The Race for Innovation

May 2021
INNOVATION DRIVES STAKEHOLDER & SOCIETAL VALUE

As the world continues to change rapidly amid the global COVID-19 pandemic, innovation is becoming increasingly important. The COVID-19 vaccines were an unprecedented innovative development that will positively impact billions of lives. Additionally, innovation has allowed companies to better adapt their businesses and workforces to ever-present uncertainties. Embracing new ideas, business models, and ways of working will be critical for survival in an unpredictable future.

LEADERS CAN TAILOR THEIR INNOVATION PATH ACCORDING TO THEIR OBJECTIVES

From 2020 to 2021, there has been a tremendous shift in emphasis and investment in innovation as organizations grapple with unfamiliar challenges. Earlier this year, BCG released the Most Innovative Companies 2021 report and The CEO Innovation Agenda. The current document is intended to further amplify and extend the messages from those pieces in order to help leaders select their most suitable innovation path.
Innovative companies are better positioned to recover and thrive in increasingly dynamic markets

**Faster recovery**

17 pp

Outperformance in total shareholder return (TSR) by the 50 most innovative companies in 2020

**Beyond the core**

20%

Higher average valuation multiple for companies that innovated across both core and new markets

**Changing leaders**

56%

56% of industry-leading companies lost their leading position in last decade, a reduction in incumbent advantage compared with past decades (23% lost)

**New disrupters**

50%

50% decrease in average age of S&P 500 companies today, compared with 1980 (19 vs. 37 years old)

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1. Analysis compared companies that disrupted more across adjacent and frontier markets with those that innovated only in core markets among BCG’s top 100 Most Innovative Companies; P/E multiple used for valuation multiple; innovation focus measured by peer survey respondents within core and outside core industry; N = 1,600 C-level and SVP-level innovation executives. 2. Based on US industry leaders by operating income in 69 industries.

Source: BCG Most Innovative Companies of 2021 report and survey (April 2021); BCG Deep Tech and the Great Wave of Innovation article (March 2021); Capital IQ; BCG Henderson Institute; BCG analysis
## The Race for Innovation

### Innovation trends

COVID-19 has tested companies’ ability to adapt to changing environments; 75% of companies report innovation as a top 3 priority in 2021.

Incumbent advantage is declining as only 44% of industry leaders maintained their industry rank in the past decade, compared with 77% in previous decades.

Innovative companies have outperformed their peers before and during COVID-19 downturn by ~10-20 pp in shareholder returns, led by the top 3 most innovative companies—Apple, Alphabet, and Amazon (A-A-A).

### Innovation options

Companies must determine their innovation focus among core, adjacent, and new frontier opportunities, which will impact other innovation plan options.

1. **Vehicles:** Explore growing innovation vehicles such as partnerships/VC
2. **Technology:** Leverage existing technologies and explore nascent areas
3. **Process:** Use agile processes to rapidly build, test, launch, and learn
4. **Working model:** Facilitate cross-functional teams to drive innovation engine
5. **Culture:** Reward innovative thinking across all teams, including frontline

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Source: BCG Most Innovative Companies of 2021 report (April 2021); BCG Most Innovative Companies of 2020 report (2020); BCG Deep Tech and the Great Wave of Innovation article (March 2021); BCG Henderson Institute; BCG analysis
COVID-19 has increased the importance of innovation and driven increased innovation budgets, as flexibility and resilience are necessary to survive.

**Increasing importance of innovation**

Percent of organizations ranking innovation a top 3 priority, in 2020 and 2021.

- 2020: 65%
- 2021: 75%
- Increase: +10%

In 2021, innovation as a top 3 priority jumped **10 pp** from 2020, the largest year-over-year increase in 15 years of research; COVID-19 drove the **increased importance**.

**Increased innovation budgets**

Share of respondents that have increased their innovation budget slightly or significantly.

- 2020: 51%
- 2021: 63%
- Increase: +12%

Innovation budget includes building new digital products and processes, exploring new business models, and reorienting the innovation portfolio.

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1. Percent responding "top priority" or "top 3 priority" to the question "Where does innovation/R&D/product development rank among your company’s priorities?" 2. Percent responding "increased significantly" or "increased slightly" to the questions "Compared with 2019, how much did you adjust your company’s budget for innovation/R&D/product development in 2020?" and "Compared with the year 2020, how do you expect your company’s budget for innovation/R&D/product development to be adjusted in 2021?" Source: BCG Most Innovative Companies of 2021 report (April 2021)
Incumbent companies are more likely to be outcompeted; innovation requires leadership and commitment at the C-level

Incumbent advantage is declining
Percent of industry-leading companies\(^1\) that kept 5-year industry ranking, in last decade compared to past decades

<table>
<thead>
<tr>
<th>Past decades</th>
<th>Last decade</th>
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<tr>
<td>77%</td>
<td>44%</td>
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33 pp

The average age of companies in the S&P 500 today is half of what it was in 1980 (19 vs. 37 years); incumbents must continue to innovate to survive

Innovation needs CEO/CXO ownership
Percent of respondents with clear C-level ownership of innovation\(^2\)

<table>
<thead>
<tr>
<th>Top innovators(^3)</th>
<th>88%</th>
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<tbody>
<tr>
<td>Bottom innovators(^4)</td>
<td>20%</td>
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CEOs/CXOs must set the overall ambition and define strategic priorities, ensure accountability for innovation outcomes, and support innovation culture and talent

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1. Based on US industry leaders by operating income in 69 industries. 2. Percent responding “defined & implemented (w/impact)” to the survey statement “Executive ownership: Innovation is owned and actively championed by the CEO or an ExCo member.” 3. Top 50 companies in innovation based on BCG Innovation (i2i) score. 4. Bottom 50 companies in innovation based on BCG Innovation (i2i) score

Source: BCG Most Innovative Companies of 2021 report (April 2021); BCG Deep Tech and the Great Wave of Innovation article (March 2021); BCG Henderson Institute
The 50 Most Innovative Companies of 2021 accelerated out of the crisis

17 pp

Outperformance in 2020 of a portfolio invested in last year’s 50 Most Innovative Companies compared with MSCI world index, a global large and mid-cap equity index.

Most Innovative Companies report includes a global perception survey, competitor views, multi-industry participation, and value creation (total shareholder return).

Even after removing digital players, nondigital innovators still outperformed MSCI by 12 pp.

Source: BCG Most Innovative Companies of 2021 report (April 2021); MSCI; CapitalIQ; BCG analysis

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Apple, Alphabet, and Amazon (A-A-A) are the top 3 most innovative companies of 2021 and have been ranked in the top 10 for the past decade.

MYTH:

A-A-A spends more on innovation than other companies

A-A-A invests similar amounts on innovation (~15% of sales) but gets 3x better returns through improved innovation practices and decision making.

Not everyone has to be A-A-A… but CEOs can apply A-A-A lessons that are relevant to their respective companies/sectors as they revamp innovation in the COVID-19 era.

1. Based on responses to the question “Innovation input: What is the total % of sales allocated to R&D as well as other innovation activities” from the BCG Most Innovative Companies 2021 report. Source: BCG Most Innovative Companies report over time.
As the COVID-19 battle continues, innovation is taking priority in global agendas

As of 12 May 2021

COVID innovations: vaccines for variants, drone deliveries, print-your-own shots, and more

Boeing gives Virginia Tech $50 million to help launch innovation campus

China targets AI, chips among seven battlefronts in tech race with US

Biden and world leaders focus on innovation for ‘clean energy future’ at climate summit

Kenya is becoming a global hub of fintech innovation

Tech giants bet $19 billion on global electric car frenzy

Deep tech startups are emerging in India, but money and markets to sustain are still needed

Plans to increase tech unicorns tenfold in Europe proposed
CEOs should set the innovation focus and use it to navigate their innovation plan options across 5 key dimensions

<table>
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<tr>
<th>Focus</th>
<th>Determine the innovation focus (core, adjacent, new frontier) based on company objectives, which will shape subsequent path</th>
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<tr>
<td><strong>1. Vehicle</strong></td>
<td>Add capabilities through ventures/ecosystems; different options exist based on innovation focus</td>
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<tr>
<td><strong>2. Technology</strong></td>
<td>Leverage existing or nascent technologies to power innovation based on focus</td>
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<td><strong>3. Processes</strong></td>
<td>Use agile innovation processes to build, test, launch, and learn across innovation focus areas</td>
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<td><strong>4. Working model</strong></td>
<td>Facilitate cross-functional collaboration between product and sales teams and ensure alignment across levels</td>
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<td><strong>5. Culture</strong></td>
<td>Reward innovative thinking across teams and ensure talent is empowered to challenge the status quo</td>
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Determine innovation areas to focus on given company objectives and positioning, which will shape subsequent path

**Description and examples**

**Explore new frontiers**
Innovation focused on developing new products or services in markets that may not currently exist

**Example**
Electronics company develops autonomous vehicle software

**Expand into adjacencies**
Innovation aimed at expanding into areas adjacent to core that are new to the company

**Example**
Airline builds and sells operations optimization platform

**Maximize the core**
Innovation aligned to scaling and optimizing existing core business

**Example**
Apparel manufacturer adopts fully digital design process

The **business model** will also need to change in order to match desired innovation and to maximize chances of **success** and ability to **scale**

1. Analysis compared companies that disrupted more across adjacent and frontier markets with those that innovated only in core markets among BCG’s top 100 Most Innovative Companies; P/E multiple used for valuation multiple; innovation focus measured by peer survey respondents within core and outside core industry, N = 1,600 C-level and SVP-level innovation executives

Source: BCG Most Innovative Companies of 2021 report and survey (April 2021); BCG analysis
Add capabilities through ventures/ecosystems; different options exist based on innovation focus

Based on innovation focus area and desired engagement model, determine appropriate innovation vehicle

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<th>Model</th>
<th>Build</th>
<th>Buy</th>
<th>Partner</th>
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<td>New Frontier</td>
<td>Internal research and development</td>
<td>Mergers and acquisitions</td>
<td>Corporate venture capital</td>
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<tr>
<td>Adjacent</td>
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<tr>
<td>Core</td>
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<td>Innovation network (e.g., public labs)</td>
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Source: BCG Most Innovative Companies of 2020 report (2020); BCG 4 Strategies to Orchestrate a Digital Ecosystem report (2020); Refinitiv/SDC Platinum; BCG Transaction Center

Venture/Ecosystem:
Companies have increasingly partnered and invested in startups and public research labs that are driving technology innovation.

In the past decade, A-A-A invested in 500+ startups and 25+ have become unicorns (>1 billion valuation).

From 2019 to 2016, there was an 8x increase in innovation alliances formed.
Leverage existing or developing technology to power innovation based on timeline and focus

Develop or partner in **deep tech** areas to meet future needs

**4X**

- Growth in deep tech investments from 2016 to 2020 (from $15B to $60B)

**Key deep tech investment areas:**
- Biotechnology, artificial intelligence, photonics and electronics, drones and robotics, advanced materials, blockchain, quantum computing

**Timeline considerations:** Deep tech areas may have uncertain timelines as technologies may not yet be **commercially available**

**Business model innovation:** New frontier innovation can occasionally rely entirely on business model innovation with little technology development

Leverage or improve **existing technologies** in current markets

- **60%** of companies are leveraging digital transformation for innovation goals

**Example**
- Fertilizer company adds satellite imagery service to help farmers maximize crop yields while minimizing environmental emissions

**Example**
- Auto manufacturer develops virtual sales platform that allows for car tours, financing options, and delivery during COVID-19

**Diversify portfolio:**
- Like other companies, A-A-A invests in a **portfolio of innovation:** 70-80% core/adjacent and remainder in new frontier. Some A-A-A new frontier bets are highly visible (e.g., Google X)

Within core, A-A-A develops products **faster** than others (average of 7 vs. 15 months), but outside core, A-A-A timelines match others

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Source: BCG Deep Tech and the Great Wave of Innovation article (March 2021); BCG Most Innovative Companies of 2020 report (2020); BCG Digital Strategy Roadmap Survey; BCG analysis
Use agile innovation processes to build, test, launch, and learn across innovation focus areas

Innovation process is effective across innovation types, with some tailoring

1. Learn from users:
A-A-A involves customers closely in the product development process to obtain continuous feedback

2-3. Analyze, build, and run experiments:
A-A-A tends to move forward with ~50% of innovation projects, like other companies, but tends to make more successful decisions (90% vs. 60% for other companies)¹

Innovation Flywheel

1. Learn from users
   Continuously capture feedback to improve understanding of customers/users

2. Analyze and build
   Use analytical toolkit on expanding data and identify high-value opportunities

3. Run experiments
   Generate new versions through rapid tests that monitor impact, drive KPIs, and eliminate dead ends

4. Launch and engage
   Build processes to enhance products, services, and platforms to drive trust/engagement

Innovation processes

1. New Frontier
   Usually requires longer timeline for technology development. May deliver intermediate results and iterate prototypes before going to market

2. Adjacent
   Flywheel will be started by frontline teams with quick innovation sprints and aim to launch MVP (minimal viable product). Product launches drive new feedback and restart cycle

3. Core

Innovation Flywheel

1. Learn from users
2. Analyze and build
3. Run experiments
4. Launch and engage

1. Based on survey respondent feedback on competitor choice set; successful decisions defined as prioritizing more successful projects
Source: BCG Digital Ventures Powering the Innovation Flywheel in the Digital Era article (March 2021); BCG Most Innovative Companies of 2020 report (2020); BCG analysis
Facilitate cross-functional collaboration between product and sales teams and ensure alignment across levels

Across industries, almost 1/3 of companies cited less than optimal collaboration between R&D and sales team as the biggest obstacle to higher innovation output.

Innovation struggles occur when ideas are pushed to market rather than pulled. R&D and sales must align to be effective.

R&D or product development unit
Drive product/service/tech innovations for market units. Must apply market feedback.

Market or sales units
Commercialize innovations across markets/use cases. Must translate customer needs.

Customers and end users

Solutions to bridge divide:
- Build a one-team mentality
- Align incentives with metrics
- Establish communication lines, mandates, and accountability
- Shift the status quo and celebrate successes

Teams working on innovations should have senior-stakeholder governance and commitment to align purpose and direction, while also having decision-making authority.

1. Decentralized, nimble teams aligned to overall objectives
2. Development ownership, but plan for launch and handoff
3. Decoupled launch schedules, considering key connections

Source: BCG Most Innovative Companies 2021 report (April 2021)
Reward innovative thinking across teams and ensure talent is empowered to challenge the status quo

All teams, including frontline/operations, should embed innovation culture and recruit talent that would excel in this culture

1. Customer obsession … while ensuring economic viability
2. Interdisciplinary collaboration … with individual accountability
3. Risk taking and tolerance of failure … with strong performance management
4. Bias for action and fast decisions … while singling out irreversible ones
5. Individual sense of ownership … with strong strategic direction

Reward risk taking and not being afraid of experiment failures; ensure top performers have opportunity to complete a focused innovation rotation

Build teams that have a diversity of backgrounds and thinking; focus on recruiting talent that will continuously challenge the status quo

Innovation culture:
Talent allocation is the true differentiator. A-A-A places the best and brightest on innovation and fosters a culture of experimentation

Diverse teams:
Companies that have above-average diversity scores have 19 pp higher revenues from innovation products than companies with below-average scores

1. Innovation revenues defined as revenue from products launched in past 3 years
Source: BCG Most Innovative Companies 2021 report (April 2021)
## Additional perspectives on innovation

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<th>Applying the Lessons of the Pandemic to Build for the Future</th>
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<td>The Readiness Gap (Most Innovative Companies 2021)</td>
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<td>How do You Manage a Business Ecosystem?</td>
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<td>15 Years of the Most Innovative Companies</td>
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