is the second report of a series, after

'The Foundations of Corporate Innovation in the Digital Age'.

Surveyed Innovation Leaders at 320 publically-traded companies with revenues of $500+



9

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