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## Corporate Innovation: One Path to More Sustainable Big Business

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## CORPORATE INNOVATION: ONE PATH TO MORE SUSTAINABLE BIG BUSINESS

*David News*<sup>1</sup>

The story of the entrepreneur seeking capital from angel investors, venture capitalists, and private equity funds has been told in great detail through mass media, television programs, and academic literature. Entrepreneurs regularly develop innovative business ideas, put together an investor pitch, and seek capital to turn their idea into a reality. Once the entrepreneur has received capital from investors, our society continues to tell the story of the independent, disruptive startup that changes an industry through its innovative product or service.

However, one variation of this story we rarely discuss (through any medium) is the story of the entrepreneur developing a new venture idea that is valued by a large corporation. These entrepreneurs may find that their most likely investors are the large companies whose business they seek to disrupt with their innovations. Other times, the entrepreneur may not be outside of the large company's organizational chart at all—they may be an *intrapreneur* who develops new ideas within the corporate structure with the goal of carrying the company's dominant market position forward through consistent product innovation. To date, academic literature has only scratched the surface of these arrangements.

This article seeks to bolster our collective understanding of entrepreneurial innovations that receive investment or internal support from large corporations. Additionally, this article seeks to advance a new theory—large corporations that support entrepreneurial ventures or internal projects do so to make their existing business more environmentally sustainable over time. Lastly, this article argues that large corporations should make a greater number of investments in environmentally sustainable technologies, for reasons related to both economic success and environmental stewardship.

### I. INTRODUCTION

Entrepreneurs seek capital from investors early and often in their journey toward building a successful new venture.<sup>2</sup> In fact, accelerator

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2. See JD Morris, *Seeking Capital For Your Startup? Remember: It's About Returns For Your Investor*, FORBES (Nov. 20, 2019), <https://www.forbes.com/sites/forbesfinancecouncil/2019/11/20/seeki>

programs,<sup>3</sup> business mentors,<sup>4</sup> and academic courses<sup>5</sup> teach budding entrepreneurs that seeking capital is a make-or-break task for the early-stage entrepreneur. Given this emphasis, entrepreneurs build their company's narrative with the investor in mind.<sup>6</sup> For example, entrepreneurial activities like the investor pitch feature segments that seek to convince investors of things like the value proposition of the product or service and why now is the correct time to launch the business.<sup>7</sup> Additionally, before the entrepreneur can even get a meeting with a potential investor, they often need to network to make relevant connections.<sup>8</sup> Otherwise, the entrepreneur is likely to resort to a modern-day version of cold-calling—sending relevant documents like executive summaries and projected financials in an effort to get a first meeting with an investor.

However, this story can look a little different for another set of entrepreneurs. In these cases, the innovative product or service idea pursued by the entrepreneur directly or indirectly competes with the

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[ng-capital-for-your-startup-remember-its-about-returns-for-your-investor/?sh=2c39fed39445](https://www.ycombinator.com/about).

One of the most daunting tasks you are likely to face after having successfully founded a growing startup can be securing enough capital to pay the bills until the expanded operations begin to pay for themselves. Startups seeking funding for their expansions have a number of options for securing capital, but you still need to convince investors that your business is worthwhile as an investment.

*Id.*

3. See *What Happens at YC*, Y COMBINATOR, <https://www.ycombinator.com/about> (last visited May 16, 2022) (“[W]hatever stage a startup is at when they arrive, our goal is to help them to be in dramatically better shape 3 months later. For most startups, better shape translates into two things: to have a better product with more users, and to have more options for raising money.”).

4. See GUY KAWASAKI, *REALITY CHECK: THE IRREVERENT GUIDE TO OUTSMARTING, OUTMANAGING, AND OUTMARKETING YOUR COMPETITION* 27 (Penguin Group 2008) (“You may never try to raise money from a venture capitalist, but unless you’re a trust-fund brat, you’ll probably have to raise money from someone to fund a business.”)

5. See, e.g., *New Venture Finance: Startup Funding for Entrepreneurs*, COURSERA, <https://www.coursera.org/learn/startup-funding> (last visited May 16, 2022) (“This course is for aspiring or active entrepreneurs who wants [sic] to understand how to secure funding for their company. This course will demystify key financing concepts to give entrepreneurs and aspiring entrepreneurs a guide to secure funding.”).

6. See KAWASAKI, *supra* note 4, at 33–39 (describing the key elements of an executive summary and an investor pitch, two key methods through which entrepreneurs communicate their business ideas to investors).

7. See, e.g., GUY KAWASAKI, *THE ART OF THE START 2.0*, 7 (Penguin Group 2015). Kawasaki states that entrepreneurs should “[e]xplain how [they] alleviate pain and the meaning that [they] make. Ensure that the audience understands what you sell and your value proposition.” *Id.* at 143.

8. See KAWASAKI, *supra* note 4, at 30–32 (discussing methods through which entrepreneurs can seek to be introduced to relevant investors).

offering of an industry giant.<sup>9</sup> When this occurs, the incumbent industry leader may have an interest in investing in (or acquiring outright) the new technology in an effort to eliminate a potential threat and maintain its dominant market position.<sup>10</sup> These types of investments and acquisitions have been made by companies outside of the technology sector more regularly in recent years.<sup>11</sup> Other large companies take this strategy a step further and encourage their employees to innovate within the company with the hopes of having these intrapreneurial projects lead to the next big innovation within the company's industry.<sup>12</sup> Regardless of the strategy deployed, it is clear that large companies recognize the need for constant innovation.<sup>13</sup>

With these ideas in mind, this article seeks to review and analyze the transactional structures through which these companies make investments in new innovations. To date, the academic literature has only scratched the surface of these arrangements. This article's first goal is to synthesize

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9. See, e.g., Leslie Picker, *For Non-Tech Companies, If You Can't Build It, Buy a Start-Up*, N.Y. TIMES (Jan. 2, 2017), <https://www.nytimes.com/2017/01/02/business/dealbook/mergers.html>.

All kinds of companies, including century-old industrial stalwarts like General Motors and General Electric, are among the corporate giants acquiring tech start-ups of late. This trend, of course, reflects how new technology is radically changing many traditional businesses. Developments like connected homes and driverless cars are upending old models. Many companies have come to the realization that building technology in-house was a painstaking process that often meant getting leapfrogged by start-ups. So companies not usually thought of as being in the tech sector have become more aggressive, making more than \$125 billion worth of acquisitions in 2016, the most ever. Five years ago, that figure was \$20 billion.

*Id.*

10. See *id.*

The examples span many industries. Walmart purchased the e-commerce start-up Jet.com, while General Electric agreed to buy ServiceMax, whose software provides information about off-site workers and equipment repairs. Roper Technologies, another century-old industrial conglomerate, signed a deal with Deltek, an enterprise-software provider. Automakers such as General Motors and Daimler have taken large stakes in ride-sharing applications, including Lyft and Hailo. Last year, the number of technology companies sold to non-tech companies surpassed those acquired by tech companies for the first time since the internet era began, according to data compiled by Bloomberg. Excluding private equity buyers, 682 tech companies were purchased by a company in an industry other than technology, while 655 were acquired by tech companies, Bloomberg's data showed.

*Id.*

11. *Id.*

12. See PAUL BURNS, CORPORATE ENTREPRENEURSHIP AND INNOVATION 338 (4th ed. 2020) ("The term intrapreneur is generally used to describe the individual charged with pushing through innovations within a larger organization, in an entrepreneurial fashion.").

13. See, e.g., Darian M. Ibrahim, *Corporate Venture Capital*, 24 U. PA. J. BUS. L. 209, 213 (2022) ("[A] large corporation that has no ownership in disruptive technologies is likely to someday fall the victim to one. Thus, corporations have increasing incentives to act as venture capitalists on the side.").

the literature on this topic to date.<sup>14</sup> Secondly, this article seeks to advance a new theory—that large existing corporations who support external entrepreneurial ventures or internal entrepreneurial projects do so in an effort to make their existing business more environmentally sustainable over time.<sup>15</sup> Lastly, this article advances the argument that these investments will have a positive effect on the large corporation’s future success and the environment itself.

This article proceeds in three parts. First, Section II takes a deep dive into why large companies seek to invest in the innovations that may someday disrupt their core business. Next, Section III reviews the previous literature on corporate innovation initiatives like those described above and highlights the transactional structures used in these arrangements. Lastly, Section IV has three key aims. First, Section IV uses a case study of the present-day automotive industry to demonstrate how shifting consumer preferences and regulatory momentum are pushing the industry to become more sustainable through the rapid development of electric vehicle technology. Second, Section IV shares some examples of other industries where similar investments in sustainable technologies are likely in the coming years. Finally, Section IV seeks to tie these conversations together by proposing a four-step blueprint for sustainable corporate investments in innovation.

## II. WHY CORPORATIONS INNOVATE

Large companies often maintain a dominant position in one or more areas of a given market, in part because of their focus on catering to existing customer needs.<sup>16</sup> A classic example of this is Blockbuster, who successfully catered to their customers’ needs throughout the 1990s and early 2000s by providing brick-and-mortar locations for customers to rent movies and video games.<sup>17</sup> However, these same companies must

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14. *See infra* Section II.

15. *See infra* Section III.

16. *See* Darian M. Ibrahim, *Intrapreneurship*, 73 WASH. & LEE L. REV. 1741, 1745–46 (2016) (citing CLAYTON M. CHRISTENSEN, *THE INNOVATOR’S DILEMMA: THE REVOLUTIONARY BOOK THAT WILL CHANGE THE WAY YOU DO BUSINESS* xxvi (1997)). Ibrahim states that:

Christensen argues that well-managed large corporations cater to existing customers and improve upon existing products (i.e., sustaining innovations) rather than pursue disruptive innovations that create new products and new demand. Eventually, however, experience shows that entrepreneurial disruptive innovations invade or occupy the large corporation’s space. This is the innovator’s dilemma: stick with a successful strategy and eventually be disrupted by a startup.

*Id.*

17. *See* KAWASAKI, *supra* note 7, at 7 (discussing how startups can succeed by attacking where a market leader is weak). One common instance of this is when a market leader is fully committed to a

maintain a delicate balance of catering to their existing customers and their desires while simultaneously being active in creating new innovations that will cater to future customer desires.<sup>18</sup> If the market leader does not maintain an active innovation agenda, it remains vulnerable to new market entrants that cater to future customer desires.<sup>19</sup> Of course, in the Blockbuster example, new market players like Netflix eventually innovated Blockbuster out of business, first through its mail-order DVD service, and eventually through its streaming platform.<sup>20</sup>

This Section first discusses how innovative entrepreneurs create

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specific way of doing business, as Blockbuster was with its brick-and-mortar strategy.

18. See Houman B. Shadab, *Innovation and Corporate Governance: The Impact of Sarbanes-Oxley*, 10 U. PA. J. BUS. & EMP. L. 955, 968–69 (2008).

Established firms that have already invested in a particular product or organizational capability may be reluctant to switch to a new technology for fear of taking away profits from their current products and lowering the value of resources used to make those products. For example, from 2005 to 2006, Motorola allocated too many resources to maintaining its popular RAZR cell phone and not enough to developing the next generation of phones to stay ahead of competitors.

*Id.*

19. *Id.* In the previous example including Motorola, the RAZR was quite vulnerable to being unseated as the dominant market player when Apple introduced its iPhone in 2007. See generally April Montgomery & Ken Mingis, *The Evolution of Apple's iPhone*, COMPUTERWORLD (Sept. 23, 2021), <https://www.computerworld.com/article/2604020/the-evolution-of-apples-iphone.html>; see also Mirit Eyal-Cohen, *Innovation Agents*, 76 WASH. & LEE L. REV. 163, 174–76 (2019).

Joseph Schumpeter, an influential scholar from the Austrian school of economic thought, defined economic development as a dynamic process of change. He claimed that the circular flow of economic life evolves through a process of “creative destruction”—that is, cycles of punctuated equilibria disrupted by sudden leaps of endogenous innovation. In other words, innovations destroy the basis of the old economy and pave the way for a new economic order with higher levels of prosperity and welfare. In 2007, the introduction of the smartphone by Apple radicalized many industries. The iPhone allowed consumers to access the internet from wherever they were, using a navigation system that was easier to operate than others in the market. The iPhone directly impacted computer sales, as well as traditional landline companies (effectively eliminating many people’s landlines and telephone booths). It also radically transformed the gaming industry with the advent of mobile games and applications. Innovation agents such as Apple are responsible for not only revealing new knowledge, but also successfully commercializing and introducing it to the market. In order to transform inventions into viable innovations with economic value, innovation agents take the original idea or concept and create a prototype, define its function, gather resources together, and monitor the progression of the development process. Once the innovative product is out in the marketplace it may create new market demands by challenging previous popular practices and traditions. Innovation agents destroy the basis for the old economy while paving the way to a new economic order of prosperity and welfare by implementing innovations.

Eyal-Cohen, *supra* note 19, at 174–76.

20. See, e.g., Minda Zetlin, *Blockbuster Could Have Bought Netflix for \$50 Million, But the CEO Thought It Was a Joke*, INC. (Sept. 20, 2019), <https://www.inc.com/minda-zetlin/netflix-blockbuster-meeting-marc-randolph-reed-hastings-john-antioco.html> (sharing the story of a meeting between Netflix and Blockbuster leadership, in which Blockbuster had the opportunity to purchase Netflix). Blockbuster had filed for bankruptcy protection less than a decade later. *Id.*

products and services that cater to future customer desires. Then, this Section addresses the balancing act large companies must perform to make sales today while investing in innovation for tomorrow.<sup>21</sup> Lastly, this Section addresses a modern reality: many new ventures (and intrapreneurial teams) are creating new products and services geared toward an emerging customer desire to be more sustainable. In highlighting each of these topics, Section II seeks to provide necessary context with respect to: (1) corporate innovation; (2) why corporate innovation is an important topic; and (3) corporate innovation's relation to environmental sustainability.

### *1. Corporate Innovation*

Most observers believe successful entrepreneurs have a knack for discovering a novel business idea. However, entrepreneurs find success by locating a problem faced by many consumers that those consumers are actively trying to solve.<sup>22</sup> Then, the entrepreneur creates a solution to that problem that consumers are willing to purchase over their current alternatives.<sup>23</sup> This explains why startup businesses today place great value on customer input.<sup>24</sup> If entrepreneurs can create something new in a way that better solves a customer problem, they may find themselves on a path to revenue.<sup>25</sup>

Existing businesses that are already generating substantial revenue

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21. See, e.g., Shadab, *supra* note 18, at 961–62.

As the pace of economic change and competitive pressures increase, innovation becomes a necessary “cost of doing business.” The incentive to stay ahead of competition and preserve profits will induce an established firm to innovate when the established firm’s “failure to develop the innovation means that new entrants almost certainly will.” Accordingly, a firm may need to adopt innovation routines and make innovation a part of its overall strategy for dealing with change.

*Id.*

22. See, e.g., *Why Problem Solving Should Be The Only Value Proposition You Use*, NEIL PATEL, <https://neilpatel.com/blog/problem-solving-value-proposition/> (last visited May 10, 2022) (stating that brands like Proctor & Gamble, Warby Parker, and Apple have all had success because they have sought to alleviate customer problems through their product offerings).

23. *Id.* (sharing the example of Proctor & Gamble’s better version of the mop—the Swiffer.)

24. See, e.g., STEVE BLANK & BOB DORF, *THE STARTUP OWNER’S MANUAL: THE STEP-BY-STEP GUIDE FOR BUILDING A GREAT COMPANY* 31–32 (K&S Ranch, Inc. 2012) (sharing the “Customer Development Manifesto” – which encourages startup founders to get outside of their office building and interact with customers directly. The authors argue that this is the only way to “embrace the feedback, react to it, and adeptly make the decisions necessary to change or pivot key business model components.”).

25. See, e.g., KAWASAKI, *supra* note 7, at 5–6 (explaining that “great companies [begin] by asking simple questions” like: “Is there a better way?”). Startup founders who follow this path are typically frustrated with the current best way to do something and seek to create a better solution to the problem.

*Id.*

have discovered a customer problem and created a product or service that solves the problem well.<sup>26</sup> These businesses often attempt to remain at the top of their field by continuously soliciting feedback from their current customers in an effort to improve upon their products and services in a step-by-step manner.<sup>27</sup> Of course, listening to today's customers is useful in the sense that those customers will provide a company insight into the products or services that can be sold today. However, companies regularly struggle to identify and take seriously new innovations that pose a threat to their current "cash cows"—products or services that keep the revenue flowing at present.<sup>28</sup>

Apple co-founder Steve Jobs perhaps said it best regarding balancing the desires of today's customers with the desires of tomorrow's customers:

Some people say give the customers what they want, but that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, "If I'd ask customers what they wanted, they would've told me a faster horse." People don't know what they want until you show it to them. That's why I never rely on market research. Our task is to read things that are not yet on the page.<sup>29</sup>

Of course, it is easy to see Jobs' point. Ford Motor Company would have been much less successful had it focused on faster horses and Apple would not have experienced the rapid growth it did without creating the iPhone, which Jobs touted as "five years ahead of any phone."<sup>30</sup> Had you asked a smartphone user at the time, they may have asked for a higher-powered BlackBerry.<sup>31</sup>

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26. A prime example of existing businesses that solve multiple customer problems well are fast food restaurants. Despite the fact that most people know fast food is bad for their health, the value proposition presented by such restaurants keeps customers coming back for more. *See, e.g.*, Miranda Hitti, *Top 11 Reasons for Fast Food's Popularity*, WEBMD (Dec. 2, 2008), <https://www.webmd.com/food-recipes/news/20081202/top-11-reasons-for-fast-foods-popularity>. The top reasons why survey respondents eat at fast food restaurants include "they're quick" (92.3%), "they're easy to get to" (80.1%), and "they're inexpensive" (63.6%). *Id.* Consumers often need a meal quickly at a restaurant that is nearby and inexpensive, which explains these restaurants and their popularity. *Id.*

27. *See generally* CHRISTENSEN, *supra* note 16.

28. *See generally* KAWASAKI, *supra* note 4.

29. *See* Dave Smith, *What Everyone Gets Wrong About This Famous Steve Jobs Quote, According to Lyft's Design Boss*, BUS. INSIDER (Apr. 19, 2019), <https://www.businessinsider.com/steve-jobs-quote-misunderstood-katie-dill-2019-4>.

30. *See* Linius Zaman, *Steve Jobs Unveils The Original iPhone – Macworld San Francisco 2007*, YOUTUBE, AT 31:29 (July 19, 2013), <https://www.youtube.com/watch?v=e7EfxMOEIBE>.

31. *See* Alexandra Appolonia, Katie Nixdorf, & Robert Leslie, *How BlackBerry Went from Controlling the Smartphone Market to a Phone of the Past*, BUS. INSIDER (Jan. 14, 2022), <https://www.businessinsider.com/blackberry-smartphone-rise-fall-mobile-failure-innovate-2019-11> ("At one time, BlackBerry controlled 43% of the smartphone market in the US and 20% globally," but "[d]espite being one of the first smartphones, [BlackBerry] failed to innovate and became complacent in



## 2. *Why Corporate Innovation is Important*

This is perhaps the single biggest challenge for today's market-leading companies: how to balance the explicit desires of today's customers with the innovations of tomorrow. Fortunately, this topic has received extensive coverage in business literature<sup>32</sup> and recently, in legal scholarship as well.<sup>33</sup> Professionals active in startup culture have also discussed this challenge at length. For example, former Apple employee and famed startup author Guy Kawasaki calls products that are currently successful "cash cows" and states "[c]ash cows are wonderful—but you should milk them but not sustain them until, pun intended, the cows come home. Truly brave companies understand that if they don't kill their cash cows, two guys/gals in a garage will do it for them."<sup>34</sup> Kawasaki, much like Clayton Christensen in his academic literature,<sup>35</sup> points out that this *Innovator's Dilemma* is indeed real.

Kawasaki also highlights some common-sense solutions for intrapreneurs,<sup>36</sup> the individuals innovating within an established company. For example, Kawasaki recommends intrapreneurs find a separate building from which to work, hire people with a love for what the intrapreneurs are doing within the organization, stay under the radar, and eventually, integrate their successful projects into the organization.<sup>37</sup> The sum of this advice states a clear goal: large companies should allow innovation efforts to bloom away from internal politics that could thwart those innovation efforts before they can thrive.<sup>38</sup> By following this advice, large companies can work to be their own disruptors and maintain

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how the smartphone market was changing."). Ultimately, Blackberry ceased supporting its operating system on phones, making the devices obsolete. *Id.*

32. See generally CHRISTENSEN, *supra* note 16.

33. See Ibrahim, *supra* note 16.

34. See KAWASAKI, *supra* note 4, at 15.

35. See generally CHRISTENSEN. *supra* note 16.

36. See Ibrahim, *supra* note 16, at 1750.

The basic difference between intrapreneurship and entrepreneurship is that intrapreneurship is innovative activity that happens within a large, established firm, whereas entrepreneurship is innovative activity that is pursued through a new firm (a startup) established primarily for that purpose. An "entrepreneur assumes the risk of the venture, generally by investing his or her own capital and reputation and by forsaking a guaranteed income," whereas an intrapreneur is commonly thought of as an employee inside a large corporation who stays in-house to pursue her idea rather than leaving to form a startup (although I will conceive of the employee and management team together as the true intrapreneur).

*Id.*; see also Eyal-Cohen, *supra* note 19, at 171 (defining intrapreneurship).

37. See KAWASAKI, *supra* note 4, at 16–17.

38. *Id.*

the lead in a given industry.

### 3. *Corporate Innovation's Relation to Environmental Sustainability*

Recently, innovation efforts across many industries have sought to take innovation a step further by developing environmentally sustainable alternatives to status quo products.<sup>39</sup> For example, the automotive industry, where upstart ventures like Tesla<sup>40</sup> and Rivian<sup>41</sup> have developed electric vehicle alternatives to gasoline-powered cars. Given the popularity of these sustainable innovation efforts among consumers,<sup>42</sup> more established competitors like Ford and General Motors have made efforts and promises to focus their future innovation efforts on converting their vehicle offerings to electric in the coming years.<sup>43</sup> This idea of environmentally sustainable innovation is another lens through which

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39. See Jessica Day, *What is Sustainable Innovation?*, IDEASCALE, <https://ideascale.com/what-is-sustainable-innovation/> (last visited May 10, 2022) (sharing examples of sustainable innovation in packaging, plastics, and construction).

40. See TESLA, <https://www.tesla.com/> (last visited May 10, 2022).

41. See RIVIAN, <https://rivian.com/> (last visited May 10, 2022).

42. See Jack Ewing & Neal E. Boudette, *Why This Could Be a Critical Year for Electric Cars*, N.Y. TIMES (Feb. 8, 2022), <https://www.nytimes.com/2022/02/08/business/energy-environment/electric-cars-vehicles.html>.

Sales of cars powered solely by batteries surged in the United States, Europe and China last year, while deliveries of fossil fuel vehicles were stagnant. Demand for electric cars is so strong that manufacturers are requiring buyers to put down deposits months in advance. And some models are effectively sold out for the next two years.

*Id.*

43. See Neal E. Boudette & Coral Davenport, *G.M. Announcement Shakes Up U.S. Automakers' Transition to Electric Cars*, N.Y. TIMES (Jan. 29, 2021), <https://www.nytimes.com/2021/01/29/business/general-motors-electric-cars.html>.

Those large forces help explain the decision by G.M.'s chief executive, Mary T. Barra, that the company will aim to sell only zero-emission cars and trucks by 2035. Her announcement, just a day after President Biden signed an executive order on climate change, blindsided rivals who usually seek to present a united message on emissions and other policy issues.")

*Id.*; see also Neal E. Boudette, *Ford Splits Into Electric and Gas Divisions to Speed Up Transition*, N.Y. TIMES (Mar. 2, 2022), <https://www.nytimes.com/2022/03/02/business/economy/ford-model-e.html>.

Ford Motor has decided the best way to make the transition to electric vehicles is to transform itself first. On Wednesday, the automaker said it had reorganized its auto operations into two distinct businesses — one that makes its gasoline-powered vehicles and focuses on maximizing profits and another that develops and ramps up production of electric models and aims for rapid growth. . . . Ford w[ill] spend \$50 billion on electric vehicles between 2022 and 2026. It previously planned to spend \$30 billion in the five years ending in 2025. It plans to spend \$5 billion on E.V.s this year, double the 2021 total.

*Ford Splits*, supra note 43.

scholars can look at innovation within startup ventures and existing organizations.

As is true of most innovation efforts, people lead the way. In cases of environmentally sustainable alternatives, the relevant parties are social entrepreneurs and social intrapreneurs. The difference between the two lies in the type of organization in which they lead innovation efforts.<sup>44</sup> A social entrepreneur leads innovation efforts within a startup organization and works to build an organization that has a positive impact on society.<sup>45</sup> While social entrepreneurs can lead nonprofit organizations that do not have a profit motive, they may also seek positive societal change while operating a for-profit entity.<sup>46</sup> Of course, the social entrepreneur has their choice of the societally beneficial cause they'd like to pursue, but often, that cause is related to making the world more environmentally

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44. See Stephen Edward McMillin, KeongWeon Lee & Sandra R. Naeger, *Millennials and Social Entrepreneurship: A Multiple Streams Analysis of Problems, Prospects, and Implications for Policy and Practice*, 21 GEO. PUB. POL'Y REV. 1, 8–9 (2016).

Others have noted that many millennials who report being interested in entrepreneurship feel that they can instead resort to “intrapreneurship.” Intrapreneurship is defined as working for a stable firm, with a stable position and paycheck, but with the autonomy to behave and innovate like an entrepreneur within the firm. For example, Google’s “Innovation Time Off” policy allows employees to devote 20 percent of their time to projects that interest them and that they believe will benefit the company. Intrapreneurial millennials may use these types of workplaces for both economic stability and as a way to address social problems or personal interests without taking on the risks of entrepreneurship. While intrapreneurship may allow employees to be socially engaged, it contains none of the market and financial advantages of truly owning one’s own enterprise and earning open-ended profit rather than merely a fixed salary. Such innovation is also still confined by the preferences of the firm for which they work. Increasing millennial intrapreneurship then only partially addresses the greater problem of declining millennial involvement in social enterprise and may actually serve as a competitor to true entrepreneurship, creating a salaried class of competent but less engaged workers who do not own the capital or authority to drive attention and action to the social problems about which they are passionate.

*Id.*

45. See, e.g., J. Haskell Murray & Edward I. Hwang, *Purpose with Profit: Governance, Enforcement, Capital-Raising and Capital-Locking in Low-Profit Limited Liability Companies*, 66 U. MIAMI L. REV. 1, 7–8 (2011).

Social entrepreneurs have been described as “society’s change agents,” creating “innovative solutions to society’s most pressing social problems.” Whereas many business entrepreneurs see cash flow as “a way of measuring value creation,” wealth is often “just a means to an end for social entrepreneurs.” In embracing market-oriented solutions to societal ills, social entrepreneurs “often structure their organizations with earned-income strategies” to minimize reliance on charitable donations.

*Id.*; see also David E. Pozen, *We Are All Entrepreneurs Now*, 43 WAKE FOREST L. REV. 283, 294–300 (2008) (defining social entrepreneurship).

46. See David News & Jeff Thomas, *Delaware’s Public Benefit Corporation: The Traditional VC-Backed Company’s Mission-Driven Twin*, 88 UMKC L. REV. 873, 874 (2020) (discussing the difficulty of choosing an entity type for founders of for-profit social ventures and endorsing the Delaware Public Benefit Corporation as the best choice).

sustainable.

Alternatively, social intrapreneurs lead socially beneficial innovation efforts within an existing organization.<sup>47</sup> Previous scholarship has investigated the social intrapreneur and posited that they are likely to be the most powerful “change agents” with respect to developing sustainable alternatives to current products and services.<sup>48</sup> This prediction is due to the additional resources on hand to support innovation efforts within an existing organization.<sup>49</sup> Noted innovator and entrepreneur Sir Richard Branson agrees with the above praise of the intrapreneur and has recognized the importance of them within his own organizations.<sup>50</sup>

As the main driver of social innovation within an established company, the social intrapreneur might be viewed as the person who can best bridge the corporation’s present profit motives with its more environmentally sustainable future product or service offering.<sup>51</sup> In fact, for currently successful companies, the social intrapreneur may be in the best position to support the organization’s twin incentives of monetizing their currently successful products and developing the next generation of innovative solutions to customer problems. Next, in Section III, this article will

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47. See Tamara C. Belinfanti, *Contemplating the Gap-Filling Role of Social Intrapreneurship*, 94 OR. L. REV. 67, 68 (2015) (“Social intrapreneurs occupy an intersectional space within the large corporate form at the crossroads of innovation, profit, and social good. They are often described as ‘disruptive’ because they devise new ways to tackle problems, usually social in nature, in a manner that disrupts traditional operating models or long-standing assumptions.”).

48. *Id.* at 84–85.

[I]n spite of the various concerns about social intrapreneurship, *The Economist*, in an article reviewing a book on social intrapreneurs, posited that intrapreneurs rather than entrepreneurs were arguably the greatest change agents for developing innovative and sustainable products, services, and solutions for the market place. In a separate article, *The Economist* noted: the greatest agents for sustainable change are unlikely to be [social entrepreneurs], interesting though they are. They are much more likely to be the entirely reasonable people, often working for large companies, who see ways to create better products or reach new markets, and have the resources to do so.

*Id.*

49. *Id.*

50. *Id.* at 85.

Sir Richard Branson, author and founder of Virgin Group, summed up the value of intrapreneurs as follows: Many millions of people proudly claim the title “entrepreneur.” On the other hand, a title that hasn’t gotten nearly the amount of attention it deserves is entrepreneur’s little brother, “intrapreneur” . . . . While it’s true that every company needs an entrepreneur to get it under way, healthy growth requires a smattering of intrapreneurs who drive new projects and explore new and unexpected directions for business development.

*Id.*

51. *Id.* at 85. A social intrapreneur’s “value is in their ability to reimagine the bounds and limits of their host corporation’s activities. This reimagination, which successfully links directives of profit with other-regarding behavior, arguably offers an innovative way for a corporation to negotiate corporate law’s structural socio-profit divide.” *Id.*

explore how companies currently invest in innovation efforts.

### III. CORPORATE INVESTMENTS IN INNOVATION

This Section argues that large companies must invest in environmentally sustainable alternatives to their core business in order to remain competitive. Namely, this Section provides a review of corporate investments in innovation in an effort to demonstrate the myriad ways in which a corporation might structure its investments in a sustainable future. Traditionally, large corporations have served a dual role in fostering innovation.<sup>52</sup> First, corporations seek to invest in innovation through internal initiatives geared toward developing new technologies. The first part of this Section covers those strategies in detail. Secondly, this Section reviews a specific type of investment in corporate innovation: corporate venture capital (CVC) funds. Overall, this subsection aims to provide: (1) a deep understanding of the economic deal behind these corporate investments in innovation; (2) the variety of structures used to make these investments; and (3) common problems faced in these arrangements.<sup>53</sup>

Large corporations invest in innovation through internal initiatives in three main ways. First, corporations use innovation departments contained within the organization to develop new ideas within the confines of the organization's existing structure.<sup>54</sup> Secondly, corporations use innovation units that are contained within the organization's existing structure but have a bit more independence with respect to who they report to and how much oversight their work receives.<sup>55</sup> Lastly, large companies encourage innovation through corporate accelerator programs, which provide employees of the company and outside experts with useful

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52. See Eyal-Cohen, *supra* note 19, at 195–96.

With the passage of time, large complex conglomerates assumed a dual role in the innovation process. First, they began to acquire existing discoveries from independent entrepreneurs and start-ups in order to develop and deliver them to the market. In doing so, they have served as an exit hub for private entrepreneurship. Second, these organizations began to cultivate corporate entrepreneurship or internal corporate venturing. The latter refers to the process whereby firms engage in diversification of its strategic operations through internal development. Internal entrepreneurship became an important tool for firms to remain viable and competitive, whether during prosperous or turbulent economic times. Indeed, studies have shown that innovation can also be fostered successfully through a process of intrapreneurship in divisions or employees within established firms.

*Id.*

53. See Ibrahim, *supra* note 16, at 1756–65.

54. See BURNS, *supra* note 12, at 351 (discussing innovation departments generally).

55. *Id.* at 353.

ideas to use company resources to pursue their idea quickly.<sup>56</sup> The paragraphs that follow will discuss these initiatives in detail.

### *1. Internal Innovation Departments*

The first instinct of many companies is to place innovation projects within an internal department in the company's existing structure.<sup>57</sup> While this instinctive format does have some advantages,<sup>58</sup> myriad problems emerge relatively quickly.<sup>59</sup> For example, internal politics can often be an insurmountable hurdle for innovations emerging from internal departments, in part because the innovation may have to clear multiple levels of management for approval before receiving the resources and support it needs to succeed.<sup>60</sup>

### *2. Independent Innovation Departments*

To solve this problem, other companies use a slightly different format: the innovation unit. These innovation units have two key characteristics: they are usually housed in a separate building from the company's main departments, and the innovation unit typically reports directly to the CEO.<sup>61</sup> These characteristics allow for the innovation unit to circumvent the main problems encountered by internal innovation departments. First, by having a separate building, innovation units can have "greater autonomy and [be] free from the bureaucracy of the main organization . . ." <sup>62</sup> This logic is endorsed by both academic research<sup>63</sup> and noted practitioners.<sup>64</sup> Second, a host company can establish the innovation

56. *Id.* at 354–55.

57. *Id.* at 351 ("An innovation department is a permanent organizational structure set up for the purpose of originating and/or developing innovations.").

58. *Id.* (providing examples of advantages had by innovation departments like "being part of an existing organization, these structures allow existing skills and competencies to be leveraged," and "[t]hey allow revenues from existing, successful products and services to finance innovations which might take some time to be profitable.")

59. *Id.* at 351–52 (describing problems like defying the organization's "dominant logic" to think outside the box, staffing the wrong people for the job given the organization's typical staff, and navigating hostility toward new ideas elsewhere in the organization).

60. *Id.* at 352.

61. *Id.* at 353 ("[M]any of the most innovative companies have therefore set up separate innovation units or divisions, often at a separate location, reporting directly to the CEO.").

62. *Id.* at 353 (citing Peter Gwynne, *Skunk Works, 1990s-Style*, 40 RESEARCH-TECHNOLOGY MANAGEMENT 18(1997)).

63. *Id.*

64. See KAWASAKI, *supra* note 4, at 16–17.

unit's autonomy by having it report directly to company leadership, like the CEO. An example of this can be found with X Development, the innovation unit within Alphabet (the parent company of Google and its sister companies).<sup>65</sup> This structure allows for the innovation unit to bypass multiple layers of management that could take away resources or end innovative projects before they can flourish.<sup>66</sup>

### 3. Corporate Accelerator Programs

Lastly, existing companies might choose to support innovation through an entirely different structure: the corporate accelerator program. Paul Burns describes the corporate accelerator well in his textbook *Corporate Entrepreneurship and Innovation*:

[Corporate accelerators] are development programs, often linked to resources and facilities such as incubators, designed to facilitate rapid conceptualization, prototyping and development of a business idea within a tight time frame. They might be open to company-only teams or mixed with outside project teams—the aim being to encourage the cross-fertilization of ideas and knowledge. . . . If successful they might be extracted in whole or in part from their day-to-day jobs and allocated a budget and a timeframe for completion of the project. . . . Once completed, the project team might decide to join any spin-off from the project or move back into the mainstream operations [of the host company].<sup>67</sup>

Simply put, large companies can use corporate accelerator programs to extract internal teams and bring in external teams working on promising new projects and provide them with a facility, resources, and a cohort of other innovators as they test the innovation's viability. While some ideas begin and end in the accelerator, others exit the accelerator as either new companies (owned in whole or in part by the parent company) or internal divisions of the parent company.

Of course, the unique format of an accelerator program lends itself to some interesting legal questions for the intrapreneurs and companies involved with such programs. To understand those issues well, it is

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65. See BURNS, *supra* note 12, at 355–57 (providing a case study on Alphabet and X Development).

66. See generally Ibrahim, *supra* note 16, at 1752 (“[I]ntrapreneurship is viewed as the study of overcoming organizational bureaucracy.”).

67. See BURNS, *supra* note 12, at 354; see also Eyal-Cohen, *supra* note 19, at 215.

Intrapreneurs act like entrepreneurs, only with better access to research and funding than entrepreneurial agents normally have. They seek profitable opportunities and learn from past failures without having to participate in the endless race for funding, or being exposed to the risks of financial accountability typically associated with entrepreneurial failure.

*Id.*

helpful to review the basic structure of accelerator programs outside of the corporate context. As an example, one of the most lauded startup accelerator programs, Y Combinator, selects two large cohorts of startups each year and invests \$500,000 cash in each startup.<sup>68</sup> In exchange, the startups receive an intensive three-month experience where they are assisted in improving their product and developing a pitch to raise money from investors.<sup>69</sup> The accelerator program provides expert mentors and connections to potential investors, which help the startup to achieve these goals.<sup>70</sup> Of course, accelerators are for-profit businesses.<sup>71</sup> They exist to earn the partners of the investment fund a return on their investment.<sup>72</sup>

Corporate accelerators are similar in that they provide internal intrapreneurs and external entrepreneurs the opportunity to intensively explore a business idea in a short time frame.<sup>73</sup> However, the actual details of the financial arrangement between the entrepreneurial idea team and the host organization are a bit more flexible, by necessity. For example, how should a team of corporate employees pursuing an idea discovered on the job be compensated? Should they be equity owners in the new business idea or simply continue to be salaried employees of the parent company pursuing a new innovation? Intellectual property issues can arise with intrapreneurial projects too, as employees typically assign any

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68. See Y COMBINATOR, <https://www.ycombinator.com/> (last visited May 20, 2022).

69. See *What Happens at YC*, Y COMBINATOR, <https://www.ycombinator.com/about> (last visited May 20, 2022).

70. See Michael Adams, *How Do Startup Accelerators Make Money, If At All?*, MEDIUM (June 11, 2020), [https://medium.com/@michael\\_\\_adams/how-do-startup-accelerators-make-money-if-at-all-fb4275a7c2d0](https://medium.com/@michael__adams/how-do-startup-accelerators-make-money-if-at-all-fb4275a7c2d0) (“Accelerators exist for one primary reason: to help new founders quickly get their business off the ground. They do this through one-on-one mentorship, as well as providing educational resources, access to investors, a place to work, and MONEY.”).

71. *Id.*

72. *Id.*

Accelerators operate in a similar manner to a Venture Capital firm. The venture model typically looks like this: 1. Venture firm gets a number of investors (limited partners) to pledge money to a fund that will invest in companies in exchange for equity. 2. The venture firm, specifically the partners managing the fund. I.e. review companies, award investments, sit on boards, and keep limited partners in the loop in exchange for a management fee. 3. The venture firm also receives a percentage of the profits, around 20%. 4. Once all the money has been pledged, the VC firm will begin to “call” in some of the capital to invest in companies. Typically, most of the money is called in the first 3-5 years. 5. Once companies start to have exits the money is then returned to investors, first paying back the initial investment, then dividing the net profit between the VC firm and the limited partners. 6. The typical time span of a fund is 8-12 years. Accelerators are similar, except companies are typically in an earlier stage (sometimes just an idea) and the accelerator does more work to actively help the company succeed.

*Id.*

73. See BURNS, *supra* note 12, at 354 (describing corporate accelerators as “designed to facilitate rapid conceptualization, prototyping and development of a business idea within a tight time frame”).



intellectual property developed using company time and resources to their employer.<sup>74</sup> Here, we can see that innovators within a corporate accelerator do not necessarily have the same incentive to innovate compared to entrepreneurs in standard accelerator programs. Thus, corporate accelerator programs should think about how to motivate their teams of innovators through additional compensation, equity in the startup idea or parent company, or something else of value.<sup>75</sup>

Challenging questions also exist at the end of the corporate accelerator experience. The goal of startups emerging from a standard accelerator program are clear: scale the business and earn a return for the business' investors.<sup>76</sup> For ideas emerging from a corporate accelerator (or corporate innovation efforts generally), there are more options, each of which has pros and cons.<sup>77</sup> Ideas that are completely unrelated to the parent company's core business and operations might be spun-off or sold to a

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74. See CONSTANCE E. BAGLEY & CRAIG E. DAUCHY, *THE ENTREPRENEUR'S GUIDE TO LAW AND STRATEGY* 33 (5th ed. 2012) ("Employers often ask their employees to sign an *invention assignment agreement*. This document requires the employee to assign to the employer all inventions conceived, developed, or reduced to practice by the employee while employed by the company.").

75. See Joseph Bankman & Ronald J. Gilson, *Why Start-Ups?*, 51 *STAN. L. REV.* 289, 299 (1999).

Thermo Electron appears to exemplify the employer who never loses an auction of an employee's innovation to a venture capitalist. The company consists of a holding company and eleven publicly traded subsidiaries in which the holding company or a first-tier controlled subsidiary (with public ownership) owns a majority of the outstanding stock. These subsidiaries are created when an employee comes up with a new idea for a business. At that time, the employee is given an entrepreneur's equity stake in the venture. If the subsidiary is successful, it is ultimately taken public with the holding company retaining a majority interest.

*Id.*

76. See, e.g., Ian Hathaway, *What Startup Accelerators Really Do*, *HARV. BUS. REV.* (Mar. 1, 2016), <https://hbr.org/2016/03/what-startup-accelerators-really-do>.

A comparison of graduates of top accelerators with a set of similar startups that instead raised angel funding from leading angel investment groups found that the accelerator graduates were more likely to receive their next round of financing significantly sooner and were more likely to be either acquired or to fail.

*Id.*

77. See Eyal-Cohen, *supra* note 19, at 198.

Internal corporate venturing can deliver innovations through various channels. It includes, but is not limited to, new product departments, special business units, micro new internal ventures, new venture divisions, independent subsidiaries, and others. Companies from the convenience store 7-11, Boots the Chemists, Visa and Citigroup financial firms, and BMW are investing in internal ventures and buying start-ups to keep up with cheap and constant R&D. Lockheed Martin, Inc. has created a group known as "Skunk Works" where members of its group operate as their own division and are given complete freedom to develop innovative ideas.

*Id.*; see also BURNS, *supra* note 12, at 358–60 (sharing methods through which parent companies might move forward with new innovations).

purchaser.<sup>78</sup> Alternatively, ideas that are highly related to the parent company's core business are likely to be integrated into the parent company as a new line of business.<sup>79</sup> Other strategies might include licensing an innovation to other companies that could better make use of it<sup>80</sup> or taking a wait-and-see approach by providing the idea some additional runway within a strategic business unit that has some autonomy from the larger parent organization.<sup>81</sup> This choice should be made on an innovation-by-innovation basis, accounting for the preferences of the parent company, but also, the key team members that are necessary for the innovation's continuing success.

Of course, large companies innovate through more typical avenues as well.<sup>82</sup> One major method of funding product and service development in existing organizations is through research and development ("R&D") initiatives,<sup>83</sup> which tend to take up the lion's share of resources, since they work to improve upon already profitable goods and services.<sup>84</sup> However,

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78. See BURNS, *supra* note 12, at 359.

79. *Id.* at 360.

80. *Id.* at 360.

81. *Id.* at 359–60.

82. See, e.g., D. Daniel Sokol, *Vertical Mergers and Entrepreneurial Exit*, 70 FLA. L. REV. 1357, 1374–75 (2018).

Investment by incumbent firms to acquire nascent firms implicates issues of corporate venture capital; non-financial investments in nascent firms via contract such as strategic alliances and joint ventures; and the entrepreneurial ecosystem, that includes, among other components, venture capitalists, and angel investors. This study of ecosystems is critical as one strategy of established tech firms is to push R&D in new products or services down to startups as a way to decrease or shift risk. The more successful startups are then acquired by larger technology firms.

*Id.*

83. See generally Ibrahim, *supra* note 16, at 1753–54.

[T]he research labs inside large corporations (that have been large for some time) bring us many notable successes too, also employing thousands of people. While it may be difficult to quantify the amount of innovation that comes from R&D laboratories inside large corporations as opposed to startups, proxies can illuminate the comparison. Patents are sometimes used as a measure of innovative activity. Gideon Parchomovsky and R. Polk Wagner note that the "major drivers of the recent increases in patenting activity are medium-to-large corporations" and that large corporations including "IBM, Intel, and Hewlett-Packard ... have consistently ranked among the top patent recipients in recent years." . . . In a study examining the relationship between patents and firm size, John Allison and Mark Lemley empirically found that large corporations filed about 70% of issued patents in their sample, while small businesses filed only 11%.

*Id.*

84. See Ronald J. Gilson, *Locating Innovation: The Endogeneity of Technology, Organizational Structure, and Financial Contracting*, 110 COLUM. L. REV. 885, 887–88 (2010).

[V]enture capital, while certainly important in its own right, is just a drop in the innovation bucket. In 2006, the four largest U.S. corporate research and development (R&D) programs alone invested more than five times what the entire U.S. venture capital industry put into seed, early-stage, and

given that those efforts are more focused on maintaining current market share with existing products, rather than developing brand-new innovations, this article does not cover corporate R&D programs further.

However, there is one other avenue through which large companies fund a significant amount of innovation, which this article will cover extensively: corporate venture capital.<sup>85</sup> Darian Ibrahim has thoroughly written about corporate venture capital and defines it as follows:

A common definition of corporate venture capitalist is “the form of a separate corporate venture entity that is exclusively funded by the sponsoring corporation.” The employees of the corporate venture capitalist arm are either long-term employees of the parent corporation or venture capital partners hired away by the corporate venture capitalist.<sup>86</sup>

Corporate venture capital teams operate much like a venture capitalist would by scouting new startups and the technologies they are developing, and then making strategic investments in the most promising companies.<sup>87</sup> Of course, large companies that have a corporate venture

startup investments, the areas where the focus on innovation is most intense. And even large R&D programs do not capture the full picture of the location of innovation. Indeed, we see R&D carried out in a virtual Cambrian explosion of organizational forms. In addition to venture capital and the in-house research efforts of major companies, innovation is at the core of, among others, angel-financed startups operating earlier in the life cycle than venture capital is available; joint ventures between large companies that combine research efforts in a particular field; joint ventures between large and small companies, especially prevalent in the pharmaceutical industry; and collaborative innovation between adjacent parties in the vertical supply chain.

*Id.*

85. See Ibrahim, *supra* note 16, at 1744 (“[C]orporate venture capital . . . may be the best of both worlds. Corporate venture capital programs allow large corporations to keep abreast of, and participate in, exciting new technologies without having to spend internal R&D dollars or overcome bureaucratic obstacles ever present in large organizations.”).

86. See Ibrahim, *supra* note 13, at 222 (quoting Tobias Weiblein & Henry W. Chesbrough, *Engaging with Startups to Enhance Corporate Innovation*, 57 CMR BERKELEY 66, 70 (2015)).

87. See Dana Brakman Reiser & Steven A. Dean, *Se(c)(3): A Catalyst for Social Enterprise Crowdfunding*, 90 IND. L.J. 1091, 1092–93 (2015) (sharing how venture capitalists structure investments and why it is critical for investments in social ventures to be structured similarly.); see also Ibrahim, *supra* note 16, at 1782–84. Ibrahim describes Corporate Venture Capitalists (“CVCs”) as:

venture arms established by a corporation. CVCs invest in promising startups, usually related to their parent corporation’s business, although some CVCs have a purely financial focus and invest in any startup that seems promising. As Josh Lerner writes: “A corporate VC fund . . . can move faster, more flexibly, and more cheaply than traditional R&D to help a firm respond to changes in technologies and business models.” Importantly, Lerner also notes that a CVC “can serve as an intelligence-gathering initiative, helping a company to protect itself from emerging competitive threats.” CVCs have been around almost as long as private venture capitalists (PVCs). The ten most active CVCs are arms of well-known, mostly-tech corporations: Google Ventures, Intel Capital, Salesforce Ventures, Qualcomm Ventures, Comcast Ventures, Novartis Venture Funds, Samsung Ventures, Cisco Investments, Siemens Venture Capital, and SR One. CVCs appear to invest at all stages of startup development, although one study found they invested most often in the middle stages--i.e., not in very early rounds, or later when a startup is close to an IPO.

capital program do have one key advantage over venture capitalists: industry-specific expertise and knowledge.<sup>88</sup> As an example, the venture capital fund run by Ford Motor Company would be a better investor for a mobility startup than most venture capitalists given their expertise in designing, manufacturing, and selling automobiles to the masses. Of course, the benefits of such an investment by a corporate venture capital fund in a startup should flow both ways—while the startup benefits from the investor’s expertise, the investor can benefit in myriad ways, like a lucrative exit, an eventual strategic acquisition, or by integrating some of the new technology into its existing business.<sup>89</sup>

Another important advantage held by corporate venture capital over traditional venture capital is that the sponsor corporation often views the investments made as both an investment and a strategic research expense while the traditional venture capitalist is strictly making investments that seek returns.<sup>90</sup> Insofar as a corporate venture capital fund is vetting new

*Id.*

88. See Ibrahim, *supra* note 16, at 1784–87.

Corporate venture capital appears to enjoy real advantages over private venture capital as a funding option for startups. To understand why, it is important to note that venture capital of any kind succeeds or fails based on a VC’s ability to select the right startups to fund *ex ante* investment and help them grow *ex-post* investment. First, in terms of selecting startups to fund, the CVC’s managers should be able to bring to bear expertise from within the parent corporation. If the CVC has a strategic focus, as most do, its people should have substantial expertise in the startup technologies being funded. The corporation would also possess superior knowledge of the entrepreneur if she came from inside the corporation. Both of these advantages reduce pre-investment uncertainty and information asymmetry in ways at least as effective as the PVC’s staged financing tool.

*Id.*

89. *But see id.* at 1784–87.

To fully capitalize on corporate venture capital’s potential, the knowledge gained from strategic startup investments must find its way back to the parent corporation. If not, this is not really a hybrid form of intrapreneurship at all, but merely the same as any other corporate financial investment. There are alternative ways to bring the knowledge from CVC portfolio startups back into the parent corporation. One way is to acquire the startup once it develops. However, a recent empirical study found poor returns to corporations acquiring their own CVC-funded startups. Indeed, my own research into the top CVCs revealed that they do not often acquire their portfolio startups. A second way of effecting knowledge spillovers is to obtain information from portfolio startups *while* they are developing absent a parent company acquisition. CVCs sometimes appear to have problems facilitating this type of knowledge spillover.

*Id.*

90. See Rami Rahal, *Will Corporate Venture Capital Disrupt the Traditional Investment Ecosystem?*, ENTREPRENEUR (Dec. 16, 2014), <https://www.entrepreneur.com/article/240904>.

A traditional venture-capital firm raises money primarily from institutional investors and high-net-worth individuals, while corporate venture capital uses cash reserves from a parent company to fund new endeavors. This difference is significant because it means more external pressure is typically put on independent venture-capital firms to generate above-average returns. Since

technologies through its strategic investments that could ultimately be folded into its existing business, that outcome in itself could be seen as a victory for the corporate venture capital fund.<sup>91</sup> In fact, large companies like IBM have used this strategy to build very profitable patent portfolios that allow the company to innovate and profit, even while cutting R&D expenses.<sup>92</sup> Given this heavy focus on technological innovation by corporate venture capital, technology companies (*i.e.*, Dell, Intel) make up for a significant portion of investments by large companies in startups, in part because of their successes in benefitting from the development of these new technologies by the startup companies in which they have

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corporate ventures are typically considered R&D alternatives, expenses are already built into the business structure. And separate revenue-generating businesses help offset any corporate venture-capital losses. That's a safety net that traditional venture-capital firms don't have.

*Id.*

91. See Gilson, *supra* note 85, at 909–10 (using Cisco as an example of a corporate investment and acquisition program).

Startup and growing early-stage companies provided a way for Cisco to deal with the need for expertise that it might not already have in-house. The lack of visibility of the direction of technology reflected the fact that different solutions were possible to most problems. This is where early-stage and startup companies provided an opportunity. If venture capitalists funded startups that pursued alternative solutions to the technology problem, then Cisco could acquire the company that won the technology race in time to have a product to market when it was needed. To be sure, the price for the winner would be high; competitors might bid, and an initial public offering could provide the winner's venture capitalists an alternative liquidity event. Cisco's large market share and its extensive marketing and distribution system, however, gave it advantages that the focused winner of the technology race could not match on a standalone basis. For the same reasons, Cisco could be expected to pay more to exercise the real option that its strategy entailed: to wait and see which technology was best and then acquire it. . . . Here innovation is allocated based on technological imperative--the ability of the venture capital market to finance a range of alternative solutions to a technology problem and make use of the incentive intensity of a startup structure, neither of which Cisco could match internally. Consistent with this confluence of technology, organizational structure, and financial contracting, Cisco developed the ability to quickly and effectively integrate new acquisitions. In effect, Cisco outsourced R&D to market-based technology races between startups to achieve the basic innovation, but took on the task itself of commercializing the innovation.

*Id.*

92. See Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1, 8–9 (2005).

The advantages of patent portfolios are well-recognized in commercial circles, cutting across both technological fields and firm sizes. While large firms provide perhaps the most compelling example of patent portfolios in practice--for example, since the mid-1990s, IBM has avowedly followed a portfolio-focused patenting strategy, which yielded a more than 400% increase in patent-related revenues (to about \$1.5 billion, or about a quarter of total corporate receipts) even as the research and development budget was slashed--we also find real world case studies of patenting behavior consistent with our theory among startups and acquisition-centric firms. Indeed, the rise of patent portfolios in the business community has become so significant that portfolios have become the credo of firm value in the modern innovation environment.

*Id.*

invested.<sup>93</sup>

Clearly, corporate venture capital has the potential to be a win-win for both corporations and new ventures.<sup>94</sup> However, not all corporate venture capital initiatives are successful, in fact, many fail quickly.<sup>95</sup> The reasons for this quick failure can vary and range from a lack of ability to integrate new technologies into the larger parent company to simply giving up too quickly.<sup>96</sup> Of course, developing new, groundbreaking technology takes time. This makes patience and a commitment to dedicating money and resources to the corporate venture capital fund initiative over the medium-to-long-term key to achieving the project's success.

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93. See Rahal, *supra* note 90.

Corporate venture capital is picking up speed in the investment industry, as large companies start setting aside funds for external investment in fledgling companies or startups. Tech giants like Intel, Dell and AMD all have strong track records with their proprietary funds, and more companies like Microsoft and Salesforce are now entering the venture-fund game. During the past four years more than 475 corporate venture funds have started, bringing the worldwide total to more than 1,100, according to Global Corporate Venturing,<sup>93</sup> and “[a]ccording to a recent Volans report, corporate venture capital accounted for 1,068 investment deals worth \$19.6 billion last year. Since 5,753 venture-capital transactions worth \$48.5 billion occurred in 2013, corporate ventures comprised nearly 20 percent of all deals and 40 percent of transaction value worldwide.

*Id.*

94. See, e.g., *id.*

Corporate venture capital also lets large companies operate on a smaller scale, which lets them innovate faster, conduct research on disruptive technologies and pre-empt competitors. And it's an efficient way for companies to explore potential acquisition targets. Data from Crunchbase shows that about one-third of corporate venture-backed startups have been acquired, versus 10 percent of startups with funding only from private venture capital. Corporate venture-capital efforts also have the advantage of involvement with startups at the early stages, when they can most benefit from access to a large, established customer base, credibility through brand association and a larger network of partner companies and advisors. Corporate venture-capital efforts can make good co-investment partners with traditional venture capital firms because each brings different expertise to the table. Venture-capital firms have the drive and know-how to realize financial results while corporate-venture capital groups provide industry knowledge and a talent pool.

*Id.*

95. See Josh Lerner, *Corporate Venturing*, HARV. BUS. REV. (October 2013), <https://hbr.org/2013/10/corporate-venturing>.

For decades, large companies have been wary of corporate venturing. Some have seen their venture initiatives fail outright, and many more have given up too quickly: The median life span of corporate venturing programs has traditionally hovered around one year. Even firms with successful funds have sometimes struggled to make use of the knowledge gained from start-up investments.

*Id.*

96. *Id.*

#### IV. CORPORATE INVESTMENTS IN INNOVATION CAN DRIVE SUSTAINABLE OUTCOMES

This Section will cover three main topics. First, this Section provides a deep dive into one example of corporate investments in environmentally sustainable innovations: legacy automakers and the electric vehicle.<sup>97</sup> This case study of the electric vehicle clearly demonstrates that these investments in innovation represent the more environmentally sustainable future of the core business. Then, this Section will review other industries where investments in environmentally sustainable innovations may behoove existing companies in the coming years. In these cases, companies are likely to ask themselves how they can better contribute to a more environmentally sustainable future,<sup>98</sup> for reasons related to altruism, consumer demand, profit, and the future viability of the business.<sup>99</sup> Lastly, this Section will provide large companies with a four-part roadmap for how they can identify disruptive innovations related to environmental sustainability in their industry and ultimately become more environmentally friendly themselves.

##### 1. Case Study on the Automotive Industry and Electric Vehicles

This Part begins with a case study on legacy automakers and startup electric vehicle companies. The automobile was first invented in Europe late in the 1800s and later, three American companies emerged as key

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97. See *Rivian*, CRUNCHBASE, [https://www.crunchbase.com/organization/rivian-automotive/company\\_financials](https://www.crunchbase.com/organization/rivian-automotive/company_financials) (last visited May 20, 2022) (listing Ford Motor Company as a lead investor in one of Rivian's rounds); see also *Arrival*, CRUNCHBASE, [https://www.crunchbase.com/organization/arrival-f90c/company\\_financials](https://www.crunchbase.com/organization/arrival-f90c/company_financials) (last visited May 20, 2022) (listing Hyundai Motor Company, Kia Motors, and UPS Ventures as investors in Arrival's zero-emission public transportation vehicles).

98. See, e.g., Belinfanti, *supra* note 47, at 78.

While there is no singular model for social intrapreneurs, one common trait of successful intrapreneurs is that they are able to see connections between their corporation's capabilities and outside societal needs. Another common trait is their ability to tap into their corporation's business model to create products, services, or internal solutions that reshape the corporation's relationship with society in a mutually beneficial way.

*Id.*

99. For one company's perspective on this issue, see *id.* at 83–84.

In a recent interview, Aspen First Movers Fellow and Director of Corporate Strategy Development at Dow Chemical, Dawn Baker, stated that to justify social intrapreneurship to shareholders, it is important to start with the company's vision and show how an innovative project will fulfill that vision. In other words, corporations should present intrapreneurial innovations to shareholders not solely in terms of profit, but also by demonstrating how these innovations will benefit the corporation's corporate purpose and/or goals.

*Id.*

industry players in the automotive industry.<sup>100</sup> At the inception of the automobile, engines were powered by either steam, an electric battery, or gasoline.<sup>101</sup> However, automakers and customers quickly determined that cars fueled by gasoline would become the prevailing standard for the next century.<sup>102</sup> Later, as environmental concerns surrounding the automobile became obvious and climate change actualized, an urgency to create a more environmentally friendly automobile arose.<sup>103</sup> First, hybrid vehicles became an option for consumers, which provided them with the ability to operate a vehicle partially powered by electricity.<sup>104</sup> Since the first hybrid vehicle was released in the United States twenty-two years ago, fully electric vehicles have the marketplace, led by companies like Tesla and Nissan.<sup>105</sup>

Since Tesla and Nissan quickly addressed the main concern surrounding electric vehicles for consumers—the mileage range on which one charge would allow them to travel—the electric vehicle quickly increased in popularity. The decreasing cost of electric vehicles compared to gasoline-powered vehicles has aided this rapid increase in

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100. See *Automobile History*, HISTORY.COM (Aug. 21, 2018), <https://www.history.com/topics/inventions/automobiles>.

The automobile was first invented and perfected in Germany and France in the late 1800s, though Americans quickly came to dominate the automotive industry in the first half of the twentieth century. Henry Ford innovated mass-production techniques that became standard, and Ford, General Motors and Chrysler emerged as the “Big Three” auto companies by the 1920s.

*Id.*

101. See Martin V. Melosi, *The Automobile and the Environment in American History*, AUTO. AM. LIFE & SOC’Y, [http://www.autolife.umd.umich.edu/Environment/E\\_Overview/E\\_Overview3.htm](http://www.autolife.umd.umich.edu/Environment/E_Overview/E_Overview3.htm) (last visited May 30, 2022) (highlighting the issues with operating steam engines and range challenges with the batteries in early electric vehicles).

102. *Id.*

103. See *The History of the Electric Car*, U.S. DEPT. ENERGY (Sept. 15, 2014), <https://www.energy.gov/articles/history-electric-car> (“New federal and state regulations begin to change things. The passage of the 1990 Clean Air Act Amendment and the 1992 Energy Policy Act -- plus new transportation emissions regulations issued by the California Air Resources Board -- helped create a renewed interest in electric vehicles in the U.S.”).

104. See *id.*

It was one of two events that sparked the interest we see today in electric vehicles. The first turning point many have suggested was the introduction of the Toyota Prius. Released in Japan in 1997, the Prius became the world’s first mass-produced hybrid electric vehicle. In 2000, the Prius was released worldwide, and it became an instant success with celebrities, helping to raise the profile of the car. To make the Prius a reality, Toyota used a nickel metal hydride battery -- a technology that was supported by the Energy Department’s research. Since then, rising gasoline prices and growing concern about carbon pollution have helped make the Prius the best-selling hybrid worldwide during the past decade.

*Id.*

105. *Id.*



popularity,<sup>106</sup> in part, due to a federal tax credit for electric vehicle buyers.<sup>107</sup> Additionally, legacy automakers like General Motors and Ford have responded to this consumer sentiment by committing to manufacturing a vast majority of their new vehicles as electric-powered in the coming decade.<sup>108</sup> These factors have all led to the perception that the future of the automotive industry lies in the electric vehicle.

Of course, this shift presents a challenge for existing automakers that have built a substantial infrastructure that allows them to mass produce gasoline-powered vehicles. If the future truly lies in the electric vehicle, these existing automakers will need to innovate quickly to survive and thrive. Legacy automakers have a tough decision to make: how to develop their own electric vehicles quickly.

To date, legacy automakers have taken several approaches to this challenge. Some automakers, like the aforementioned General Motors, have elected to primarily build out their own infrastructure through intrapreneurship to mass produce electric vehicles.<sup>109</sup> Others like Ford,<sup>110</sup> Hyundai,<sup>111</sup> and Kia<sup>112</sup> have elected to play corporate venture capitalist and make investments in startup electric vehicle companies in an effort to “hedge their bets” and benefit from those innovation efforts. Further, almost every legacy automaker is involved with an accelerator program aimed to further the development of technologies important to the future

106. See, e.g., Michael D. Plante & Sean Howard, *Electric Vehicles Gain Ground But Still Face Price, Range, Charging Constraints*, FED. RESRV. BANK DALL. (Feb 22, 2022), <https://www.dallasfed.org/research/economics/2022/0222> (“Tesla and other EV brands have become less expensive per mile of range over the past decade but trail gasoline-powered vehicles.”).

107. See *IRC 30D New Qualified Plug-In Electric Drive Motor Vehicle Credit*, INTERNAL REVENUE SERV., <https://www.irs.gov/businesses/irc-30d-new-qualified-plug-in-electric-drive-motor-vehicle-credit> (last visited June 27, 2022).

108. See *GM Will Boost EV and AV Investments to \$35 Billion Through 2025*, *infra* note 110.

109. See Kirsten Korosec, *Inside GM’s Startup Incubator Strategy*, TECHCRUNCH (June 22, 2021), <https://techcrunch.com/2021/06/22/inside-gms-startup-incubator-strategy/> (“GM has launched a series of new subsidiaries in the past year tackling electrification, connectivity and even insurance — all part of the automaker’s aim to find value (and profits) beyond its traditional business of making, selling and financing vehicles.”); see also *GM Will Boost EV and AV Investments to \$35 Billion Through 2025*, GENERAL MOTORS (June 16, 2021), <https://plants.gm.com/media/us/en/gm/ev.detail.html/content/Pages/news/us/en/2021/jun/0616-gm.html> (“In November 2020, GM announced it would deliver 30 new EVs by 2025 globally,” and “it will increase its EV and AV investments from 2020 through 2025 to \$35 billion, representing a 75 percent increase from its initial commitment announced prior to the pandemic.”).

110. See Luc Olinga, *Rivian Has News That May Ease Concern Among Investors*, THESTREET (May 3, 2022), <https://www.thestreet.com/technology/rivian-report-may-ease-concern-among-investors-fans> (last visited May 30, 2022) (“As of Dec. 31[,] Ford owned 11.42% [of Rivian], according to documents filed with the Securities and Exchange Commission.”); see also *Rivian*, *supra* note 97.

111. See *Arrival*, *supra* note 97.

112. *Id.*

of the automobile.<sup>113</sup> It is fair to say that innovation efforts in the automotive industry are currently widespread—as this is a pivotal moment for every automobile manufacturer.

## 2. *Other Examples of Industries Ripe for Sustainable Innovation*

The automobile industry is not the only industry where more environmentally sustainable innovations have the potential to disrupt the types of products and services that consumers end up using. This Part will briefly cover some other potential case studies, occurring in the present-day. Some environmentally sustainable innovations, like the use of lithium batteries over fossil fuels, cover a wide set of industries (including the automotive industry). Other innovations, like edible or biodegradable food wraps and cutlery,<sup>114</sup> target a more narrow industry (plastic food packaging and cutlery). As highlighted in this Part, the race to uncover more sustainable versions of many products is well underway.

One of the most competitive spaces for more environmentally sustainable innovation, the development of powerful batteries, relates to the electric vehicle. In fact, many companies that traditionally operate in the energy sector have dedicated significant resources in recent years to innovation efforts that will allow them to transition from providing consumers with less environmentally sustainable energy sources to providing consumers with electric power sources. For example, one conglomerate infamous<sup>115</sup> for its involvement in and profiting from oil

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113. See Ivan Koshurinov, *Automotive Startup Accelerators*, FRONTIER TECH REV. (May 31, 2019), <https://medium.com/frontier-tech-review/automotive-startup-accelerators-05-2019-5f06a5624927> (sharing examples of automotive accelerator programs with involvement from legacy automakers like Toyota, Renault, Nissan, Mitsubishi, BMW, Honda, Volvo, Volkswagen, GM, Ford, and others).

114. See Emily Senkosky, *The Sociable's Top 20 Sustainable Technology Innovations for 2022*, SOCIABLE (Feb. 4, 2022), <https://sociable.co/technology/the-sociables-top-20-sustainable-technology-innovations-for-2022/>.

Boston-based start-up Mori has created a plastic-like food wrap made from natural silk protein. Applied in place of a thin plastic film or packaging, it can keep food fresh as it's shipped to stores. Best of all, it's totally natural, so unlike plastic, it will biodegrade. You can even eat it if you want to. Mori uses nature-inspired protection for all kinds of foods, from produce to protein, and their all-natural protective layer can even double a product's shelf life.

*Id.*

115. See Amrith Ramkumar, *Koch Industries, Built on Oil, Bets Big on U.S. Batteries*, WALL ST. J. (Mar. 22, 2022), <https://www.wsj.com/articles/koch-industries-built-on-oil-bets-big-on-u-s-batteries-11647946147> (“Koch Industries Inc., the energy-based conglomerate whose CEO long opposed environmental regulation and funded groups that questioned climate change, has emerged as one of the biggest financial backers of the battery industry.”).

refinement,<sup>116</sup> Koch Industries, Inc., recently invested over \$1 billion<sup>117</sup> in battery technology companies to diversify its interests in the energy sector. Similarly, a Swedish battery maker, Northvolt, recently attracted \$600 million from large institutional investors, including<sup>118</sup> a company that has dealt with its own public relations issues related to the environment<sup>119</sup> in the corporate venture capital space, Chevron Technology Ventures.<sup>120</sup>

Another space for innovation lies in our food supply, more specifically, in alternatives to farming. An example that has gained popularity in recent years is the advent of lab-made meat alternatives like Impossible Foods<sup>121</sup> and Beyond Meat.<sup>122</sup> Researchers have found that lab grown alternatives to meat “could cut down greenhouse gas emissions by 96%” and “cut our water consumption between 82 and 96%, depending on the animal.”<sup>123</sup> However, not all sustainable alternatives involved moving to the lab.

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116. See Nathan Reiff, *7 Companies Owned by the Koch Brothers*, INVESTOPEDIA (Sept. 25, 2020), <https://www.investopedia.com/insights/companies-owned-koch-brothers/> (last visited June 3, 2022) (“Koch Industries is a private company that has annual revenues topping \$110 billion. The company is not really a single business, but rather a conglomerate of different companies under one umbrella.”) A Koch Industries subsidiary “offers petroleum products, gasoline, diesel fuels, jet fuels, and other oil products, as well as those related to polymers and other chemicals. The company’s ethanol plants have a combined production capacity of roughly 725 million gallons per year.” *Id.*

117. See, e.g., Tim De Chant, *Oil-Refining Giant Koch Industries Invests Nearly \$1B in Battery Companies*, ARSTECHNICA (Mar. 23, 2022), <https://arstechnica.com/tech-policy/2022/03/oil-refining-giant-koch-industries-invests-nearly-1b-in-battery-companies/>.

118. See Robert Rapier, *Funding For Battery Technology Companies Exploded in 2020*, FORBES (Feb. 6, 2021), <https://www.forbes.com/sites/rpapier/2021/02/06/funding-for-battery-technology-companies-exploded-in-2020/?sh=4b2f621533ab>.

Last fall Swedish lithium-ion battery maker Northvolt announced that it had raised \$600 million in equity to invest in capacity expansion, research and development, and large-scale recycling. The capital raise included institutional investors Baillie Gifford, Baron Capital Group, Bridford Investments Limited, Norrsken VC & PCS Holding together with private investors Cristina Stenbeck and Daniel Ek. It was joined by current Northvolt shareholders Goldman Sachs, IMAS Foundation, Scania, and Volkswagen AG.

*Id.*

119. See Guilbert Gates, Jack Ewing, Karl Russell, & Derek Watkins, *How Volkswagen’s ‘Defeat Devices’ Worked*, N.Y. TIMES (Mar. 16, 2017), <https://www.nytimes.com/interactive/2015/business/international/vw-diesel-emissions-scandal-explained.html> (“Volkswagen admitted that 11 million of its vehicles were equipped with software that was used to cheat on emissions tests.”).

120. See Jason Plautz, *As Battery Storage Booms, Investors Spend Big on Startups*, UTIL. DRIVE (Aug. 27, 2021), <https://www.utilitydive.com/news/as-battery-storage-booms-investors-spend-big-on-startups/605673/> (“Chevron Technology Ventures, the oil giant’s venture capital arm, is investing in long-duration energy storage firm Malta Inc. as part of a Series B financing round.”).

121. See IMPOSSIBLE FOODS, <https://impossiblefoods.com/> (last visited June 3, 2022).

122. See BEYOND MEAT, <https://www.beyondmeat.com/en-US/> (last visited June 3, 2022).

123. See Bryce Poirot, *Lab Grown Meat – An Emerging Industry*, U. COLO. BOULDER ENV’T CTR. (Oct. 20, 2021), <https://www.colorado.edu/center/2021/10/20/lab-grown-meat-emerging-industry>.

Alternatives to farming outdoors have emerged in indoor vertical gardens, which have the potential to reduce the amount of light and water required to yield fresh crops, while also allowing those crops to be grown year-round without pesticides.<sup>124</sup> Further, other innovations seek to reduce environmental harm created through plastic packaging; an example being in-store herb gardens that allow consumers to purchase fresh herbs rather than the dried and pre-packaged alternative.<sup>125</sup> In total, innovations impacting our food supply have immense potential to create a more environmentally sustainable world.

Lastly, both new technologies and the reduction in price of existing technologies have made solar and wind electricity more widely available. An example of a potentially game-changing new technology comes from researchers at the University of Michigan who are developing a solar glass that could be used as both windows for buildings and also a space that captures and stores solar energy.<sup>126</sup> Of course, building owners that can

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124. See Senkosky, *supra* note 114.

In 2019, the EPA reported that 12% of the US's greenhouse gas emissions came from land-use including farming, forestry, and peatland. So, in order to get to net zero, we're going to need to seriously rethink how farming works and how we utilize mother earth's soils. Vertical farms are a growing (literally) solution for this. Vertical farms are indoor structures that stack plants on top of each other so that lots can be grown in a relatively small space. California-based start-up Plenty, for instance, has recently prototyped a 2-acre farm that can produce 720 acres' worth of food. Their method utilizes machine learning and AI to make sure the plants are getting all the light and water they need, ensuring that any type of fruit or vegetable can be grown all year round. Plenty's farms are designed to increase the yield of crops over 350x relative to traditional farming—a seriously promising technological solution for reducing greenhouse gas emissions while also feeding our growing population!

*Id.*; see also Sophie Hirsh, *10 of the Decade's Best Climate Innovations*, GREENMATTERS (Dec. 18, 2019), <https://www.greenmatters.com/p/best-environmental-innovations-2010s-decade> (“Compared to conventional farming, indoor farming and vertical farming take up less land, there is no risk of pests (or need for pesticides), they yield more crops, and they bring locally-grown produce to communities that cannot grow a variety of produce year-round.”)

125. See Donovan Alexander, *21 Sustainability Innovations That Might Just Change the World*, INTERESTING ENG'G (Nov. 26, 2020), <https://interestingengineering.com/21-sustainability-innovations-that-might-just-change-the-world> (last visited May 24, 2022).

Dutch supermarket chain Albert Heijn introduced in-store herb gardens in 2017, to combat waste and give customers the freshest possible produce. The initiative was developed in collaboration with design agency studiomfd. The herbs are grown to maturity off-site, before being transported to stores. Customers can then cut as many sprigs of the herbs as they need, without buying pre-packaged sprigs. It's a simple and effective way to cut down on plastic packaging.

*Id.*

126. *Id.*

Solar glass could change the way we create homes and commercial buildings. Researchers at the University of Michigan are developing solar glass, a sustainable engineering project that has generated a lot of buzz in recent years. Just as the name implies, the solar glass would be able to capture and store solar energy. According to the research team, 5 to 7 billion square meters of usable window space exists, enough to power a full 40% of US energy needs using solar glass.

utilize window space as a form of solar panels have a greater chance at powering their buildings entirely through solar energy. In the aggregate, this technology could significantly reduce the demand for electricity from other, less sustainable sources. Innovations in solar and wind energy could also impact new markets. For example, the reduction in cost for certain existing solar and wind energy systems has the potential to provide access to electricity for some of the “nearly 1 billion people across the globe without access to electricity.”<sup>127</sup> For these communities, largely in sub-Saharan Africa and the Caribbean, access to electricity could make a significant difference in quality-of-life through an environmentally sustainable electricity source.

### *3. Roadmap for Corporate Investments in Future Sustainable Innovation*

This Part provides a blueprint for how large companies can best align the goals of environmental sustainability and innovation to set themselves up for future success. In total, this Part makes four recommendations to large companies. First, this Part recommends that companies take environmentally sustainable innovation seriously by forgoing unclear, impossible to reach goals.<sup>128</sup> Instead, companies should focus on identifying external products or services that are potential threats to their core business and more environmentally sustainable than the company’s current offering.<sup>129</sup> Next, this Part provides a framework for large companies to use in determining how to invest in sustainable innovation

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*Id.*

127. See Matt Rogers, *These 9 Technological Innovations Will Shape the Sustainability Agenda in 2019*, MCKINSEY SUSTAINABILITY (Jan. 7, 2019), <https://www.mckinsey.com/business-functions/sustainability/our-insights/sustainability-blog/these-9-technological-innovations-will-shape-the-sustainability-agenda-in-2019>.

128. See Jenny Davis-Peccoud, Paul Stone & Clare Tovey, *Achieving Breakthrough Results in Sustainability*, BAIN & CO. (Nov. 17, 2016), <https://www.bain.com/insights/achieving-breakthrough-results-in-sustainability> (last visited May 24, 2022).

Many CEOs want to make a difference. Convinced that companies should play a positive role in environmental stewardship and social development, they declare sustainability a top priority, launch a transformation program, hire a chief sustainability officer, and commit millions of dollars and hundreds of hours of management time to the effort. Then momentum fades. It’s a frustrating setback—and a common one. Bain research on corporate transformation programs shows only 12% achieve or exceed their aims. For sustainability, that figure is just 2%.

*Id.*

129. See, e.g., Fanny Hermundsdottir & Arild Aspelund, *Sustainability Innovations and Firm Competitiveness: A Review*, 280 J. CLEANER PROD. 1 (2021), <https://www.sciencedirect.com/science/article/pii/S0959652620347594?via%3Dihub>.

efforts.<sup>130</sup> Third, this Part recommends that large companies “place their bets” broadly across a wide variety of potential innovations rather than going “all-in” on one concept or startup company. Lastly, this Part leverages a concept commonly used in entrepreneurial finance to describe how large companies should determine whether to continue making additional investments in a technology.

First, this Part recommends that large companies avoid creating lofty sustainability goals with flowery language and little substance. Below is an example sustainability statement, pulled from Chevron’s 2021 Sustainability Report:

Our success is driven by our people and their commitment to deliver affordable, reliable and ever-cleaner energy. Our strategy is clear – we are leveraging our strengths to deliver lower carbon energy to a growing world. By operating responsibly and performing with excellence, we strive to make Chevron the partner of choice and aim to be a force for shared progress and prosperity. Our success rests on a culture true to our Chevron Way values – getting results the right way.<sup>131</sup>

Mission statements like this are harmful to corporate efforts aimed at achieving progress with respect to environmental sustainability. In the above example, Chevron gives no specificity with respect to how it will deliver lower carbon energy, nor does it contemplate the order of magnitude to which it will reduce its carbon emissions.<sup>132</sup> Instead, Chevron makes a promise that sounds good and is easy to live up to – while alienating those who feel strongly about environmental sustainability and believe that Chevron’s core business must change. Essentially, this “mission” statement serves as nothing more than a distraction from the company’s efforts.<sup>133</sup>

Instead of using flowery language like the above example, large companies should focus on identifying competing products and services that are potential threats to their core business, especially those that are more environmentally sustainable than the company’s offering. Then, companies should innovate in those spaces. Interestingly, Chevron talks about this extensively in the substance of its 2021 Sustainability

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130. *See generally* Section II (highlighting different ways in which large corporations engage in innovation efforts.)

131. *See 2021 Corporate Sustainability Report*, CHEVRON, <https://www.chevron.com/-/media/shared-media/documents/chevron-sustainability-report-2021.pdf> (last visited June 21, 2022).

132. *Id.*

133. This concept is derived from Guy Kawasaki’s discussion of mantras vs. mission statements in his book *REALITY CHECK: THE IRREVERENT GUIDE TO OUTSMARTING, OUTMANAGING, AND OUTMARKETING YOUR COMPETITION*. *See* KAWASAKI, *supra* note 4, at 23–24.

Report.<sup>134</sup> For example, Chevron provides examples of how it seeks to: (1) achieve net zero carbon emissions by 2050; (2) lower the methane intensity of its operations in various ways; (3) reduce natural gas flaring; (4) develop hydrogen as a fuel source; (5) grow its carbon capture business; (6) reduce plastic waste; and (7) develop methods to reuse and recycle wastewater.<sup>135</sup> Even though it appears clear that these efforts are being driven by a mix of regulatory pressures and the scrutiny of consumer preferences, large corporations like Chevron miss an opportunity to communicate their substantial sustainability efforts when electing to use flowery language instead of communicating their efforts clearly. Further, promoting the actual steps that are being taken to become more environmentally sustainable and protect the business' long-term position in the market reinforces and communicates the steps that must be taken by the company to employees, managers, executives, shareholders, and other stakeholders. This subtle shift in messaging does a lot of heavy lifting with respect to aligning a business with its best path to become more environmentally sustainable.

Next, this Part provides a framework for large companies to use in determining the sustainable innovation efforts in which to invest. There are several options for corporations who elect to invest time, money, and other resources into innovation efforts.<sup>136</sup> Many of these options, including corporate R&D, corporate incubators and accelerators, corporate venture capital, and acquisitions were covered extensively in Section III.<sup>137</sup> Deciding whether to invest in environmental sustainability and innovation efforts is not a challenging one for many corporations;<sup>138</sup> instead, deciding how to most effectively invest in those efforts is a significant challenge due to the high number of unfamiliar options available.

To begin, large corporations should evaluate where innovative ideas are likely to arise in their industry. Typically, those ideas will come from internal projects (from intrapreneurs<sup>139</sup>) and from external sources

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134. See Chevron, *supra* note 132, at 13-29.

135. See *id.*

136. See generally Section II.

137. See generally Section II.

138. See generally CHRISTENSEN, *supra* note 16.

139. See BURNS, *supra* note 12.

(through open innovation<sup>140</sup> and startups<sup>141</sup>). The mix of where these ideas arise will likely be different in every industry. Once a large corporation can determine that mix, it provides the company with a framework that informs how and where to invest the company's resources. For example, if a large corporation expects most new innovations to arise from startup ventures, it should invest its resources in things like a corporate accelerator program, a corporate venture capital fund, or a fund set aside for strategic acquisitions. In these cases, the corporation expects to use its various investments in startups, in part, as an exercise in intelligence gathering.<sup>142</sup>

In each of these cases, the corporation has created an avenue through which it can evaluate new technologies developed by startups. Further, the corporation can determine how best to nurture those new technologies with the different tools in its toolbox. For startup companies that could

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140. Open innovation is a term coined by Henry Chesbrough, a professor at the Haas School of Business at the University of California at Berkeley. Henry Chesbrough, *Everything You Need to Know About Open Innovation*, FORBES (Mar. 21, 2011), <https://www.forbes.com/sites/henrychesbrough/2011/03/21/everything-you-need-to-know-about-open-innovation/?sh=56445f3575f4>. Chesbrough writes:

Open innovation is “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.” Open innovation can be understood as the antithesis of the traditional vertical integration approach where internal R&D activities lead to internally developed products that are then distributed by the firm. As my definition suggests, there are two facets to open innovation. One is the “outside in” aspect, where external ideas and technologies are brought into the firm’s own innovation process. This is the most commonly recognized feature of open innovation. The other, less commonly recognized aspect is the “inside out” part, where un- and under-utilized ideas and technologies in the firm are allowed to go outside to be incorporated into others’ innovation processes.

*Id.*

141. *See generally* Section II (discussing corporate venture capital and corporate accelerators).

142. *See* Lerner, *supra* note 95.

A venture fund can serve as an intelligence-gathering initiative, helping a company protect itself from emerging competitive threats. During the 1980s, for example, when integrated-circuit makers were searching for alternatives to silicon (the basis of the dominant chip technology), the silicon-chip specialist Analog Devices created a venture program to invest in competing technologies. Its goal was to gather strategic information at relatively low cost. Analog’s portfolio didn’t do very well. Just one of its 13 companies went public, and only after so many financing rounds that Analog’s stake was heavily diluted. But the reason for the lackluster performance was significant: Making chips out of anything other than silicon turned out to be stubbornly difficult and expensive. Once this reality hit the markets, makers of silicon chips saw their valuations spike; Analog’s increased sevenfold from 1979 to 1985. But the corporate venturing program had provided insurance: If the alternatives had been viable, Analog would have been covered. Traditional R&D doesn’t do a good job of sniffing out competitive threats. More and more, corporate R&D units tend to focus on a narrow range of projects, thus potentially neglecting disruptive advances that occur outside the company. Plenty of executives in companies with robust R&D functions lie awake wondering whether their firms are about to be blindsided by technologies they’ve never heard of.

*Id.*



use mentorship, investing money, space, and mentorship via a corporate accelerator program makes the most sense.<sup>143</sup> Alternatively, for companies with strong founders and interest from many other investors, making an investment through the company's corporate venture capital fund is likely the best option.<sup>144</sup> Lastly, for technologies that can be acquired cheaply and easily integrated into the acquirer's operations, an outright acquisition of the startup may be the perfect course of action.<sup>145</sup> Overall, each of these strategies positively assists new innovations, including environmentally sustainable innovations, in having success.<sup>146</sup>

Of course, large companies that expect a significant number of innovations to arise from internal ideation or R&D efforts should use a different strategy. In these cases, a large corporation may begin by setting aside some percentage of employee time to be dedicated to innovation or side projects, much like the efforts used by Google<sup>147</sup> and Lockheed Martin.<sup>148</sup> From there, corporations have latitude to determine if they would like to have a corporate incubator for promising new ideas, launch an innovation subsidiary to house the development of these ideas, or simply integrate new innovations into the company's existing structure

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143. See BURNS, *supra* note 67 (defining corporate accelerator); see also generally Section II (providing a lengthy discussion on corporate accelerators and how they are used strategically in a large corporate setting.)

144. See Ibrahim, *supra* note 87 (listing highly active corporate venture capital funds, demonstrating that many successful large corporations use this strategy).

145. See Gilson, *supra* note 91 (discussing how Cisco effectively used this strategy).

146. See, e.g., Eyal-Cohen, *supra* note 19, at 206–07.

Individual entrepreneurs perform a critical role in uncovering opportunities and knowledge that would otherwise remain hidden. However, they may not have what it takes to effectively execute their discoveries in the marketplace. Entrepreneurs lack economies of experience (size, scope, and age) that help defray various costs. Economies of experience allow intrapreneurial conglomerates to recognize and capitalize on the innovative ideas of entrepreneurs by offering attractive terms that induce entrepreneurs to sell their innovations. Walmart purchased the e-commerce start-up Jet.com, a company that developed a real-time pricing algorithm that prices goods based on their locations in distribution centers. General Electric agreed to buy ServiceMax, a software program that “provides information about off-site workers and equipment repairs.” For entrepreneurs, time is of the essence as they desire both capital and ways to develop and distribute their innovation quickly. They know competitors will attempt to duplicate discoveries as soon as the knowledge is made accessible. Instead of developing the product and distribution network independently, many entrepreneurs prefer to move faster by adjoining existing larger firms with resources, market power, and proven record. More notably, certain R&D with high risk and long progression, such as pharmaceuticals drugs, is better developed within large firms that possess FDA protocols, production facilities, and market reputation.

*Id.*

147. See McMillin et al., *supra* note 44 (describing Google's “Innovation Time Off” policy).

148. See Eyal-Cohen, *supra* note 77 (describing Lockheed Martin's effort to provide time to innovate to its' employees).

and workflow.<sup>149</sup> There are pros and cons to each strategy, although scholars and commentators alike recommend that corporations create a separate space for innovation efforts that lies outside the physical space of the company's normal operations.<sup>150</sup>

Third, it is recommended that large companies make investments in many different innovations rather than making a large investment in one concept or startup company. This recommendation aligns with the portfolio theory of investment<sup>151</sup> that most startup investors follow. Corporations should expect that most innovation initiatives will fail, and the products being developed will never make it to market, let alone turn a profit or provide a return of capital to investors.<sup>152</sup> However, buried within all of the failures may lie a few shining successes that, if successful enough, will earn the corporation a return on its aggregate investment in innovation initiatives.<sup>153</sup>

Lastly, corporations should constantly evaluate innovation projects to determine whether those projects warrant further investment of time, money, and other resources. For this reason, commenters recommend utilizing structures like a corporate venture capital fund rather than developing internal ideas, if possible, because it makes it easier for companies to cut their losses with respect to projects that are not having

149. See Ibrahim, *supra* note 16, at 1791–92.

Studies have found that a CVC's likelihood of success increases if the parent corporation establishes dedicated units (e.g., subsidiaries), rather than housing the corporate venture capital operation inside the parent. Although the results of CVC-funded startup acquisitions have not been good, one study found that when parent corporations later acquired their CVC's portfolio startups, financial returns were significantly higher "when managers from dedicated CVC units [were] responsible for the initial funding decision."

*Id.*

150. See KAWASAKI, *supra* note 4, at 15–17; see also BURNS, *supra* note 12, at 351–53.

151. See, e.g., Ben McClure, *Modern Portfolio Theory: Why It's Still Hip*, INVESTOPEDIA (June 28, 2021), <https://www.investopedia.com/managing-wealth/modern-portfolio-theory-why-its-still-hip/> (sharing academic research that shows investment diversification is a good strategy to increase investment returns and reduce investment risk, as compared to investing substantially in fewer companies).

152. See, e.g., Tom Eisenmann, *Why Start-Ups Fail*, HARVARD BUSINESS REVIEW (May-June 2021), <https://hbr.org/2021/05/why-start-ups-fail> ("Most start-ups don't succeed: More than two-thirds of them never deliver a positive return to investors.").

153. See, e.g., Alejandro Cremades, *How Venture Capital Works*, FORBES (Aug. 2, 2018), <https://www.forbes.com/sites/alejandrocremades/2018/08/02/how-venture-capital-works/?sh=507d3c621b14>

Start-ups are a very risky type of asset class and nine out of 10 will end up failing. For that reason, VCs will go for those companies with the potential of giving them a 10x type of return so that it can help them with the losses of other companies inside their portfolios. If you are not able to project these kinds of returns, a VC might not be the route to follow for financing.

*Id.*

success.<sup>154</sup> One way to achieve this aim is to create a structure where the company makes “staged” investments<sup>155</sup> of time, money, and resources to innovation efforts, with each stage of investment requiring the idea to meet certain goals or milestones to receive the next batch of investment. This prevents the corporation from investing too much in the wrong ideas and provides an objective way for the company to choose winners and losers from the pack.

## V. CONCLUSION

Corporate innovation initiatives are an important piece of our society’s collective efforts in innovation. Large corporations engage in such initiatives internally through R&D, dedicated employee “innovation” time, and corporate incubators. Other times, corporations solicit innovative ideas from outside the company’s four walls from parties like startup ventures and independent inventors. Recently, large corporations have turned to innovation efforts like those described above more often, sometimes in an effort to remain competitive in a marketplace that suddenly has more environmentally sustainable product options available to consumers. In these instances, it is important for large corporations to survey the transactional structures outlined in this article before deciding where innovation efforts should begin and how the company should ultimately work to include those efforts into its existing structure.

In any case, it is important that large corporations participate in these innovation efforts. For the corporation itself, innovation efforts will give it the best chance to remain competitive against startups seeking to disrupt its current market share with more innovative products and services. For

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154. See Lerner, *supra* note 95.

Another benefit of venturing, one that’s closely related to accelerating the company’s response to change and threats, is that it gives executives a faster way to disengage from investments that seem to be going nowhere. As is well-known, many companies find it difficult to abandon the not-quite-good-enough innovations that sometimes come out of internal labs. These projects can linger in product development for years, resisting termination (despite much talk about R&D portfolio management). Nokia’s insistence on developing its phones using the Symbian operating system, even as its competitive position went into free fall, is a classic illustration. The arm’s-length relationship between companies and their venture funds offers advantages in this regard: The best funds tend to be quicker on the trigger than their corporate parents. Even if a corporation is unwilling to terminate an unpromising initiative, the presence of co-investors may force the decision.

*Id.*

155. Staged investments are common in the venture capital world and have been found to reduce risk for investors. See generally Lanfang Wang & Susheng Wang, *Is Staged Financing Designed for Alleviating Risks or Agency Problems?*, in HANDBOOK OF BUSINESS AND FINANCE ch. 8 (Matthaus Behrmann & Timotheus Faust eds., 2009), <http://www.bm.ust.hk/~sswang/homepage/Wang-Wang%20Chapter%208.pdf>.

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society, corporate innovation is important because it presents one avenue through which the inventions of independent inventors, who often lack the business acumen to bring those ideas to market, can come to life and benefit consumers. When those inventions happen to be more environmentally sustainable than the status quo, large corporations have a golden opportunity to assist society and their future business prospects. It is wise for large corporations to take advantage of those opportunities and actively seek to create more of them.