

Chapter 5

Old Dogs and New Tricks

Build, Buy, or Belong to a Platform

Belong to a Competing Platform

Buy a Platform (Especially the Technology and the Talent)

Build a New Platform Yourself

Key Takeaways for Managers and Entrepreneurs

The question we ask in this chapter is simple: Can an old dog learn new tricks? While entrepreneurs are building new platforms every day from scratch, incumbent firms have struggled with adapting to the world of digital platforms. For many well-established firms, platforms challenge the core principles of their ongoing business. Many traditional enterprises have been accustomed to controlling all aspects of their destiny, from supply chain through distribution and direct control over customer relationships. But the dynamics of industry platforms and ecosystems challenge those

assumptions. Platforms connect customers to customers (Facebook), customers to advertisers (Google), drivers to passengers (Uber), and software developers to buyers (now via app stores, such as from Apple and Google). Moreover, platforms often disrupt existing business models that focus on stand-alone products or services. How does a black cab in London compete with an unregulated Uber? How does a retailer such as Walmart compete with Amazon, eBay, or Alibaba? How should modern hotels respond to Airbnb? How should a firm like Nokia or even Microsoft respond to Google, which gives away the Android smartphone platform software for free?

Many established firms facing these challenges have actually found a way to adapt. Very few shrivel up and die. Mattel, for instance, introduced the Barbie doll in 1959.¹ Over the years, the company faced competition on many fronts, but it evolved the Barbie product into an innovation platform. Although Mattel had always made some accessories for the dolls, the company eventually realized that it would be more profitable if it licensed hundreds of partners to make clothes, fashion accessories, and a wide range of complementary products and services, including online Barbie doll chat rooms and videos, which would ultimately expand demand. Of course, Mattel still controls the Barbie doll experience, much the way Apple controls the iPhone experience throughout its ecosystem.

Traditional hotels also have discovered the potential magic of transaction platforms. When Airbnb got started, many hotels dismissed the platform as an irrelevant niche. But when Airbnb hit 2.5 million people staying on a single night in 2017, it was hard for hotels to ignore.² With 4 million listings, Airbnb was larger than the top five hotel brands combined. It was also far

more valuable. It took a while, but several major hotel brands decided it was time to get into the home-sharing business. AccorHotels bought Onefinestay, a platform for renting upscale homes and apartments in London.³ Hyatt invested and partnered with Oasis, a niche home-rental platform in twenty cities. And Marriott bought the Tribute Portfolio Hotels collection from Starwood Hotels, folded in an experiment on home sharing in London, and then bought Starwood outright to vastly expand its market share and base of loyalty program users.

There are numerous questions old dogs need to answer before they can compete successfully in a platform world. For example, what parts of your business would be better handled by using an existing transaction or innovation platform owned by some other company? Can access to an existing platform add value to your business by lowering your costs or increasing your customer reach? How can you prevent the platform owner from extracting all or most of the value? As platforms become more powerful and ubiquitous, should you become a platform yourself, build coalitions with other players, or focus on a niche, outside the reach of a mass-market platform?

Even modern product companies face the challenge of adapting to platforms. Consider the example of HTC Corporation of Taiwan, one of the pioneers of the smartphone industry. It delivered the first 3G phone, the first 4G phone, and the first Android phone. At its peak in 2011, HTC was the third largest smartphone company, behind Nokia and Apple. Annual revenues hit \$16 billion and were growing close to 50 percent. Fast forward a half dozen years, and HTC's smartphone business was struggling: The big winners in the smartphone industry were the dominant platform players,

Apple (iPhone) and Google (Android). Android, in particular, had commoditized the hardware industry, driving down margins for everyone but Apple.

Peter Chou, and later Cher Wang, HTC's CEOs, responded by moving aggressively into a new space: virtual reality. Wang knew that HTC had a high-end product, called Vive, which was better than its competitors, but HTC also had one of the best products on the market in the early days of the smartphone. HTC had a very close relationship with Google during the initial launch of Android, and, similarly, HTC had a close relationship with the leading platform for PC virtual reality gamers (Valve). In a world where platforms were likely to play an important role, how could a traditional hardware company adapt to a platform world driven by software and digital technologies? For more than a year, management and the board debated: How do we avoid a repeat of the smartphone experience?

The answer, repeated in several examples in this chapter, is that you have to be willing to play the platform game.⁴ For HTC, it meant both "belonging" to existing platforms (Valve's Steam platform for PC games and Google's platform for Android phones) and "building" its own hybrid platform for educational, industrial, entertainment, and other virtual reality applications. HTC continued to work closely with Valve because virtual reality was a classic innovation platform: Virtual reality's initial success would depend on third parties building exciting applications, and the early adopters would be serious gamers. HTC also worked with Google because the high-volume, low-end virtual reality market would most likely emerge from the Android ecosystem. At the same time, Wang wanted HTC to have its own platform, called Viveport, which would seek to attract non-gaming applications. It was

still too early to predict the success or failure of HTC's Vive and its Viveport platform, but the strategies of belonging to and building platforms have become increasingly common among traditional product firms.⁵

The key message of this chapter is that “old dogs” can learn to adapt to a platform world in at least three ways: They can belong to a competing platform, buy a platform, or build their own platform. The biggest nightmare for established firms is not being able to prevent a new platform from becoming the next winner-take-all or winner-take-most competitor in markets where they have competed effectively for years or decades. To analyze these options in more depth, we examine how black cabs in London have worked with competing transaction platforms to fend off Uber and how a creative retailer found ways to leverage the Amazon platform to its advantage. We also discuss how Walmart accelerated its progress in competing with Amazon by buying Jet.com, and how General Electric started down the road of building a new innovation or hybrid platform for the industrial Internet of things to leverage its product and service capabilities.

The path to success for old dogs is not a straight line. Setbacks are inevitable, as GE in particular has experienced. But these examples highlight the challenges and strategic options that many established firms can and should confront as “platformization” comes to their industries.

Belong to a Competing Platform

In the early days of the Internet, some managers believed that the best way to defend your business against a new platform was to jump on the bandwagon. If Amazon or eBay made it easy to sell directly to consumers,

why not become an Amazon or eBay seller and exploit a successful platform's hard work of connecting large numbers of customers? What many companies did not realize was that, once a platform had a large installed base, that platform could also gain significant market power and extract most of the value.

Recent research has shown that pattern has continued. Companies that realized material revenue growth selling their products on Amazon's platform ran a significant risk that Amazon would observe that success, enter the category, and take it over.⁶ And for the brands that would use Amazon to sell their products directly, many found that the automated bots Amazon used to search the web and adjust prices to guarantee it had the lowest prices effectively put the traditional distributors at a competitive disadvantage. Moreover, Amazon's tactics had repercussions on the brands themselves, alienating them from their usual distribution network and further reinforcing Amazon's bargaining power.⁷ This type of aggressive behavior is not unusual for a platform leader. In an earlier era, many software developers who worked on the Windows platform discovered that Microsoft would often copy and integrate third-party applications, effectively putting those players out of business.⁸

PHARMAPACKS ON AMAZON: LEVERAGE THE PLATFORM GIANT

In some cases, belonging to someone else's platform can be very profitable. A big successful platform such as Amazon can dramatically reduce search and transaction costs for customers. The challenge for firms using the platform is to learn how to exploit the advantages without being run over by the

platform itself. The answer often exists in platform governance rules that allow participants to pick their spots.⁹ Many creative businesses have found ways to belong to a platform, while mitigating that platform's inherent power.

A relatively unknown success case of belonging to a platform was a company called Pharmapacks, which got its start in brick-and-mortar retail in 2010. The founder, Andrew Vagenas, first ventured into online sales in 2011. At the time, Vagenas and a partner owned a retail pharmacy in the Bronx, which he described as a “pretty successful mom-and-pop shop.” They raised money from friends and built their own website, with limited success.¹⁰ Their sales only took off when they began selling on eBay and Amazon. By 2016, the vast majority of revenues came from online marketplaces—40 percent from Amazon alone.¹¹ And they emerged as one of the largest U.S. sellers on the Amazon marketplace.¹²

Some retailers had success by concentrating on a niche on the Amazon marketplace. By contrast, Pharmapacks made its money by selling lip balm, shampoo, razor blades, and other everyday items you might buy at a drugstore. Its business model was to offer high-volume and low-margin products, which it bought at a discount from a range of distributors and sold at a 3 percent to 6 percent profit margin.¹³ Pharmapacks succeeded by capitalizing on the rules of the platform. Unlike a traditional retailer, as a marketplace seller they did not need to stock a full line of products all the time, but could adjust their inventory based on what products their suppliers discounted.

More importantly, Pharmapacks developed a pricing algorithm that

would automatically adjust the price of a given item to ensure the price they were charging was low enough to show up at the top of the Amazon search page, but not so low that they lost money on the sale.¹⁴ Vagenas told ABC in early 2016 that “every 45 minutes, our systems are changing prices. Whether it's increasing prices, decreasing prices, [based on] market demand or we're getting better deals or buying better. We always pass the profits straight to the customer whenever there's a discount given to us, so that's how we can drop prices.”¹⁵ As Pharmapacks refined their pricing formula, its products began to land the top spot and sales began to increase dramatically. Revenues grew to over \$31 million in 2014, \$70 million in 2015, and \$121 million in 2016, a three-year growth rate of nearly 600 percent.¹⁶ By mid-2016, Pharmapacks was shipping 20,000 packages a day.¹⁷

Amazon might compete directly with high-volume players in easily identified categories, but Pharmapack's strategy was probably less attractive and too much trouble for Amazon to replicate. The lesson for established companies is that if you can “manage” the platform, you can build an attractive business. Pharmapack managed the platform by offering the lowest prices and getting top billing. It leveraged Amazon's strength—reach and low-cost distribution—without worrying (at least in the short run) about Amazon moving into its territory. The bottom line: Pharmapack was a business that fit Amazon's strategy of offering great retail value, and it was not so large that Amazon felt compelled to copy it.

GM AND LYFT: SUPPORT A COMPETING PLATFORM

Sometimes belonging to the dominant platform can be a winning strategy when you can take advantage of the platform rules, but sometimes a new

platform aims to put you out of business. In these circumstances, playing on the platform is usually not the answer. An alternative strategy is to support a competing platform. Especially early in the game, before a market has tipped or the new platform player has built significant scale, there may be opportunities to fragment the market and prevent a winner-take-all-or-most outcome. Every taxi company in the world, for example, has fretted over how to adapt to Uber. Suppliers to the taxi industry, such as General Motors, also have feared that the market could tip to Uber. When Uber starts building its own self-driving cars, GM could be frozen out of the loop. GM's response was to invest \$500 million into Uber's competitor Lyft to improve the prospects of a competitive industry.

Within the taxi industry itself, firms across the world have been striving to fend off Uber's advances. The single most successful strategy has been political: In numerous cities and even countries, taxi organizations have lobbied local governments to put Uber into a compromised position. In Hong Kong, for instance, local authorities sent a message to Uber when the police arrested seven Uber drivers for carriage of passengers and operating without insurance against third-party risks.¹⁸ The drivers were fined 7,000 Hong Kong dollars (about \$900 U.S.) and lost their driver's licenses for twelve months. Suddenly, finding an Uber in Hong Kong was challenging. Similarly, in July 2016, Uber was forced to pull out of Hungary when the nation's legislature passed a law that made it impossible for Uber to operate its platform.¹⁹ Even in our hometown of Boston, the taxi industry convinced our local airport (Logan) to ban UberX from picking up passengers for several years.²⁰ Forty other U.S. city airports did the same.²¹

In cities and countries unwilling to protect their local taxi industries,

firms have had to make a choice: Join Uber or find competitive strategies to compete with Uber. In some cities, taxi companies opted to join Uber and operate on Uber's "fleet owners" platform. In other cities, such as London, the taxis have chosen to fight. Before the city of London declined to renew Uber's license in 2017 (a decision that was overturned with a temporary license in 2018), London's iconic black cabs provided an illuminating example of how an old dog can remain viable by supporting alternative platforms.

LONDON'S BLACK CABS: MAKING ALTERNATIVE PLATFORMS YOUR "HOME"

The London taxi business before the rise of ride sharing consisted of the city's traditional black cabs and thousands of private hire vehicle (PHV) operators, popularly known as minicabs. Black cab drivers were self-employed, determined their own hours, and functioned almost as a professional guild. Admission required rigorous training, including memorizing 25,000 streets and 20,000 landmarks in London. It typically took about four years of nearly full-time work to prepare for and pass the exam.²² Once they passed the exam, drivers could buy a license, acquire a vehicle, and begin operating as a cabbie. The industry's regulator, Transport for London (TfL), mandated that vehicles had to meet strict standards (e.g., a specific turning radius, be wheelchair accessible) and pass safety inspections every six months.

London's black cabs had long faced competition from minicabs, which operated differently. Unlike taxis, minicabs could not be hailed on the street, nor were they allowed to use taxi stands. Instead, they had to be prebooked,

either by phone or in person at an office or kiosk. Despite the hassle, demand for minicabs was high. By 2013, there were nearly 50,000 licensed PHVs in London, soaking up some of the demand left by the limited number of black cabs available, especially on nights and weekends.

Uber and other platforms: Uber launched in London in 2012, licensed as a PHV operator. Its impact on the black cab business was difficult to quantify, since there were no updated statistics on ridership. Anecdotally, cabbies said it had affected their business, and the number of licensed cabs in London declined slightly, falling from 22,600 to 22,500 between 2011 and 2015.²³ Despite cabbies' efforts to limit Uber's growth, in the second half of 2015 the number of Uber drivers passed the number of black cab drivers and reached 25,000 by early 2016.²⁴ Cabbies saw Uber as an existential threat. In the words of one black cab driver who also helped to run a driver training school, "I genuinely believe [Uber's] aim is to wipe us out. Starve black taxis into submission and then run riot with that marketplace."²⁵

In response to Uber's challenge, many of London's cabbies turned to competing third-party ride-sharing platforms. By early 2016, the two major taxi-only ride-sharing platforms were Hailo and Gett, which together had signed up over 60 percent of London's black cab drivers. Hailo actually predated the arrival of Uber, launching in London in November 2011. The app was free to riders, who paid the same fare they would have if they hailed a cab on the street. Hailo's revenues came from taking a commission of 10 percent from the driver's fare for each trip it enabled. By August 2012, about 5,200 drivers had signed up for the service and some 200,000 Londoners had downloaded the Hailo's smartphone app. Drivers were attracted to the app primarily because it reduced their amount of idle time. One cabdriver

who used the platform said, "I get about four more jobs a day than I did before. . . . The cut on each fare and paying the credit card fee isn't that big a deal. You lose more money driving around waiting to be hailed."²⁶ In September 2013, Hailo reported that 3 million taxi trips had been made in London over the previous two years using the app. This was a sizable number but a relative drop in the bucket compared to the number of black cab trips taken in London, which stood at 1.8 million per week in 2007 (the latest year for which statistics are available).²⁷ By November 2013, the number of drivers on the platform had risen to 16,000, or 60 percent of the licensed cabbies in the city, and Hailo had over 400,000 registered users.²⁸

Joining Hailo to fight Uber was not problem-free, however. Hailo, like most platforms, had the power to change the rules. Originally, Hailo marketed itself as a platform exclusively for hailing London's black cabs. But, under increased pressure from Uber after its 2012 launch, Hailo opened the platform to private hire vehicles in May 2014. The decision provoked a backlash from drivers of black cabs. The head of the Licensed Taxi Drivers Association said: "There's a lot of resentment and anger out there . . . now the guys just feel betrayed."²⁹

The good news for London black cabs was that the market had not tipped. There was yet another ride-hailing app in the city, Gett, which was based in Israel and operated in a number of cities around the world before coming to London. Its growth trailed Hailo's, but it profited from the backlash against Hailo's decision to open its platform, and signed up 10,000 cabbies in London by March 2016.³⁰ By early 2016, London's black cab drivers, in addition to depending on their iconic status and legendary knowledge of the

streets of the city, were committed to fighting Uber through a combination of direct action, political lobbying, and the adoption of rival taxi-only ride-hailing platforms. Of course, the battle for the London cab industry was not over. In early February 2016, Uber offered to open up its platform to London's iconic black cabs commission-free for twelve months, but cabdrivers rejected the offer.

While some might have predicted the death of the black cabs when Uber entered London, they have managed to adapt by choosing new platforms, which allow the old and the new way of doing things to coexist. London's black cab drivers also got some potential relief from city officials. On September 22, 2017, Transport for London announced it would not renew Uber's license to operate in the city when it expired on September 30, citing "a lack of corporate responsibility in relation to a number of issues which have potential public safety and security implications."³¹ Uber appealed the decision, although Uber CEO Dara Khosrowshahi subsequently acknowledged that Uber had "gotten things wrong along the way" and apologized for its mistakes.³² Uber also gained considerable support; by late October, some 700,000 Londoners had signed a petition calling for TfL to reverse its verdict. Uber, of course, appealed and was allowed to continue operations in London, pending the final decision.³³ In June 2018, Uber won its appeal to continue operating in London, and was given a probationary license requiring a review every fifteen months.³⁴

CAVEAT: THE PITFALLS OF JOINING A DOMINANT PLATFORM

Smaller firms (or independent operators in the case of taxi drivers) often

have few choices other than to join an existing platform. Larger firms may have more choices. Often, they can build or buy their own platform. Sometimes, incumbents simply lack the skills to build and operate a digital platform, and belonging to an existing platform may be the best answer. However, belonging to a powerful platform has many risks for traditional companies. Holdup problems are rampant. Platforms may pretend to be open and unbiased, but that has often been false. Once a platform achieves scale, it has the power to compete directly with one of its market sides.

A good example of this dilemma was the relationship between Toys "R" Us and Amazon. In the year 2000, Toys "R" Us signed a ten-year "exclusive" agreement with Amazon to participate on its platform. Realizing that its traditional brick-and-mortar retail strategy needed help and its online presence was not getting traction, Toys "R" Us joined Amazon's platform for both web presence and order fulfillment. Toys "R" Us paid \$50 million per year, plus a percentage of its revenue. By 2004, however, the deal went south: With Toys "R" Us losing money and Amazon offering competing toy vendors on its site, Toys "R" Us sued for \$200 million in damages. Amazon claimed it was offering toys which Toys "R" Us could not or would not provide. After a two-year legal battle, the courts ruled in favor of Toys "R" Us, allowing the toy company to sever its connection with Amazon, but awarded no damages. For the next decade, Toys "R" Us continued to struggle while Amazon sold an estimated \$4 billion in toys. Toys "R" Us then declared bankruptcy in 2018 and closed all its stores.

Toys "R" Us made three mistakes. First, when it joined a powerful platform, the company should have extracted the maximum concessions up front. In this case, Toys "R" Us failed to adequately define the word

“exclusive” in its contract. Second, Toys “R” Us might have built its own platform, not just for its own toys but for other toy companies as well. Three, Toys “R” Us might have bought a competing platform, which would have had the skills Toys “R” Us lacked. Especially when the threat of holdup problems are severe, bigger incumbent firms need to explore buying or building.

Buy a Platform (Especially the Technology and the Talent)

No one ever said that creating a platform business was easy. For many managers, particularly if they have strong balance sheets, the easy answer has been to buy a platform. But before heading down this path, it is important to recognize that buying your way into the platform world is fraught with danger. The skills to manage a platform can be antithetical to managing an old command-and-control organization. Notable disasters have included News Corporation’s acquisition of MySpace and the AOL-Time-Warner merger.

Yet under the right conditions, buying a platform may be the right answer. In businesses where new, emerging platforms are likely to capture a significant share (e.g., taxis and retail), incumbent firms cannot sit on the sidelines indefinitely. In general, the biggest risk in acquiring a platform has been not retaining key talent, integrating technology into legacy systems, and cultural rejection from the parent. But, as we’ll see in the Walmart example, there may be hope. Buying strong technology and empowering new, outside talent can sometimes overcome the natural obstacles to transforming an old dog into a new platform.

WALMART’S ACQUISITIONS

Few large incumbent companies have been more challenged by platform competition than Walmart, the biggest company in the world measured by sales and employees. “How did a peddler of cheap shirts and fishing rods become the mightiest corporation in America?” a *Fortune* columnist once asked. “The short version of Walmart’s rise to glory goes something like this: In 1979 it racked up a billion dollars in sales. By 1993 it did that much business in a week; by 2001 it could do it in a day.”³⁵ That same year, Walmart also topped *Fortune*’s Global 500 list, and it retained the top spot for most of the next fifteen years. In 2017, its revenues were close to \$500 billion, which outpaced the next largest company—China’s State Grid—by more than \$150 billion in revenue.³⁶ Walmart had become the dominant retailer on the planet by cutting costs ruthlessly in service to its everyday low-price model and steadily pushing competitors small and large out of business.

Walmart’s biggest threat came from e-commerce. Though a small fraction of overall retail sales (about 14 percent in 2017), online retail was growing much faster (about 16 percent in 2017), compared to the 1.4 percent overall growth in retail. Online U.S. sales were predicted to grow from \$390 billion in 2016 to \$612 billion in 2020.³⁷ But, in the United States, Walmart faced head-on the new juggernaut of the retail world: Amazon. Although Amazon’s revenue was much less than half of Walmart’s in 2017, it was growing much faster: Amazon’s retail sales had grown at an annualized rate of nearly 20 percent between 2011 and 2015, while Walmart’s growth was in the low single digits. Amazon’s dominance in e-commerce was nearly as complete as

Walmart's dominance in brick-and-mortar retail. Amazon was also the world's most valuable retailer in 2018, more than three times the market cap of Walmart. As the CEO of Adidas put it, "Amazon is the best, without any comparison, transaction platform in the world."³⁸

The Platform Challenge: The challenge from Amazon was not simply that it was a rival retailer and dominating e-commerce. Amazon had become an increasingly large platform for third-party retailers, ranging from individuals selling used books to retailers generating tens of millions of dollars in annual revenue on its marketplace.³⁹ Amazon originally launched its marketplace in 2000, and in 2007 introduced its Fulfillment by Amazon (FBA) service, which meant it would handle not only the online transaction but store, package, and ship items for third-party sellers who took advantage of the service. This feature distinguished Amazon from other marketplaces like eBay and allowed small retailers to reach a wide audience without having to build a fulfillment infrastructure.

The size of Amazon's marketplace was growing rapidly. Marketplace sales generated \$9.2 billion in revenue for Amazon in the first quarter of 2018, about 18 percent of Amazon's total revenues in the quarter.⁴⁰ By 2018, roughly 65 percent of total unit sales on Amazon came from third-party sellers, and the number of sellers actively using the service stood at over 2 million. Through its Fulfillment by Amazon service, Amazon delivered over 2 billion items for other sellers in 2016, double the number for 2015.⁴¹ The proliferation of third-party sellers vastly expanded the product selection available on Amazon.com; by one estimate between 80 percent to 90 percent of product variety was coming from third-party sellers, contributing the

majority of the hundreds of millions of items available on Amazon.com.⁴² The scale of the marketplace contributed to the site's attraction for consumers, who recognized they would be able to find whatever they were looking for at Amazon.

Amazon was the largest threat to Walmart's growth. However, other large retail platforms also gave them reason to worry. By giving small and medium-sized retailers an online presence with broad reach, marketplaces such as eBay and Alibaba in China left Walmart a smaller share of the online pie. While it might seem strange for the world's largest retailer, accustomed to driving other retailers out of business, to bring other retailers under its umbrella, it faced the same choice Amazon had dealt with fifteen years before: whether or not to allow those retailers to use its platform and at least get a percentage of those sales (and acquire greater selection that would bring customers to its site, where they might buy products sourced directly from Walmart) or risk losing a large swath of consumers altogether.

Walmart's Response: With dominant e-commerce platforms threatening its growth plans both at home and abroad, Walmart's leadership recognized the need to increase its online retail presence and poured billions into the effort. Walmart tried to build its own platform organically: It even sought to leverage Silicon Valley by creating a partnership with the venture capital firm Accel Partners to make Walmart.com into a viable competitor of Amazon. But after more than a decade of disappointing results, Walmart management concluded that it didn't have the right technology or the right team, and it needed to acquire those capabilities. Between 2011 and 2016, it made more than a dozen e-commerce acquisitions. The largest by far was the \$3.3 billion acquisition of Jet.com in August 2016.⁴³ Walmart hoped Jet.com could bring

e-commerce capabilities and technology that would jump-start Walmart's marketplace business. Walmart CEO Doug McMillon put Jet CEO Marc Lore and his team in charge of all of Walmart's e-commerce business. If Walmart was going to succeed in the new world of platform-based retail, the company needed a new approach, a new team, and a new leader.

Walmart had built its own marketplace into its website, but as of summer 2016 it had only about 550 third-party vendors, compared to over 2 million at Amazon.⁴⁴ Walmart's ability to grow its marketplace was hindered by the lengthy vetting process for adding vendors—which took an average of six weeks, compared to one day on Amazon and eBay.⁴⁵ When Walmart acquired Jet, a big hope was to quickly broaden its online selection.⁴⁶

Jet.com had launched in June 2015. Part of its original strategy was to use revenue from annual \$49.99 membership fees to maintain low prices by subsidizing money-losing transactions, but the company quickly abandoned it. Lore argued that membership was not central to the business model; he claimed that Jet could achieve 4 percent to 5 percent savings over competing sites (i.e., Amazon) without membership fees.⁴⁷ Jet's marketplace was distinctive in a number of ways. Rather than the user selecting the retailer for each item, Jet's algorithm selected what it called the "optimal retailer"—that is, the least expensive—for a given set of purchases based on various factors such as the shoppers' locations or the items in their carts. For instance, a small retailer that happened to be located close to the shopper might win out over a larger retailer with a lower-priced item because its lower shipping costs made the purchase cheaper. In addition, sellers could establish rules for how their goods were priced, giving customers discounts for buying in bulk, for accepting slower shipping times, for waiving their

right to return items, or for opting in to receive marketing emails. All of these rules were factored into Jet's dynamic pricing algorithm and would help determine the cheapest option for a given basket of goods.⁴⁸

From buyers' perspectives, the price of goods in their carts changed in real time as they added items or agreed to waive returns or opt in to receive emails. Behind the scenes, the retailer providing them might see changes as well, depending on the buyers' choices. This all depended on Jet's sophisticated pricing technology, which Lore saw as a crucial differentiator for the Jet platform that competitors would find difficult to imitate. As Lore noted in 2015, "Every product we look at, we've repriced relative to what's in your basket, looking at all the pools of inventory, applying all the rules retailers have set. There could be hundreds of retailers who set rules and you have to go through all of them to find out what the cheapest is and what the difference is. That's a lot of calculations." He went on to say that "the technology has been super, super hard. It's about getting it to the point where it can run these calculations at the speed we need it to run."⁴⁹

It will take years to determine if Walmart's acquisitions will enable it to create a successful retail platform to rival those of Amazon and Alibaba, but early returns after the Jet acquisition were promising. The first year after the acquisition, Walmart appeared to turn a corner in its e-commerce efforts, generating significant growth and momentum. In the quarter ending January 31, 2017, the first full quarter after closing the acquisition, Walmart's domestic e-commerce sales and gross merchandise volume were up 29 percent and 31 percent respectively over the previous year. When Walmart announced its earnings for the third quarter in November 2017, its stock rose 11 percent to an all-time high. With e-commerce growth rates

surpassing Amazon's, CNN declared that Walmart was "making Amazon sweat."⁵⁰ Part of the improvement could be attributed to increased selection: By February of 2018, the number of items for sale in its marketplace had risen to 75 million, up more than tenfold.⁵¹

Buying Jet.com clearly jump-started Walmart's e-commerce platform business. However, like many large acquisitions, it suffered from growing pains, execution problems, and integration issues. Growth decelerated sharply at the end of Walmart's 2018 fiscal year, with e-sales growth and GMV growth falling to 24 percent and 23 percent respectively. Walmart's leaders acknowledged the slowdown in online growth. CEO Doug McMillon said, "We are building a business. We are learning something new." McMillon went on to suggest that Jet would remain a smaller part of Walmart's overall business: "I think what you'll see is Jet will go through a period of adjustment and then it'll start to grow again in the future but focused on specific markets and opportunities, whereas Walmart will be the broad-based, big part of the business, and growing it will be a priority."⁵² Specifically, Walmart's leadership was positioning Jet as a way to reach younger, more upscale urban consumers.⁵³

Matters got worse in March 2018. Tri Huynh, a former employee in Walmart's e-commerce division, filed a whistle-blower suit. He apparently had been fired after repeatedly raising concerns—culminating in bringing them to Marc Lore—about Walmart's "overly aggressive push to show meteoric growth in its e-commerce business by any means possible"—even, illegitimate ones. Huynh claimed that Walmart had lowered its standards for third-party marketplace items, mislabeled items so vendors received lower commissions, and failed to process returns, resulting in inflated sales

numbers.⁵⁴

Walmart Invests in Flipkart: Undeterred by challenges at home, Walmart was moving at full speed to build out a global retail platform. In 2018, Walmart made its largest acquisition in history by investing \$15 billion for a 75 percent stake in Flipkart, India's leading e-commerce player. As one of the world's largest and fastest-growing new markets for online commerce, India was an attractive target for Walmart.

Flipkart had been founded by two former Amazon employees in 2007 but was facing stiff competition from Amazon, which entered India in 2013. Jeff Bezos decided to pour \$5 billion into the India operations, which in 2018 included fast delivery and Prime video streaming. Flipkart struggled to maintain its lead and needed additional financing. Meanwhile, Walmart was also struggling in India, operating only twenty-one wholesale stores, limited by rules that restricted foreign companies' ownership of local retail operations. The investment in Flipkart provided an opportunity for Walmart to sell directly to Indian consumers.⁵⁵ Although this decision was a much bigger financial gamble than the acquisition of Jet.com, it signaled Walmart's serious commitment to transition from brick-and-mortar competition to digital platform competition.

Failing in its retail platform business was not an option for Walmart management. Everyone understood that allowing Amazon to dominate the e-commerce segment would be the kiss of death for the world's largest retailer. Flipkart and Jet.com gave Walmart and its shareholders hope. At the same time, success would demand that Walmart learn, adapt, and fix its execution challenges—similar to any conventional acquisition.

Build a New Platform Yourself

Building a new platform yourself is the most challenging option for incumbent firms, but potentially the most rewarding. Still, the inherent complexity of platform markets makes it difficult to predict how older industries will respond. Even if one market side accepts a new platform, the other sides must cooperate and engage. It is also difficult for a firm to overcome internal inertia and accept a new way of doing business. Even in the face of intense platform competition, internal factors will often limit the effectiveness of a build-your-own strategy.⁵⁶

THE PROMISE OF A BUILD STRATEGY: GE'S PREDIX

While building a new platform from scratch remains extraordinarily hard, especially for “old dogs,” it also held the promise of revolutionizing a business. At a minimum, the opportunity to take advantage of network effects could inject new growth into a mature market. To succeed, however, traditional firms needed to overcome the natural tendencies of command and control. Old dogs also needed to learn the lessons of this book: Identify the right type of platform, figure out how to solve the chicken-or-egg problem, build a business model that takes advantage of network effects, and learn how to govern a platform. The last challenge requires working with competitors and other sides of the platform, which for many established companies has been an unnatural act. There are no easy solutions. Ultimately, managers have to commit to new ways of doing business without being wed to the past. Our colleague Clay Christensen famously

recommended that old dogs should establish separate organizations to handle new, disruptive business models such as digital platforms.⁵⁷ But there is very little evidence that this has worked for many established companies. Sometimes a platform needs to be integrated into a core business; other times it should be separated. The key is accepting a platform mind-set, with all of the techniques and tools we describe in this book.

Although General Electric has struggled mightily as a company as well as struggled with its digital platform, it is one of the bolder examples of a traditional firm trying to establish a new platform business. General Electric was one of the oldest companies in the United States and a member of the twelve original companies that made up the first Dow Jones Industrial Average. A mere decade ago, GE remained one of the largest companies in the world, with annual revenues peaking at over \$180 billion in 2008. In 2018, after several changes in leadership and continued divestitures of businesses, GE was smaller, with revenues of about \$120 billion, though still a leader in most of its remaining businesses.

The Industrial Internet: The core of GE's business was making products like locomotives, jet engines, and turbines for power generation. However, GE was also facing new competitive threats from the emergence of the “industrial Internet” or the “industrial Internet of things” (IIoT). The idea of the IIoT referred to the integration of sensors into machines to produce continuous streams of data. The key was how to link these data streams to the cloud and then analyze large pools of data through analytics and predictive algorithms. The promise of the IIoT was to generate real-time intelligence and valuable insights for users. For example, a wind farm could use data to optimize its production by allowing turbines to rotate in order to

harness more wind power. Incorporating this type of data analytics, a 100-megawatt wind farm could increase energy production by 20 percent and produce an additional \$100 million over the farm's lifetime, according to a GE report.⁵⁸ Another major application was predictive maintenance—using the analysis of sensor data to predict when a piece of equipment is about to break down and repair it before it malfunctions.

Former CEO Jeffrey Immelt believed that data and analytics could add a substantial layer of value to GE's businesses. If one of GE's existing competitors or a third-party software firm developed a winner-take-all platform that captured that analytics layer, GE could be forced to join the platform and cede a great deal of the value of its equipment, including maintenance services, to the owner of the platform.

GE's initial answer to this dilemma was to build a platform and go head-to-head with Amazon, Microsoft, Google, IBM, and other software giants that dominated cloud computing. But in the words of one analyst, "GE knows the machinery, the industrial side very well but Microsoft, IBM et al. understand software a lot more."⁵⁹ At the same time, start-ups backed by venture capital were racing to capture the value of the data and analytics generated by the Internet of things; the financial and technical resources being poured into the space "keeps me up at night," said one GE executive in late 2016.

On the positive side, the opportunity was huge. GE estimated that the market for an industrial Internet platform and applications could reach \$225 billion by 2020. Other estimates put the figure as high as \$500 billion. In the words of one GE executive, "I think the race is on from a competition perspective and everybody understands the size of the Industrial Internet

prize."⁶⁰

Predix—A Platform for the Industrial Internet: To win the prize, GE leaders realized that the company would have to become a software and data analytics firm, transforming GE into a "top 10 software company." However, capitalizing on the potential of the industrial Internet would mean transforming GE into a platform company. The key to this transformation was Predix, GE's "cloud-based operating system for the industrial Internet."⁶¹ In our terminology, Predix's goal was to become an operating system, designed to serve as an *innovation* platform for applications development, providing the services that permit programmers to quickly build apps for the industrial Internet. The strategy was to enable big data analytics, monitor machines remotely, and facilitate massive machine-to-machine communications.⁶² In this way, it was much like Microsoft's Windows or Google's Android. But instead of running on PCs and phones it would be an "edge-to-cloud" platform. This meant it would be deployed both on industrial machines (the "edge") and in centralized data centers (the "cloud").

Mid-course Corrections—Platforms on Top of Platforms: Rather than build its platform from scratch, GE based Predix on the Pivotal Cloud Foundry, a leading cloud platform. Cloud Foundry was originally developed as an open-source platform by VMware, and later transferred to a joint venture called Pivotal Software that VMware formed with EMC. GE invested \$105 million to take a 10 percent equity stake in Pivotal in 2013. Built on top of Pivotal Cloud Foundry, Predix was a cloud-based platform-as-a-service (PaaS).

GE originally planned to build its own data centers. But the technological

challenges to building an industrial cloud platform were significant: It had to be optimized for industrial applications where the stakes were much higher and mistakes much costlier. The platform needed to be scalable to handle the massive amounts of data being generated by IIoT machines and needed to be able to deliver that information under potentially adverse conditions. In addition, much of the computing functionality needed to be installed on the machine itself, rather than off-loaded entirely to the cloud, in order to reduce latency and speed up analysis.⁶³ At the same time, data had to be aggregated into a central place to permit analysis, which happened on the cloud platform.

The natural tendency for an established giant such as GE was to control everything in-house. Yet building a successful platform was about enabling others, and not control. GE initially fell into this trap. Outside observers appropriately questioned GE's argument that its experience with industrial equipment uniquely qualified it to develop an industrial cloud, arguing that the virtue of a public cloud was flexible enough to be adapted to a variety of uses.⁶⁴ Observers pointed out that government agencies were using public cloud providers, and their security needs were as high as GE's customers'.⁶⁵

By late 2016, GE had reversed course: It abandoned its own cloud infrastructure in favor of running Predix on top of Amazon's AWS and Microsoft's Azure clouds. Bill Ruh acknowledged in 2017 that "we pivoted" and admitted that the massive investment made into data centers by the likes of Amazon, Microsoft, and Google was "not an investment we can compete with."⁶⁶

Solving the Chicken-or-Egg Problem: GE initially deployed its emerging software analytics capabilities on its internal operations. Immelt mandated

that all GE business units had to use it to manage their equipment. GE estimated that Predix and associated applications generated \$500 million in productivity gains in 2015.

As it began to take Predix to market, GE addressed the chicken-or-egg problem by taking advantage of its existing customer base. After developing applications for its own industrial processes, GE released a commercial version to its channel and technology partners as well as customers able to build their own analytics on top of the platform.⁶⁷ GE began running a series of pilots with customers in a variety of industries to demonstrate the capabilities and promise of Predix. At this stage, however, Predix was not truly an innovation platform. Rather, it represented a complementary service to GE's products, a set of tools and services that could add to the value of a given industrial asset. In a classic solution to the chicken-or-egg problem, GE offered Predix as a product and service with stand-alone value, even before third-party applications emerged.

Attracting Complementors: Recognizing the value of a thriving ecosystem of third-party developers, GE began aggressively recruiting software developers to develop applications that could run on the Predix platform.⁶⁸ To cultivate a thriving developer community, GE released Predix developer kits in August 2016 to a limited group of programmers and partners before making them available to everyone by the end of the year.⁶⁹ Predix had all the resources provided by a typical innovation platform: documentation, guides, training, APIs, a virtual machine preconfigured for developing with Predix, and a machine data simulator.

In addition, GE established "Digital Foundries," incubators for local start-ups designed to spur both its customers and third-party developers to build

innovative Predix applications. The goal of these foundries, located in cities such as Paris, Munich, Shanghai, Boston, and Singapore, was to cultivate an “innovation ecosystem” around the platform.⁷⁰ As a result of these efforts, by December 2017, GE had 22,000 developers building applications and there were some 150 distinct applications available.⁷¹ To realize the goal of becoming the dominant platform for the industrial Internet, GE also needed to attract other equipment manufacturers to the platform, including its competitors. After initially embedding Predix only on GE machines, GE opened up Predix to hardware from other manufacturers.

Governance and Use of Data: The promise of the industrial Internet lay in the ability to gather, pool, and analyze large quantities of data in order to improve operating performance, predict and avoid defects, and eliminate unplanned downtime. In most contexts, GE’s equipment was operating as a part of a larger industrial ecosystem made up of equipment from a variety of manufacturers. The platform and complementary applications could only realize their full value if data from all the equipment in a given plant—not just GE equipment—were combined into a single “data lake” for analysis. This raised governance concerns about the use and ownership of data. To be effective, data was required from a wide range of customers and a variety of manufacturers. But customers were reluctant to share their operational data for competitive reasons. In the words of one executive, “Maybe five or six years from now, we’ll begin to see companies more willing to share data that could unlock new levels of collaboration,” perhaps by sharing anonymized data.⁷² To allay privacy concerns, GE enabled users to retain ownership of all their data processed on Predix, while GE would own the algorithms.⁷³

Monetization—Subscription and Hybrid Business Models: Finally, to

build a successful platform, GE needed a monetization strategy. Building Predix was costly: In 2015 alone, GE spent half a billion dollars. GE planned to monetize Predix using a subscription-based model, with either metered payments or predefined bundles for enterprise customers. In some cases, the price would be linked to outcomes, i.e., GE would get paid more if it did more to improve performance or reduce downtime. “We believe deeply in subscription models being the future, so we’re trying to build subscriptions that are priced based on the value that they deliver,” according to one GE executive.⁷⁴

In addition to deriving income from customer subscriptions to its platform, GE hoped to generate revenue from taking a percentage on third-party application sales or subscription revenue. While Predix was primarily an innovation platform, GE wanted to position Predix as a hybrid platform by adding a marketplace. GE also developed several hundred application suites running on Predix that it offered as software-as-a-service offerings. However, the viability of this business model depended heavily on the broad and successful deployment of Predix. At best, it would take years to deliver a reasonable return.

As we finished this book, it was too soon to tell whether GE would be able to transform itself into a platform company. GE faced serious competition as well as significant execution hurdles. For example, Siemens, GE’s biggest industrial competitor, offered its own platform, called MindSphere. Siemens described MindSphere as an “open operating system for the Internet of things.”⁷⁵ MindSphere’s architecture and technology were much like that of Predix: It was a cloud-based platform-as-a-service product, built on the SAP Cloud, which in turn was based on the Pivotal Cloud Foundry.⁷⁶

IBM and Microsoft also planned to compete head-to-head with GE and Siemens. In 2015, IBM announced it was launching an Internet of things division that would bring the analytical capabilities of its Watson cognitive computing service to the analysis of data generated by billions of devices that make up the IoT. And Microsoft's Azure cloud platform, first launched in 2010, was both a competitor and a partner for GE. Even as GE and Microsoft announced that Predix would be available on Azure by 2018, Azure also offered many of the same features. In the meantime, other large firms such as Amazon, Cisco, and Hitachi were designing their own software platforms for the industrial Internet. In addition, there were over 125 start-ups trying to grab a slice of the IoT market. In the narrower category of IIoT platforms, there were at least a dozen startups, including C3 IoT, Flutura, and Uptake.⁷⁷

Beyond intense competition, GE faced other problems rolling out Predix. Technical difficulties and delays dogged Predix's implementation. Porting legacy systems with old code onto the new platform proved to be difficult and time-consuming. As a result, some customers faced delays in installations or software that was buggy or lacked desired features. In the meantime, Predix failed to hit internal development goals. In the midst of these struggles, the head of Predix development, Harel Kodesh, left in 2017, and his successor called a two-month "time-out" to address the problems.⁷⁸

After the time-out, GE adjusted its strategy. First, GE began to focus on applications, "which executives now saw as more useful for winning business and more profitable than the platform alone."⁷⁹ In September 2017, new CEO John Flannery, who replaced Jeff Immelt, insisted that "GE is all in on digital," but he stated that GE would target its platform to GE verticals—not the entire IIoT.⁸⁰ Second, along with the rest of GE's operations, Predix and

GE's digital effort would need to reduce costs. Executives suggested that the \$700 million invested in GE's digital efforts in 2017 would represent a "peak" in its investment in the space. In late 2017, GE leaders remained optimistic about Predix, but acknowledged that, in the words of one executive, "doing that right and at scale is a massive challenge."⁸¹

In 2018, GE also revealed dismal financial results: The company lost nearly \$6 billion in 2017, the stock price was down over 50 percent for the year, and activist investors Trian Fund Management won a seat on the board. In response, Flannery was considering a wholesale reorientation of GE's strategy, including \$20 billion in asset sales and possible restructuring of the business. Among the changes Flannery proposed was a continuing shift in strategy for GE digital that de-emphasized Predix as an innovation platform for the industrial Internet in favor of selling solutions to GE's existing customers. Flannery said the strategy would "focus on a handful of applications," including asset performance management and operations performance management. He went on to say, "We're going to focus our platform investments on the things that really differentiate in an industrial world . . . we're going to sell these focused platform and applications into our installed base." This more modest approach, Flannery claimed, would allow GE to cut its Predix-related spending by about \$400 million, a reduction of about 25 percent.⁸²

In his annual letter to shareholders in February 2018, Flannery also reported that "Predix-powered orders were up over 150% in 2017." At the same time, he said, GE expected "Predix product revenues will double in 2018, to approximately \$1 billion," a modest figure in light of the \$12 billion in digital revenue GE had projected to be generating by 2020. Nevertheless,

Flannery insisted, “There is absolutely no change in our belief in the digital future—only some adjustments in our approach.”⁸³

But Flannery was in for another surprise, which shocked most of the business world. Due to missed financial targets, surprisingly dismal financial results, and ongoing losses in the turbine and power-generation business, the GE board of directors replaced Flannery as CEO in October 2018 after only fourteen months on the job. His successor was new GE board member Larry Culp, formerly CEO of Danaher Corporation.⁸⁴ Culp has successfully focused Danaher, another diversified industrial company, but GE was a much bigger challenge. It was unclear to what extent Culp would stay the course or shift direction on GE’s Predix business.

What GE learned, and what we can learn from GE, is that building a new platform from scratch can be a Herculean effort. We believe that building a platform was the right strategy for GE. Nonetheless, getting the various market sides on board, solving chicken-or-egg problems, creating a sustainable business model, and designing acceptable governance rules was a massive, long-term task that seemed beyond the company’s capabilities. Maybe even more important, few successful platforms have begun with such grandiose ambitions, and GE may have fallen into the trap of overreaching. GE leadership focused on the promise of platforms without truly understanding platform thinking and without internalizing the harsh realities of the digital revolution.

Key Takeaways for Managers and Entrepreneurs

In this chapter, we discussed how established firms can enter the platform

business, focusing on three options: partner with an existing platform to sell your own products and services, buy an existing platform, or build a new platform from scratch. Can old dogs learn new tricks? We think so, even though the challenges are many. We have four key takeaways for managers and entrepreneurs (including “intrapreneurs” attempting to launch new platform businesses within an established firm).

First, when firms become large enough to go it alone, *the choice with regard to how to enter the platform business is usually between building and buying*. Like many other strategic decisions to internalize a new activity, the choice of build versus buy starts with time-to-market. Platforms require a new set of skills, which many traditional businesses do not possess, especially facilitating partnerships and open innovation, and stimulating economic activity without exercising direct control. If those skills are available, and time-to-market is important, even the most sophisticated technology companies find that “buying” platforms is better than building from scratch. Remember that Apple did not build Siri; it bought it. Facebook did not build Instagram; it bought it. And Walmart recognized that building its e-commerce business would probably never reduce the gap with Amazon, which led to the purchases of Jet.com and Flipkart in India. As Walmart’s challenges in integrating Jet.com into the company illustrated, buying doesn’t “solve” the problem, but it can jump-start the process.

Second, *“belonging” to someone else’s platform creates the opportunity to leverage platform economics*: greater reach and potentially lower costs. The key is to remember that your success on a third-party platform can lead to that platform becoming your biggest competitor. Amazon has been famous (or infamous) for entering product categories with aggressive prices

when it sees a platform player building a successful business. Similarly, eBay bought PayPal and became a competitor to many of its partners. In past years, it has also been common for Microsoft, Apple, and Google to duplicate third-party applications or services that once were complements of their innovation platforms and then to sell those products or services themselves.

Third, *small or new firms are generally better off building their platforms on top of existing platforms* rather than trying to go it alone. Building a platform can be a good strategic move, particularly when the field is relatively new and existing players or technologies are not readily for sale. The challenge with building any new platform from scratch, especially one as complicated as GE's Predix and the industrial Internet of things, is that it takes time and money, as well as cooperation from other companies. To succeed, firms generally need deep pockets and a long time horizon. Maybe even more challenging is that managers have to solve all the platform challenges we discussed in Chapter 3: Choose the right market sides (complementors, buyers, sellers, etc.); overcome chicken-or-egg problems and build an installed base; create a business model to monetize the platform; and develop governance rules, ranging from who will own the data and the algorithms, to what's acceptable and unacceptable behavior.

The fourth and most important lesson is that *managers in the traditional economy should not give up*. The transition from conventional command-and-control businesses to digital platforms is painful but not impossible with experimentation and frequent adjustments in strategy. Some failures and setbacks are inevitable, but these are better than doing nothing.

The governance challenges when building and managing your own platform is the subject of Chapter 6.