IVEY BUSINESS REVIEW
AN IVEY HBA STUDENT-RUN PUBLICATION

ASML: INNOVATING AT THE SPEED OF LIGHT

To retain their dominance in the semiconductor supply chain, ASML should acquire Lightmatter | **P. 32**

INTERVIEW

Alex Leduc | P.7
IBR Speaks with the founder and CEO of Perch.

SOCIAL IMPACT

Indigenous Reconciliation: The Role of Universities | P.44
Canadian university endowment funds should support the development of Indigenous communities.

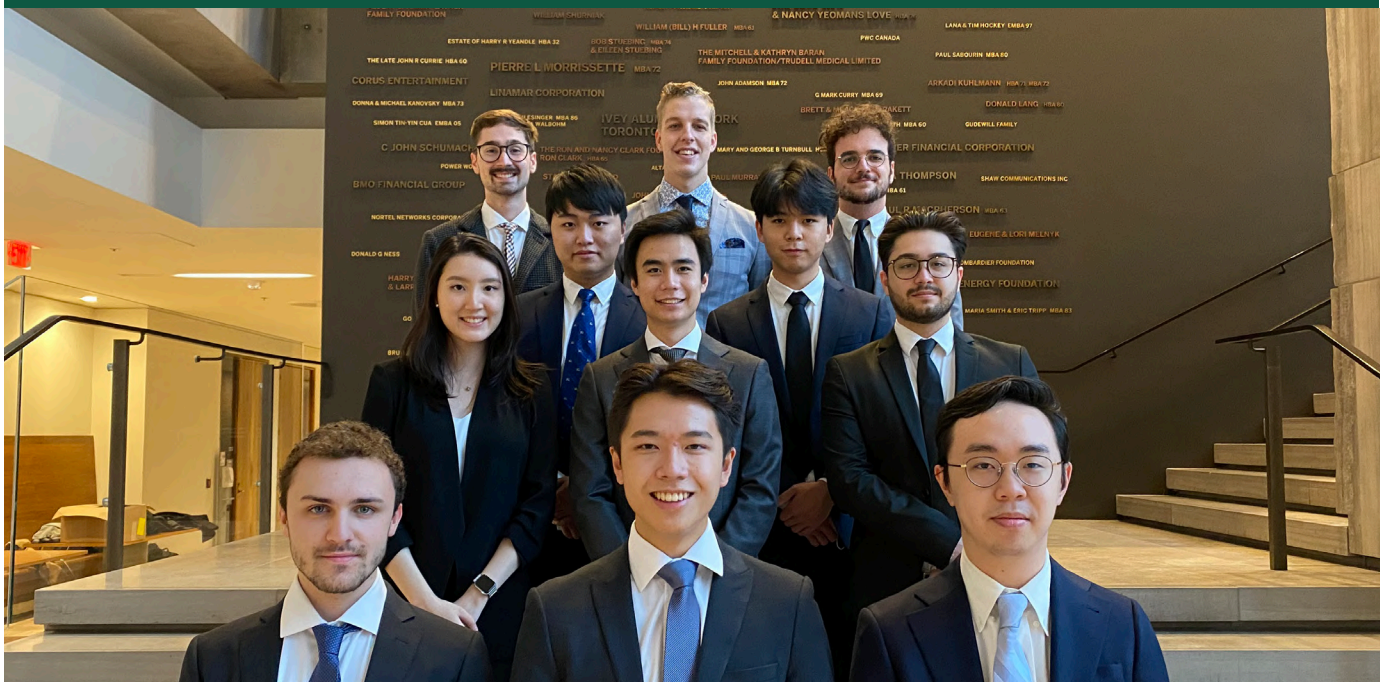
MEDIA

Twitch: The Platform For the Pitch | P.28
Twitch should acquire the UK broadcasting rights for the English Premier League.

PUBLIC SECTOR

Quayside: Revitalizing the Smart City Project | P.12
Waterfront Toronto has an opportunity to rethink their approach to developing Quayside.

Editorial Board



Ivey Business Review is an undergraduate business strategy publication conceived, designed, and managed exclusively by students at the Ivey Business School. Its mission is to provide a forum for tomorrow's business leaders to develop, voice, and discuss their thoughts on today's business strategies, threats, and opportunities. Articles are written by undergraduate students in the Ivey HBA program, and have been created specifically for the publication after several months of intense collaboration between student writers and members of the Editorial Board.

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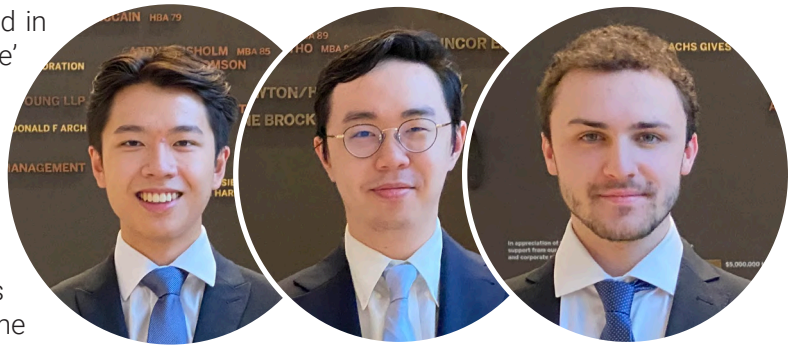
Note from the Editorial Board:

"The New Normal"



The term 'unprecedented times' has become ingrained in corporate emails worldwide, joining 'pandemic fatigue' and 'the new normal' in everyday parlance as the world seeks to return to pre-pandemic stability. However, the past year has shown us that change can happen more rapidly than we ever imagined; for most companies, waiting for things to 'return to normal' is no longer an option. As many businesses struggle with this ongoing uncertainty, it is evident to us at the Ivey Business Review that most firms must adapt strategically to the current business climate sooner rather than later.

As we approach the two-year anniversary of the COVID-19 pandemic, the highly infectious Omicron variant has thrust the world into turmoil once again. However, given that most businesses are better equipped to cope with the pandemic than the year prior, the attention has turned to the larger structural shocks that the pandemic has induced. The twin forces of a lockdown-induced reduction in consumer spending and aggressive government stimulus have inflated household disposable incomes significantly. Paired with supply-chain disruptions, rising energy prices, and a labor market shortage, many major economies are seeing historic rates of inflation. Given that today's businesses face starkly different challenges than when the outbreak first began, our team has outlined 12 new strategies for businesses and industries to navigate today's biggest challenges, leading to the Fall 2022 edition of the Ivey Business Review.

Facing a slowdown in the technological innovation of microchips, we recommend that ASML, an OEM for chip manufacturers, look forward to the future and invest in Lightmatter, a photonic chip startup. We demonstrate how Intel, amidst an increasingly competitive semiconductor industry, should separate its foundry from its design unit to improve strategic focus and relative competitiveness. We examine strategies for how Blackrock could enter China's underpenetrated pension fund market, and our feature on Penguin Random House recommends the publisher pivot towards co-creating content with streaming studios.

Amidst an increasing focus on ESG performance, we examine how IKEA and Canadian university endowment funds can rethink the role of social purpose in their operations. Our articles on iRobot, Twitch, RBI, Square, and Tesla illustrate how organizations can recalibrate their strategic focus to overcome challenges presented by the pandemic. Finally, we showcase how smart city companies can learn from the Sidewalk Labs project in Toronto's Quayside for future smart city projects.

On behalf of the Editorial Board, we hope that this edition will highlight some of the biggest challenges and opportunities facing today's business community, and we present a playbook for how organizations can adapt to the changing times. By illustrating how companies can thrive in spite of today's uncertainty, we at the Ivey Business Review believe that leaders can overcome these challenges and embrace 'the new normal.'

Sincerely,

Ryan Cheng, Edward Wang & Ben Ballyk

Editor-in-Chief, Publisher & Managing Editor

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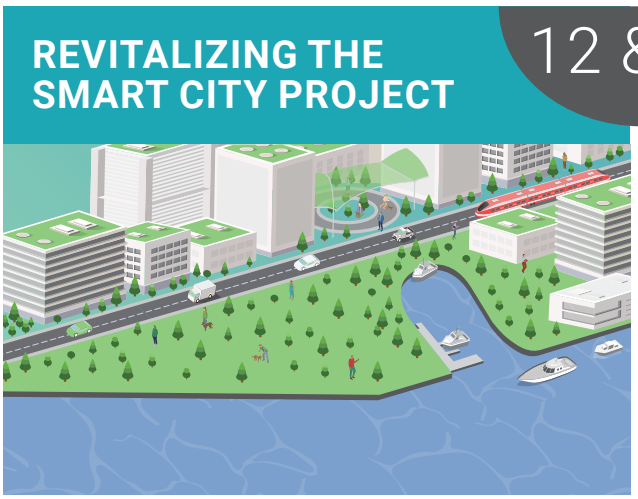
TABLE OF **CONTENTS**



Interview: Alex Leduc

Founder and CEO of Perch

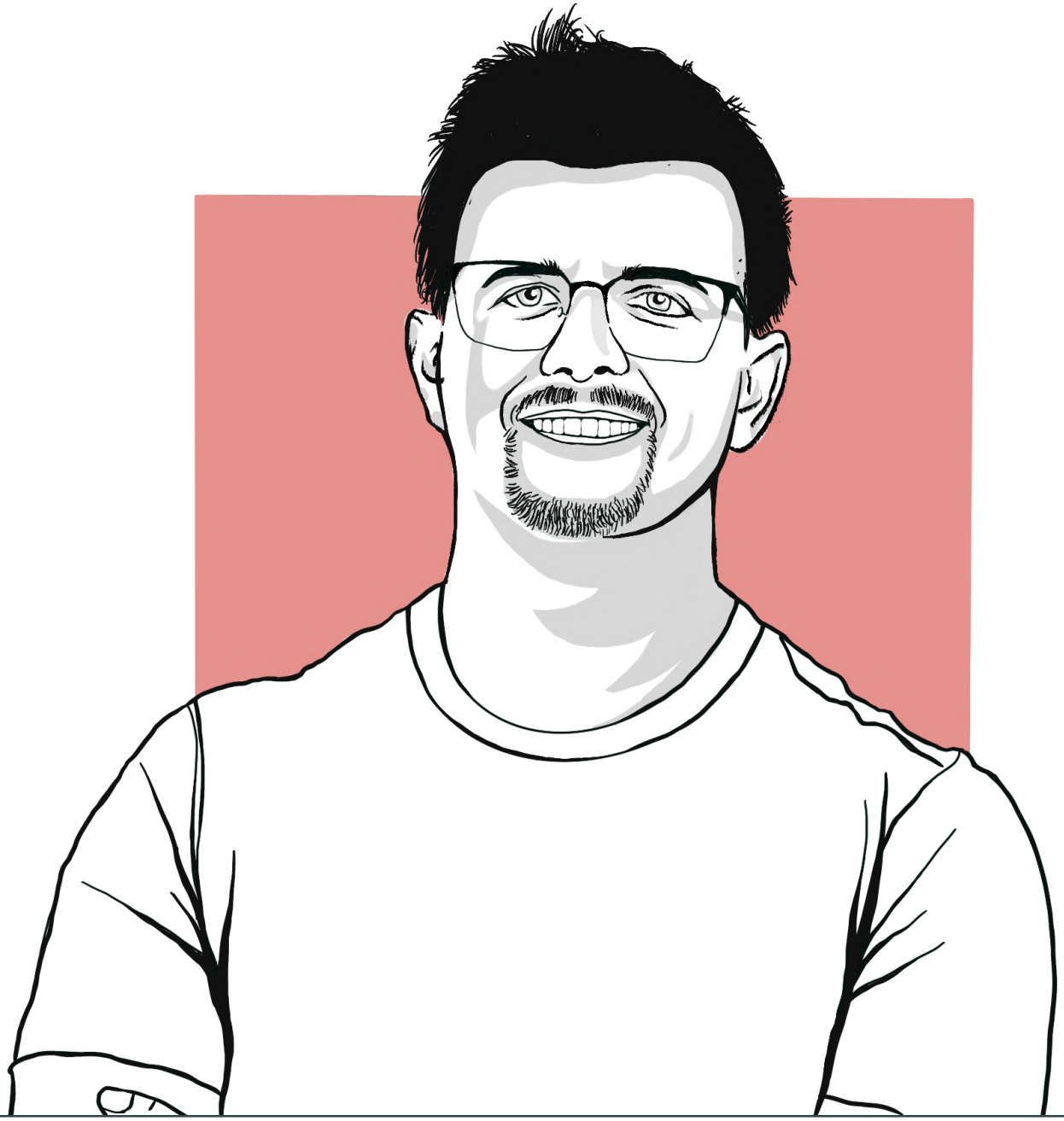


Illustration by: Madhumita Nathani

Alex Leduc is the Founder and CEO of Perch.

IBR: Before founding Perch, you originally worked as an analyst and manager at Equitable Bank and the McCann Mortgage Corporation. What motivated you to leave those larger, more established companies to start your own firm? How did you approach that risk-reward trade off?

Prior to starting Perch, I spent about seven years working at different firms. The one thing that became really apparent to me while working there is that there aren't any good systems for the way people make their decisions in real estate - there's a ton of disconnect. The realtors do the realtor part, the lawyers do theirs, then it's on to the next person's job. I noticed that since everybody is only interested in their own part of that process, people don't get the best advice because it's hard to actually know who is a good mortgage broker versus who is a good realtor. After doing enough research, it became apparent that there really isn't a better way for people to make such a huge purchase.

What I found is that I knew a lot of the fin, but I didn't really know any of the tech. I knew a lot of quantitative and finance people but I didn't know a single developer. I also tried to find a co-founder but didn't, so I knew I had to pick up at least one other skill. So I picked up coding and taught myself SQL and Power BI, which was enough of a skill set for me to do an NVP. I would literally go to food courts with a working product and then sit down with random strangers to get honest feedback - if you ask your friends and your mom, they're going to tell you it's the best thing they've ever seen.

Then I put in some capital, hired an offshore developer, and got a working product. Once it was apparent that there's a lot of potential, that's when I really made the switch. It's hard to build a business and be full time because you'll be in your full time job and thinking about what you'd want to do in your business. I quit there, started my company, and then went full time into it.

IBR: So for some of our readers who might not be familiar with Perch or PropTech in general, can you describe what the company does and how you knew that PropTech and FinTech was the space you wanted to move into?

Funnily enough, PropTech wasn't well-known when I started. Now it's all the rage and everybody is talking about it, but the reality is that PropTech always had so much potential because the real estate industry, especially in Canada, is just so massive. With Perch, we solve two problems.

First, we help people get into their first home - we essentially tackle housing affordability. We help optimize our customer's path to home ownership by figuring out the fastest way to get there based on their specific parameters. We're able to do that better than other providers because we have access to over 25 lenders and also an auto adjudication algorithm that fast tracks.

But this is where the journey stops for most people. Once someone is a homeowner, the second component is putting that home equity to work, and we help people build wealth once they become a homeowner as well. So we're solving those two problems: how do we get our customers into housing and how can we help them build wealth as homeowners.

IBR: One of the things we learn about entrepreneurship at Ivey is that although the rewards can be really high, it's also a very challenging journey. Applying and going through funding rounds and tech accelerators is not an easy process, so how did you find that and how were you able to work through the setbacks and the failures?

My story is a bit interesting because I just raised through friends and family earlier on. Our first formal fundraising round was actually a month ago when we closed our seed round. We raised $1 million then, but didn't have any prior round. Typically there are two other stages you'd go through, an angel round and a VC round, but we just bootstrapped straight past that. I was lucky to be in a position where I could do that, but like fundraising is definitely a kick in the teeth because it depends on so many things - how strong is your product? How strong is your network? Are you cold calling investors out of nowhere? Or do you have people that you already know that can do warm intros?

The reality is, most of those funds are going to look at a thousand or more companies in a year. It's not necessarily that your idea is bad, it just might not be the one they're looking for. That being said, there is a certain degree of luck and being at the right place and time. If you're going to be a full time CEO whose only job is fundraising, then you're not going to have time to build the business - you have to be able to manage expectations in both ways. Personally, it wasn't something that I wanted to spend all my time with early on. To add on to that, not everyone's going to get or like what you're doing. I bet at some point when Uber was pitching their service, someone in the room said that people already take taxis.

IBR: Many who are interested in pursuing entrepreneurship face the challenge of needing prior work experience. So do you have any advice for those students who aren't sure whether or not to pursue that ambition and to what degree?

I think there are two things about entrepreneurship that are misunderstood.

First of all, I view prior work experience as almost a given, because it's near impossible to change a process if you don't really understand. It's also difficult to identify and fix a pain point that you don't understand. While there are exceptions, most investors looking at a company are going to ask, why is this the right person to solve this problem? If you have zero experience on your resume, these investors might not think you're that right person—it's a tough sell to get capital. In terms of my background, I had seven years in the sector and understood the industry very well. I have a CFA among other things that make me arguably more qualified for the role. But if I came fresh out of school?

The second thing about entrepreneurship I think is misunderstood, is that people imagine entrepreneurship as being the person with all the ideas. In reality, that is the easiest part of being an entrepreneur - the execution is by far the hardest part. We need people that can take an idea, beat it up, and then ruthlessly execute it. Unfortunately if you can't execute, it'll be really tough to survive in a startup because you're having to always do a minimum of two jobs. If you have no time management or ability to execute, you're not going to do a lot in this role realistically.

IBR: What sort of strategies do you think that Perch's growth can be attributed to, and when did you start to see traction take off?

We initially wanted to offer fully digital mortgages. Our idea was that no one wants to go to a bank to schedule an appointment, talk about everything, and then bring in paperwork among other things. When the pandemic hit, it accelerated this entire process because people didn't get to choose whether or not to go online, they had no choice. By then we'd been building the platform for one and a half years versus everybody else trying to build from scratch once the pandemic hit. Not only did it make it easier for our customers because digital experiences became more of the norm, but it also became easier to form partnerships.

We had an ideal state of where we wanted Perch to be, but then we had to work backwards and accept that it'll take time to get there. Pushes to digitalization around us moved people in the direction we wanted, and being able to ride that was key to experiencing a lot of growth. We doubled our revenues year over year because we were able to really adapt to the market when it was changing.

IBR: You spoke a bit about COVID-19 already, but how did you maintain the values and culture of Perch as you became a bigger organization but also while working remotely—was that tricky?

Perch was always a fully remote company. I was on the fence for a while about getting an office, but then the pandemic definitely solidified that we'd probably never get one. If anything, being remote wasn't a COVID-19 issue because we were already remote before then.

What was interesting was ending last year with five people and now being at 15. I actually think having more people is better for culture because there's more likelihood of interacting with other people. There are a ton of steps to take to build towards having a strong culture, even in a digital setting: you can have online meetups, virtual lunches, or even games as an example. Obviously fatigue is something to consider as well in regards to online meetings, but if you host something fun, people will have fun. At Perch, we had an UNO competition for Uber Eats gift cards - we didn't get Zoom fatigue because we were having fun.

"People imagine entrepreneurship as being the person with all the ideas. In reality, that is the easiest part of being an entrepreneur—the execution is by far the hardest part"

IBR: A lot of Ivey students are graduating and starting to look for places, and they're definitely seeing some of the same issues that you were talking about. What solutions to these housing supply issues do you believe would be most impactful? Would it be on the part of the policymakers or private developers?

It's a bit of both. Developers are limited based on how much they can develop, so if it's hard for them to build new homes or there's limited land as an example, all of those factors are preventing developers from doing more. A 500-unit condo could theoretically be built in one place, but developers might be limited to only three stories. The regulatory environment and planning will directly impact how much development is happening, but there's also that element of free market that's at play.

Over the last couple of years, there's been a greater emphasis placed on remote work. The beauty of remote work is that location and vocation no longer matter - we've helped people move from Toronto to Nova Scotia, where they bought the exact same house for half the price, and they're still making the same salary. Then I just look at other countries that are rich and developed. Transportation enables more access, so high speed rail and more advanced transit technology means more access.

I think this greater emphasis on remote work is going to help correct the problem to a certain degree because it reduces the demand in pockets. That's really the problem: there are so many high demand areas where no one wants to sell their house.

IBR: You mentioned the increasing number of immigrants. Has that changed anything about your product offering or anything about your customer acquisition and retention strategies as it pertains to new immigrants specifically?

From a customer acquisition and retention strategy standpoint, the increasing number of new immigrants definitely plays a role. A lot of people might have defined ways of approaching home ownership - they might refuse to get a mortgage from someone outside of the big 5 banks, even if the rates are lower or if it's an equivalent product. On the other hand, new immigrants likely don't have these preferences, and a lot of people might not even know who these providers are.

It's interesting because other countries outside Canada are a lot more digitized in the way they do real estate. A lot of people new to Canada are actually great users because they're used to digital mortgages already. Besides, our value prop is that we help guide people towards home ownership. We help immigrants plan ahead and with things they might be unfamiliar with, like navigating Equifax credit scores or even bringing money over from abroad. They see a lot of value in that because it's something they need, versus someone who might be on the fence about buying a home.

It makes for a really good client. An added bonus is that they can do it from home before even arriving in Canada - instead of booking an appointment at a bank, they can get their Perch profile and do it right away.

IBR: What sort of areas and trends in proptech or fintech are you excited for, and how do they impact Perch going forward?

There's a ton of trends. There are a lot of rent-to-own programs for people who don't have established credit. I think we're going to see a lot more rent-to-own, but also more fractional models of ownership instead of the standard, one person or two person deal. These are already around to a certain degree - shared equity home programs where people own chunks of a property by contributing different parts. We'll probably see a lot more of that because real estate is such a hot asset class, especially Canadian real estate. Investors want in, but most don't want to deal with the hassle of being a landlord.

As open banking really starts to take off, I think we're going to start seeing a lot more competition in regards to product offerings. Right now, most banks or lenders have very standard and similar products. Once there's more data out there to help people build the algorithms the lenders need to quantify risk, we'll start seeing a lot more innovation in regards to products that enable people to get a home even sooner.

"Regardless of what space you want to go into, be it UX, design, finance, or human resources, there are tons of activities to be exposed to. Just keep asking yourself, what skill set am I developing?"

IBR: If some of these trends are visible, how do you see big institutional entities reacting and what are they doing in the space?

A lot of big institutions might simply buy up their competitors. There will likely be a tremendous amount of money being poured into acquisitions. As far as how are the incumbents going to react? I think the main disadvantage of large institutions is that they can't pump out products as fast as we do. Because of that, they will probably try and buy their competitors, but also try to outmaneuver them because they have substantial amounts of capital. It's not a bad thing though, sometimes there are really good partnerships that can get formed between the incumbents and the newcomers. Right now, I think market share is pretty concentrated. Once big institutional entities get involved, those will be the main things that we'll see in the foreseeable future.

IBR: If you could go back in time and give yourself some advice as a university student or specifically an HBA student, what would you tell yourself?

Don't spend that much at the Frog! No, no, I would tell myself to focus more on building networks outside of my

immediate career. Don't just meet a bunch of people that do exactly what you do, especially if you aren't 100 percent sure what path to take. Be open to plugging yourself into different ecosystems - I honestly found it fascinating to do coffee days where I just went to sit down and be like the engineers with their headphones on, just typing away frantically and not speaking to anyone for an hour.

Regardless of what space you want to go into, be it UX, design, finance, or human resources, there are tons of activities to be exposed to. Just keep asking yourself, what skill set am I developing? At university, there's this mindset of commitment - like I want to do finance, or accounting. There's this immense pressure people feel that if they don't pursue a path, they will fail because nobody likes a generalist.

I think it's about focusing not so much on being the best at one thing, but to always have a second activity to enjoy. Having that will allow you to think about things from a different perspective, which is really valuable.

IBR: When starting Perch, you were setting out to succeed and make a great company in spite of the risks. What does success mean to you in the long run?

That's the billion dollar question right? My ultimate definition of success is being able to fully enable people to achieve home ownership and then build wealth afterwards. If we're able to effect change by creating new products, like enabling people who otherwise wouldn't be in the space to buy a house, and developing a system where people are making the right decisions with the right experts, that's our goal.

We want people to get the right advice, pick the right people, and do it from start to finish. For me, success means nailing that concept and helping people do exactly that - it's more about the destination versus any quantifiable metrics in the long term anyways. From a qualitative, long term standpoint, that's really my ultimate vision is to build that ecosystem.

QUAYSIDE: REVITALIZING THE SMART CITY PROJECT

In the aftermath of Sidewalk Labs retreating from their Toronto smart city project, Waterfront Toronto has an opportunity to rethink their approach to developing Quayside.

Liam Deschamps & Albi Nani

Illustrations by: Harrison Angellotti & Jessica Zhu

A Failure Unturned

In 2017, Waterfront Toronto (Waterfront), entered into an agreement with Sidewalk Labs (Sidewalk), a subsidiary of Alphabet, to take the decrepit Quayside waterfront property and turn it into a smart city block. This initiative would propel Toronto's emergence as North America's next technology hub and provide a blueprint for the future of urban innovation. However, only three years later in 2020, the project was abruptly terminated by Sidewalk, citing financial difficulties from the COVID-19 pandemic.

The downturn allowed Waterfront to swiftly exit the Quayside project without acknowledging its failures. By allowing Sidewalk to drive the narrative, Waterfront was unable to quell concerns surrounding data collection and usage, incurring protests from the surrounding communities.

Sidewalk's exit from Quayside prompted Waterfront to re-evaluate their project development strategy and re-establish their presence as the controlling party. Following Sidewalk's withdrawal, Waterfront announced their intention to continue with creating a smart city block—this time placing inclusivity, accountability, and sustainability as guiding principles. To capitalize on this second chance, it is vital that Waterfront works with specialized firms in infrastructure and traffic management to implement technologies that meet local needs while maintaining robust data governance.

6ix in the City

The city of Toronto is the fourth-largest in North America, with a population of 2.9 million as of 2019. Regarded as the world's next 'tech hub', Toronto was considered an ideal candidate to host a smart city project due to its abundance of tech talent and plots desperately needing development. The Quayside zone where the project was proposed had been mismanaged for decades and littered with abandoned facilities, providing minimal value to the city and the public at large.

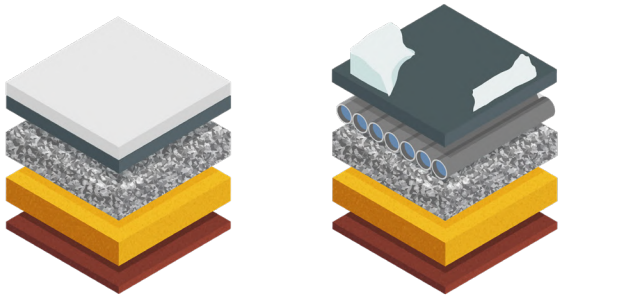
Waterfront is uniquely positioned to take ownership of this opportunity. As an organization built in collaboration with the Government of Canada, Government of Ontario, and City of Toronto, it has financial and political backing from all levels of government to drive meaningful action. However, concerns remain that ambitious urban design might be stymied by bureaucracy and the increased public scrutiny that accompanies public-sector projects.

Building the Toronto of Tomorrow

For the Quayside project, Sidewalk planned to implement a variety of smart technologies, including heated sidewalks, heated bike paths, underground freight delivery using drones, universal Wi-Fi, and using an all-wood building method that was intended to be cheaper and less carbon-intensive. Sidewalk also intended to install cameras covering all of Quayside's public spaces to analyze traffic patterns. However, the public was understandably concerned by this level of surveillance.

These technologies were extremely ambitious. While heated sidewalks do exist in Nordic cities like Helsinki, Oslo, and Reykjavik, they have never been implemented on Sidewalk's intended scale. Similarly, no neighbourhoods have ever been built using all-timber construction frames, and underground delivery systems were a novel concept. While the city of Toronto has tested automated water meters, as well as a free-wifi pilot project that provides an internet connection to 25 apartment buildings in low-income neighbourhoods, the proposed technological advances are new to Toronto. Sidewalk wanted Quayside to feel futuristic and innovative, however, their project plan resembled science-fiction more than 21st century realities of the challenges within cities.

SMART HEATED SIDEWALKS



Regular sidewalk | **Pipes underneath surface heat sidewalk**

Source: Heavenly Heat Inc.

Profits over Privacy

Perhaps the most exciting prospect—and simultaneously the biggest drawback—of the original Waterfront-Sidewalk partnership was working with Alphabet. While working with the tech giant unlocked several data capabilities and opportunities that would have otherwise been unavailable, it also presented an unbalanced power dynamic. With a market capitalization of $2 trillion and expertise in smart technologies, Alphabet was the leading party on the Quayside project.

Waterfront's only option for exerting influence was through policy. Decisions over data governance were particularly divisive. While Alphabet needed access to consumer data to deliver the full potential of smart technologies, they were

met with public backlash centred around privacy concerns. Philosophical tensions caused the project to deteriorate, with Ann Cavoukian, an advisor on the project who served as Ontario's Information and Privacy Commission for 16 years, resigning from her role. Despite her initial support for the project, she believed that a private tech giant was incapable of using the data to serve public interests. This was followed by a reduction in Quayside's scope, from a 190-acre smart-city project to 12 acres of modernized development and a complete rejection of Alphabet's claim to data ownership.The largest point of friction was Sidewalk's proposal for an urban data trust. Similar to a trust fund, Sidewalk would act as the steward for all data collected and distribute the data to its partners when necessary. However, Sidewalk's plan included no mention of Waterfront's role in the data infrastructure, removing the chances for Waterfront to ever have the project be developed in their own vision.

REDUCTION OF SIZE

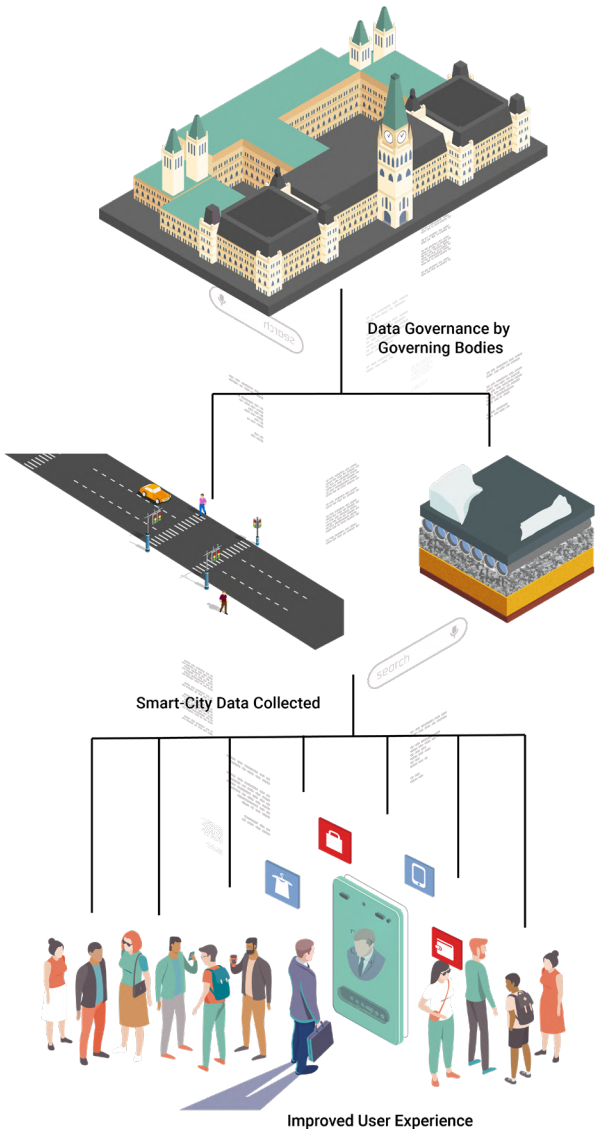
Source: BBC

An urban data trust could solve a plethora of data governance problems if controlled by the appropriate party. If Waterfront were to fulfill the role of trustee on behalf of its citizens, corporate partners could use the data in a controlled capacity that protects residents from needless data harvesting. To realize the potential of a shared data-governance approach, Waterfront should change their partnership strategy from a bilateral approach to a multilateral arrangement that involves the public, private, and social sectors. Waterfront should recognize that no single organization has the requisite knowledge to make Quayside work; Sidewalk may have had Alphabet's big data capabilities, but they were not experts in urban development. Waterfront's best option is a collection of niche, collaborative entities that function under a unified governance model.

The Quay (Key) to Corporate Governance

Successfully executing an urban data trust requires that the infrastructure match the power dynamic of the Quayside project. With Sidewalk no longer involved in the project, Waterfront can distribute data access based on their own set of criteria. As the steward, Waterfront would determine which partners have access to certain segments of data. Given that up to 73 percent of data collected by organizations goes unused because of collection overlap and redundancies, having one party responsible for distributing the data would also improve efficiency and incentivize beneficiaries' participation.

NEW INFRASTRUCTURE



Concerns over data privacy will undoubtedly continue. Therefore, it is crucial for Waterfront to give citizens agency over their own data. The "Aware Home" project already proved this was possible at a smart home scale. The initiative offered the functionality of a smart home

while ensuring the data collected was proprietary to the user by remaining in a closed loop and was only used with the user's permission. Consequently, only the user and the firms immediately using the data have access to user information. While this model was limited in scope, having Waterfront responsible for expanding the loop while keeping it closed enabled scalability that was previously not feasible in a pro-privacy model. Addressing the privacy concerns of citizens will consequently appease activist groups that prevented Quayside from progressing when Sidewalk was involved.

Most crucially, Waterfront's corporate partners must be convinced that giving up ownership of data is beneficial. This is a substantial reason why Waterfront would be better served finding various niche partners rather than relying on a few industry giants like Google—the former is much less inclined to engage in data-heavy platform envelopment strategies than the latter. With Waterfront acting as the data's steward, Quayside would save smaller beneficiaries the trouble of cleaning up the data, which takes up nearly 80 percent of a data scientist's time. This process ensures the private firms that are partnering with Waterfront can spend their time generating insights they can use to create knowledge proprietary to their firm. For instance, if Bell acted as Quayside's network infrastructure partner, they could be given data on network traffic and connectivity heat zones to determine where they could best allocate future network capacity resources. In contrast, a traffic management firm such as Geotab would only be given access to location and density data to ensure their data analytics pertain to Quayside's road infrastructure.

Granted, there are still problems with giving Waterfront control over the urban data trust. While surveillance concerns with private partners can be dealt with using the aforementioned closed-loop model, this may not alleviate fears of privacy breaches at the government level. Even if the current governing body was anti-surveillance, this might change in the future when a new city council is elected. However, prior resistance to the Quayside project was primarily directed at Alphabet's propensity for surveillance, not Waterfront's. Torontonians want to be able to trust Waterfront to take action and give it the power necessary to innovate.

Building the Toronto of Tomorrow (Take Two)

Quayside's technologies need to be affordable, realistic, and feasible to justify its own expansion over time. While Sidewalk did initially propose heated sidewalks, their project scope was unrealistic; fortunately, they are not overly ambitious to install. Heated sidewalks are a useful technology for northern cities, as snow and ice buildup can be costly for cities to clean up, and can reduce safety hazards for pedestrians and cyclists. While cost can be a burden, this should not be an issue for Waterfront. The projected cost of implementing heated sidewalks in Quayside would be an approximately $8 million investment upfront, with up to $80,000 in costs per year for maintenance and operations. For an organization with nearly C$245 million in capital funding, this can certainly be afforded.

Second, Quayside should employ a traffic management system. These systems would gather traffic data at intersections to improve the signalling and safety of cyclists and pedestrians. The city of Pittsburgh has begun to use the system at 50 intersections across the city that use video and radar to detect traffic and adjust signals in real-time. This has led to reduced travel times, wait times at intersections, and vehicle emissions. These systems are not only efficient, but they are environmentally friendly and have clear precedence. A traffic management system is something that would greatly improve life in Toronto, especially considering Toronto is the second-worst city in Canada for congestion.

Putting the Tech in T.O.

Toronto is positioned uniquely in the smart city market; the city ranks 20th on the global urban mobility index despite having little of the smart infrastructure implemented by other members of the top 20. This is less an indication of Toronto's lack of technological expertise, and more a statement of Toronto's potential to be one of the world's top cities if smart technologies are successfully integrated.

Quayside represents an important first step in that integration process. With an opportunity to pilot experimental technologies separate from the rest of the downtown core, Waterfront can afford to take risks with Quayside. Should these technologies prove to better serve the city and its goals, they can then be scaled across the downtown core and its neighbouring boroughs. However, this is contingent on Waterfront successfully implementing an urban data trust that focuses on high-impact and feasible technologies that strengthens Quayside's reputation in smart city development. Waterfront has an opportunity to be a model for private-public relationships, and this collaboration is key to unlocking Quayside's potential.

PENGUIN RANDOM HOUSE: **PENNING THE FUTURE OF PUBLISHING**

To protect against a decline in print publishing and capitalize on the surging demand for IP by streaming services, Penguin Random House should form a long-term partnership with Netflix.

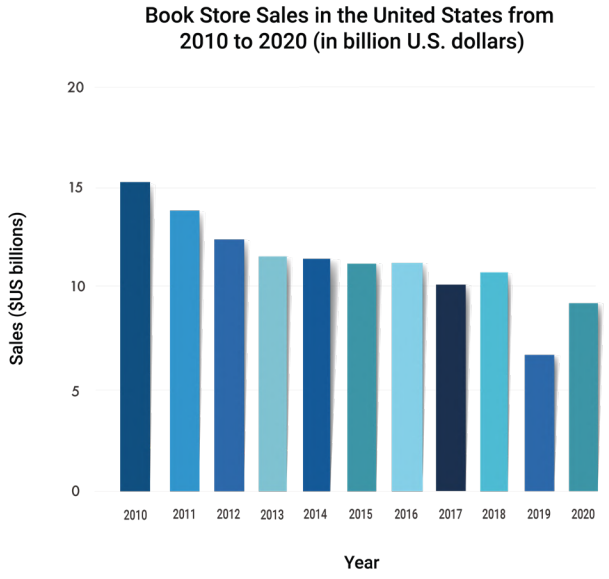
Maclaren Forrest & Logan Kieller

Illustrations by: Danielle Brennan & Tracy Wang

The Penguin in the Room

Through the early 2000s, most new books relied on publishing industry giants to be given the seal of approval and published. Today, the world of publishing is still highly consolidated, with the "Big 5" publishing houses accounting for the vast majority of book sales worldwide. Penguin Random House (PRH) is the result of a merger between Random House and Penguin Group, and has become the largest paper-back publisher globally. The company owns a number of subsidiaries that hold many different types of publications, with in-house content including novels, childrens' books, textbooks, and non-fiction content. Each year, PRH produces approximately 275 imprints, 15,000 print titles, and 70,000 digital titles. Publishing houses like PRH screen authors and help share their works with the world, mainly focusing on distributing print books through brick-and-mortar stores. With the introduction of e-readers and other digital print formats, revenue through retail stores has decreased from around $15 billion to $9 billion in just ten years. Consequently, many authors now see self-publishing as a more lucrative option.

DECREASE IN RETAIL SALES



Source: Statista

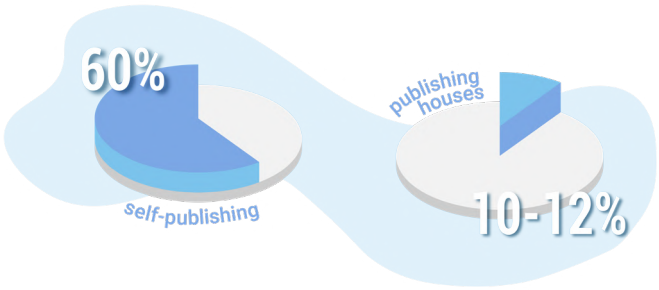
A Page-Turning Problem

Self-publishing platforms like Kindle Direct Publishing, B&N Press, Apple Books, and Kobo now offer authors a simpler and potentially more lucrative method of going to market. Authors can retain ownership of their work, earn direct royalties, and bypass the competitive process of meeting a publishing house's standards. Self-publishing has grown consistently at 40 percent annually since 2010.

In parallel, the retail industry has experienced a 25 percent decline between the years 2019 and 2020, serving as a prime illustration of the changing landscape in publishing.

Studies have shown that people are spending less time reading year-over-year, which has made it imperative for publishing houses to capture and retain the most engaging authors. However, when an author considers other options outside of major publishing houses, they see a huge appreciation in the potential profit margins for their books. By self-publishing, they would capture approximately 60 percent of the profits for a book, whereas going through a publisher like PRH would leave them with just 10.0 to 12.5 percent.

AUTHORS' PROFIT MARGINS



Source: Self-Publishing School

While the pandemic in 2020 has led to 35 percent of people reading more, publishing houses are still looking to expand their traditional value proposition beyond screening authors and distributing books. PRH's current strategy has been to acquire adjacent publishing-focused companies, such as its Simon & Schuster acquisition in 2020. However, horizontal acquisitions fail to address the longer-term threat of self-publishing, and the Justice Department has sued PRH to block the deal over antitrust concerns.

Producing a New Chapter

In an effort to stave off competition and attract more authors, there has been a trend towards publishing houses becoming content management studios. This shift became evident with the emergence of movie and television production arms within publishing houses. In 2005, PRH developed their in-house production arm, Random House Studio, which is responsible for the production of movie and television content based on PRH books, as well as innovative forms of content such as video games, podcasts, and social media content. The success of the production arm is best illustrated through the 2011 release of the film "One Day", which earned $59 million at box offices across the world.

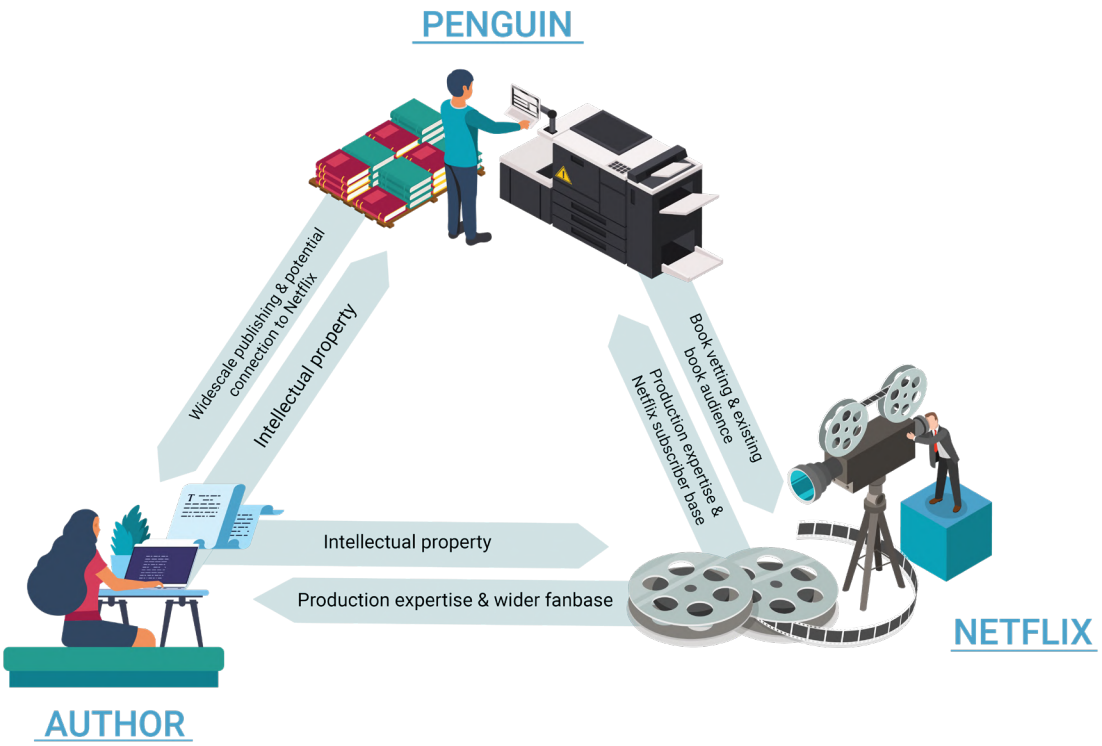
Despite the newfound success, PRH decided against continuing solo production due to the high upfront investment required. With limited resources, PRH cannot capitalize on the benefits of solo movie production and provide more revenue streams and opportunities to the authors they work with. Even Wattpad, an adjacent player in the space, is focused on doing the same—incentivizing authors on the platform by opening up production to its user base. To accomplish this, Wattpad has launched Wattpad Studios, which co-produces content with other movie studios based on Wattpad stories. Independent authors who create on the Wattpad platform are able to quickly access industry-leading production for their IP if the stories gain enough traction on the platform; thus, despite the published stories being available for free to readers, authors have the opportunity to monetize through other forms of content.

Why Netflix Would Care About a Random House

The pipeline to IP in the streaming world is becoming more essential than ever. This process is being streamlined in many different companies through strategic acquisitions, internationalization strategies, and other means to create a strong brand image. Netflix has yet to refine this strategy, a shortcoming that is demonstrated through their unprecedented $17 billion spending plan. This spending has not resulted in the expected increase in subscribers for Netflix, with only 4 million new subscribers in the first quarter of 2021, compared to 16 million in the previous year. With stagnating returns on existing content and competitors like Disney+ and HBO continuing to strengthen their IP strategies, Netflix must find a sustainable strategy to acquire affordable and high-potential IP.

Looking towards a declining industry with existing audiences would allow Netflix to move beyond their ad hoc purchasing nature of licensing rights, and move towards creating sustainable content pipelines. Flagship IP costs Netflix large sums of money; for example, Netflix paid $500 million for the global rights to Seinfield. Unlike Disney+, Netflix has limited access to existing subscriber-enticing franchises with viewership prospects like Marvel or Star Wars. While Netflix experiences occasional breakout success in certain pieces of original content such as Squid Game, original content represents high risk with mixed success and inflated costs. Instead, securing existing IP from books is a significantly more attractive sourcing

INCENTIVES ACROSS ALL PARTIES



model. By building upon a strong existing framework to the decreased risks that come alongside producing industry-certified ideas, Netflix should look to capitalize on the relative ease and speed of production that would result from sourcing IP from books.

Sending a New Partnership to Print

PRH should launch a co-production studio to further itself as a leader in the content management space, and take advantage of streaming companies' need for IP. Specifically, this new studio should create a long-term partnership with Netflix to co-create television and movie content, in return for providing Netflix the first rights to purchase IP. A longer-term partnership sets incentives between both parties to invest in the shared IP and would involve revenue sharing alongside fixed fee payments for both books and streaming content. Additionally, co-production enables authors to maintain control as they work with Netflix through PRH, ensuring that all content being created aligns well with the original IP and the author's vision. For authors, co-production through PRH also adds an incentive to use the publishing house over self-publishing, since the publisher would act as a launchpad to other forms of content. Netflix, on the other hand, receives a consistent funnel of IP that has been pre-screened by PRH and hedges the risk that the content will lack a sufficient audience since the published book will already generate substantial interest.

For PRH, this opens up new revenue streams as they earn both the fixed, first-look access fees paid by Netflix and the shared revenues from streaming the content. First-look deals between publishers and production studios are lucrative and have been prevalent in the past; for instance, Universal Pictures, one of North America's largest production houses, created a two-year first-look deal with PRH in 2014. Deals of this nature prove to be very attractive for publishers since they ensure the IP reaches audiences through broader media channels, generating higher revenue for the existing books, as well as the films or TV shows.

This newly printed partnership between PRH and Netflix helps each company accomplish critical goals: PRH differentiates its services to authors and is able to generate more topline growth through a new content medium, while Netflix can access and collaborate on high-potential media at an earlier stage with lower premiums. Through this partnership, both firms can transition from ad hoc deals to developing an ongoing content funnel.

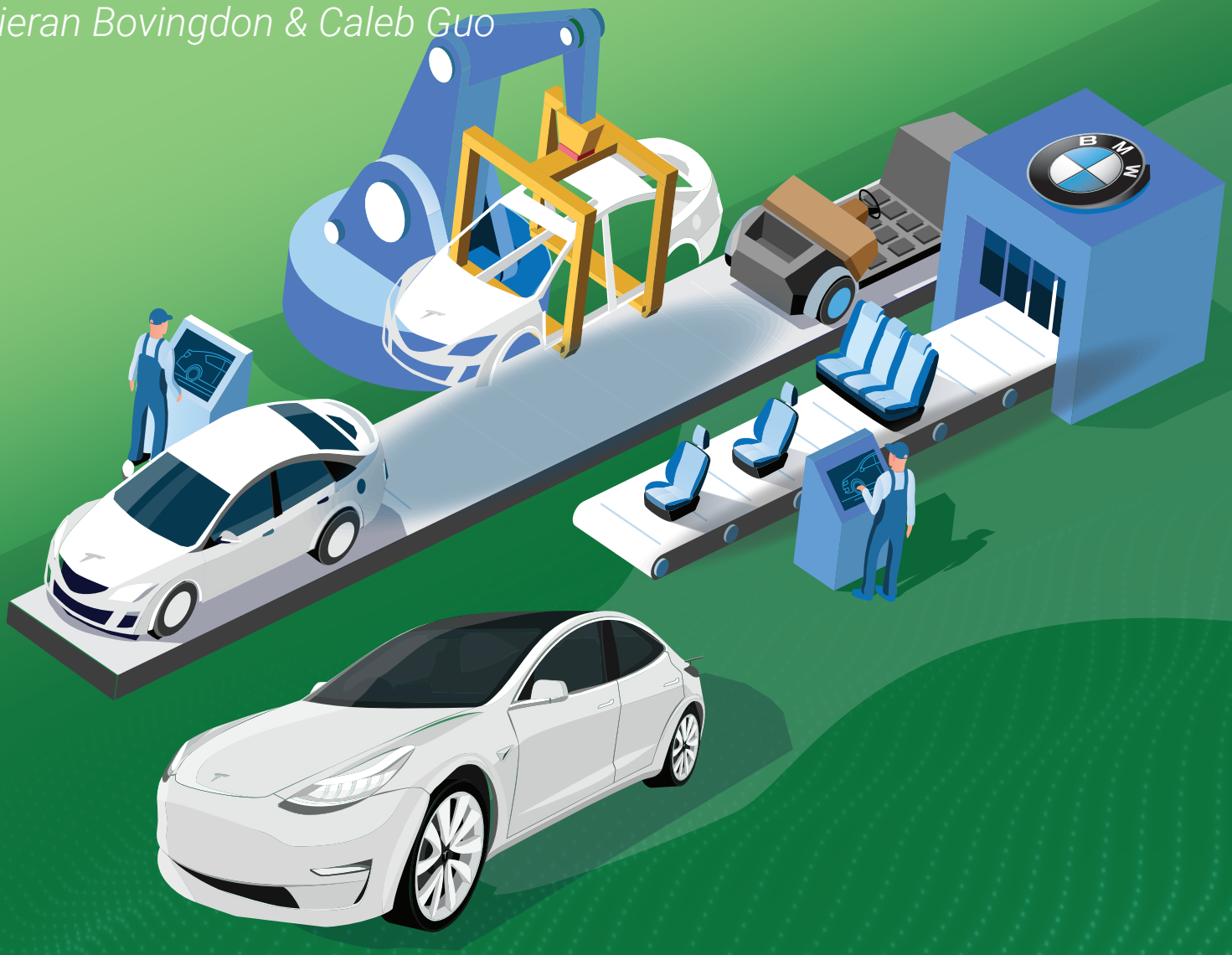
Not All Books are Created Sequel

As PRH faces stagnating revenue and limited acquisition opportunities, they must expand across the content management value chain and co-produce meaningful television shows and movies with content-hungry streaming services. In the longer term, the partnership creates the potential for new avenues to develop IP into alternative forms of content, whether through video games, interactive media, or by releasing Netflix-exclusive chapters and short stories to subscribers. At its core, however, a longer-term partnership effectively aligns the incentives between a streaming service starved of high-potential IP, and a publishing house with troves of valuable stories waiting to be developed into new forms of content.

TESLA & BMW: **AN ELECTRIC OPPORTUNITY**

Faced with quality assurance problems and the need to increase capacity in a competitive market, Tesla should partner with BMW to remain the market leader in the new age of electric vehicles.

Kieran Bovingdon & Caleb Guo



Illustrations by: Harrison Angellotti & Danielle Brennan

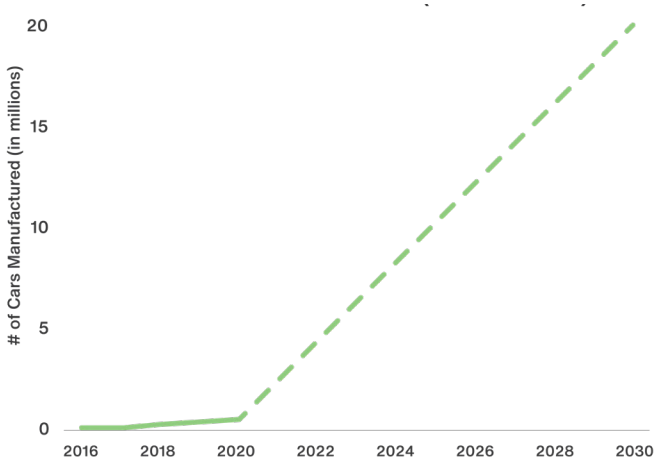
Driving Change

Tesla is an electric vehicle (EV) and energy storage manufacturer that has grown to be the world's seventh-largest company with a market capitalization over $1 trillion, despite having only posted positive net earnings in 2021. Historically, Tesla's success has resulted from its first-mover advantage in the luxury EV market. As investors and consumers seek to decarbonize road transportation worldwide, Tesla must position itself for the mass market by increasing production output without compromising quality.

Shocking Capacity

Tesla first entered the EV market as a premium manufacturer with the release of the original Tesla Roadster in 2008 (not to be confused with the as-yet-unreleased Roadster announced in 2019). The company's initial business strategy was to establish a foothold in the niche EV market and expand its production capabilities to lead to mass adoption. In 2014, with the Gigafactory, Tesla created the infrastructure needed to increase production capacity for batteries and electric motors. In 2018, the Gigafactory became the highest-volume battery plant in the world. Even in the wake of this success, Tesla's recently announced goal of reaching a production capacity of 20 million electric vehicles per year by 2030 is ambitious. It produced just 237,823 vehicles in Q3 of 2021, which annualizes to around 1 million cars per year; at this rate, a 1,900 percent increase in production is required to meet the 2030 target.

TESLA'S ANNUAL PRODUCTION



Source: Statista

Tesla's push to automate about 75 percent of its factories in an effort to save costs and increase production of existing models has had unintended consequences. This ambition to automate the production line was driven by company goals of reducing factory lead times by 13.5 percent, reducing factory overhead, and increasing worker safety.

Despite the anticipated benefits, research analysts have pointed out several problems associated with Tesla's affinity for automation. Notably, robots are poorly equipped to correct unanticipated errors compared to their human counterparts. Furthermore, as complex assembly phases become increasingly automated, the margin of error rises significantly. Thus, without the flexibility of human employees, excessive automation can lead to large problems. By CEO Elon Musk's admission, these issues are a consequence of a premature attempt to ramp up production. While Tesla still retains considerable brand loyalty, persistent quality control issues may lead consumers to take a pause, especially when competing offerings begin to become available.

Re-Volting Geographic Constraints

In recent years, Tesla has had difficulty expanding into markets outside of China and the US. To remedy these challenges, Tesla aimed to strengthen its position within the established European market. As of April 2021, electric vehicles accounted for 22 percent of all car sales in Germany, compared to just 7.2 percent of global car sales in the same period.

One such expansion effort was Germany's Berlin-Brandenburg plant, known as Giga Berlin. However, citizens and environmental groups have raised concerns regarding the factory's environmental impact and compliance with German regulations. As a result, plant operations were suspended in mid-2021 and are still awaiting regulatory approval. This delayed expansion presents a key concern for Tesla's entrance into the European market, particularly as incumbent manufacturers begin turning their attention towards EVs as well.

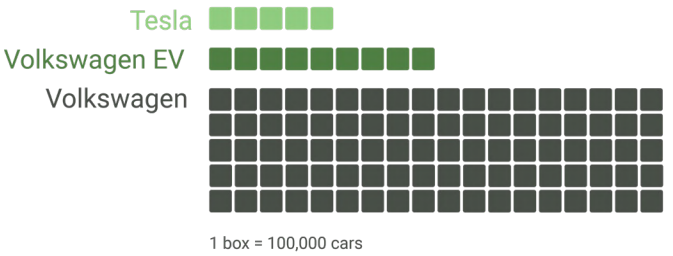
In 2020, the Audi E-Tron outsold Tesla's Model X, which has historically been one of the best-selling electric cars. Additionally, 2020 saw Tesla's premium cars, the Model S and Model X, fall out of Europe's Top 20 in sales. Only in September 2021 did Tesla regain its position as the number 1 EV seller with Audi and Renault following closely behind. Capturing consumer demand is essential as Europe is a key battleground market of EVs.

Capacity is King

The lack of production capacity and persistent quality control issues could threaten Tesla's market share as other large-scale automakers shift to manufacturing EVs.

Large manufacturers already have the infrastructure to produce electric vehicles, with Volkswagen capable of manufacturing over 900,000 electric vehicles annually. With its newly announced Wolfsburg plant, Volkswagen is expected to add another 250,000 to its existing EV production capacity. Indeed, companies are still consolidating their share within the burgeoning EV market, as electric vehicles only account for 2.6 million of the 66 million sales the auto industry is projected to make in 2021. In this nascent market, competitors with established international supply chains and superior internal quality control mechanisms threaten Tesla's reception in Europe. Therefore, if Tesla cannot upscale production in time, it will lose its lead and allow companies like Volkswagen and Toyota to displace brand loyalty and gain market share.

ANNUAL MANUFACTURING CAPACITY



Source: Statista

Europe is superseding China as the global leader in EV demand, and the EU is aiming to see 30 million vehicles on the road by 2030 for climate-related goals. If Tesla does not balance its ambition for a twenty-fold increase in production with consistent quality controls, the auto manufacturer risks missing out on the opportunity to build considerable brand loyalty in a high-growth market. Ultimately, if Tesla wishes to be the "driver of the world's transition to electric vehicles" as proclaimed in its corporate vision, a market-leading position in Europe is crucial in reaching this goal.

B-ehind MW

Bayerische Motoren Werke AG, more commonly called BMW, is a German luxury automaker known for its strong motorsports history. However, BMW has fallen behind in the electric vehicle race in recent years with its flawed and outdated i3 model, which compares poorly against the Tesla Model 3 in almost every metric, including range, acceleration, and recharge time. This is reflected in its low popularity—US sales had declined rapidly from a peak of 11,000 units in 2015 to a new low of 1,502 units in 2020. In comparison, over 200,000 Model 3s were purchased in America that same year. After selling just 1,278 units in the first half of 2021, BMW quietly pulled the i3 from the US market in July.

While BMW has revealed a new EV, the i4, and plans to release its first EV SUV next year, market experts at the Financial Times have been skeptical about BMW's commitment to overhaul its internal combustion engine fleet with EVs. BMW needs to improve existing offerings and demonstrate its commitment to EVs to earn its place in a carbon-neutral future, and in doing so, capitalize on a rapidly-expanding EV market to achieve consistent sales and increase brand loyalty.

Introducing the Omniverse

While BMW's EV sales are stagnating compared to its rivals, its approach to automated assembly lines involves advanced technological capabilities that Tesla should implement. Importantly, BMW has developed strong quality control capabilities. Digital twins are used throughout BMW's operations to virtually simulate manufacturing processes in computers using artificial intelligence technology. For example, BMW's new plant in Regensburg, Bavaria, uses digital twin technologies to replicate robotic drivetrain production. By partnering with NVIDIA to simulate 31 factories, BMW's centralized machine learning platform, called Omniverse, enables iterative retraining of robots to reduce planning time by 30 percent and automates more complex tasks.

Collaboration with BMW

In light of its struggles, Tesla should develop a mutually-beneficial partnership with BMW. Information sharing and partnerships are central to Tesla's goal in enabling mass EV adoption, as Tesla openly states that all its patents are free to use. Additionally, Tesla has partnered with several other car manufacturers in the past, previously supplying electric powertrains for the likes of Toyota and Daimler.

Given the precedence of collaboration between automotive manufacturers, a prospective partnership between Tesla and BMW could help Tesla ramp up EV production to meet forecasts without quality assurance issues. At the same time, BMW could benefit from additional data from Tesla's plants for its Omniverse technology and subsequently improve its EV manufacturing processes. In a potential partnership, Tesla would provide royalty payments to BMW in exchange for access to BMW's digital twin technology, enabling Tesla to pre-test and train robotic production sequences for complex automation. In addition to royalties, Tesla would exclusively share its relevant digital twin data with BMW, creating a more extensive training dataset for BMW to use in optimizing its own manufacturing process.

Even with its capable engineering team, buying into BMW's Omniverse is a better alternative to developing a similar system internally. Omniverse will enable Tesla to access considerably more data from over 30 facilities

while avoiding substantial R&D costs. Furthermore, a shorter integration and development period is crucial, as Tesla is under a time constraint to meet its forecasted sales figures.

German Geographies

As a leading German car manufacturer, BMW is naturally experienced in navigating German regulations and factory approval processes. Tesla obviously recognizes the value of becoming a regional manufacturer and supplier in Germany. However, this requires efficient navigation through the complex European legal frameworks. To prevent more regulatory hurdles from barring the construction of new factories like Giga Berlin, Tesla would benefit from BMW's experience in dealing with European regulation processes. The geographic benefit of this partnership is realized through the more efficient navigation of regulatory hurdles and greater community buy-in.

Conclusion

To reach the mass market by 2030, Tesla has to increase production over twenty times while avoiding quality control issues. Increasing automation has resulted in quality control limitations and vehicle recalls, yet it does offer Tesla the potential of cost savings and efficiency if properly implemented. Further, expansion into Europe has been an uphill battle, with Tesla still facing legal hurdles with Giga Berlin. Simultaneously, BMW has been slow in its commitment to an overhauled EV fleet. A Tesla-BMW partnership offers substantial benefits to both as Tesla can gain access to BMW's automation expertise, including its digital twin technology, while BMW can gain another revenue stream through royalty payments and valuable data from Tesla's contribution to the Omniverse's dataset. In the race for EV market leadership, this partnership can provide the shock that each company needs to take pole position.

INTEL: **SPINNING OFF AND OVER IDM**

To overcome increasing global competition and capitalize on the global semiconductor shortage, Intel should spin off its manufacturing divisions and new foundries into an independent company to regain its market leadership.

Roy Katznelson & Justin Voronoff

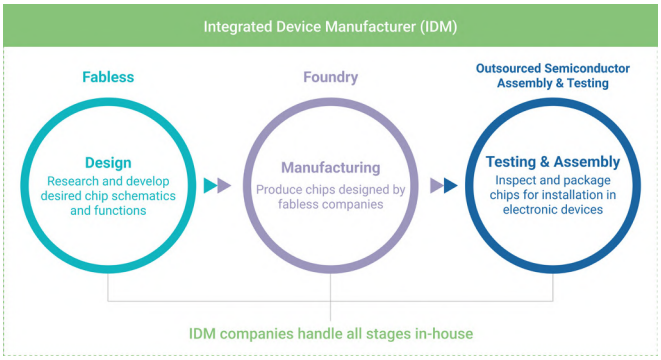
Illustrations by: Frank Huang & Madhumita Nathani

Sil-Icon of Silicon Valley

Intel was incorporated in 1968 by Robert Noyce and Gordon Moore, and with it, began the rapid innovation that characterizes "Silicon" Valley. Intel's business model revolved around designing and manufacturing microchips to be sold to computer companies such as Dell, who packaged these chips into their own computers. The integration of these two steps, design and manufacturing, within one company made Intel an Integrated Device Manufacturer (IDM).

Selling chips as an IDM was the predominant business strategy until the 1980s, when competitors began to focus on just one of these two supply chain steps. Those specializing in chip manufacturing became known as foundries or "fabs", and those that focused exclusively on design became known as fabless.

SUPPLY CHAIN OVERVIEW



Source: Bloomberg

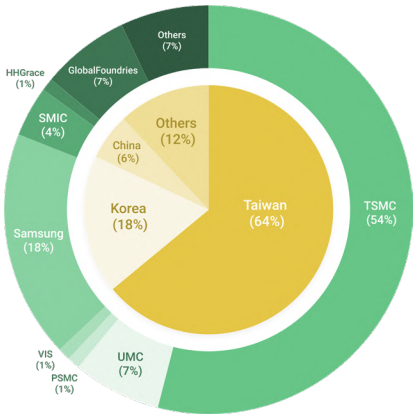
As chips became more complex over time, continuous capital investment in manufacturing processes became a steep barrier to entry. Today, the upfront capital expenditures associated with opening a new fab is estimated to be a minimum of $10 billion in upfront capital. In addition, the industry became characterized by long lead times up to four months. Therefore, a highly agile supply chain is required in the industry. Manufacturing processes need to constantly keep up with the breakneck speed of chip innovation, changing manufacturing needs, and high demand uncertainty.

Chipping Away at the Competition

The world's first independent foundry, Taiwan Semiconductor Manufacturing Company (TSMC), has gone on to become the dominant player in the global semiconductor manufacturing market. TSMC's strategy of investing heavily in research and development to lead the industry in engineering innovation has contributed to its rapidly increasing market share, particularly among high-end chip manufacturing. This strategy has earned TSMC a commanding 54 percent of the semiconductor manufacturing market and by some estimations, a 2 to 3 year lead in technology innovation.

In the early 2000s, Advanced Micro Devices (AMD) recognized that dividing its business into two units—one design-focused, one manufacturing-focused, would be strategically beneficial. AMD's foundry business was spun off as a separate entity named GlobalFoundries (GF).

MARKET SHARE



Source: TrendForce

AMD, the former design unit, shifted its focus to innovating chip design while outsourcing their manufacturing to GF and TSMC. This strategy proved fruitful as AMD could innovate freely, delivering a powerful 10nm-equivalent chip to the market ahead of Intel. They have now shifted their operations to making chips for next-generation technologies like 5G. These initiatives have unlocked a $20 to $30 billion market for AMD while keeping fabless product development costs low.

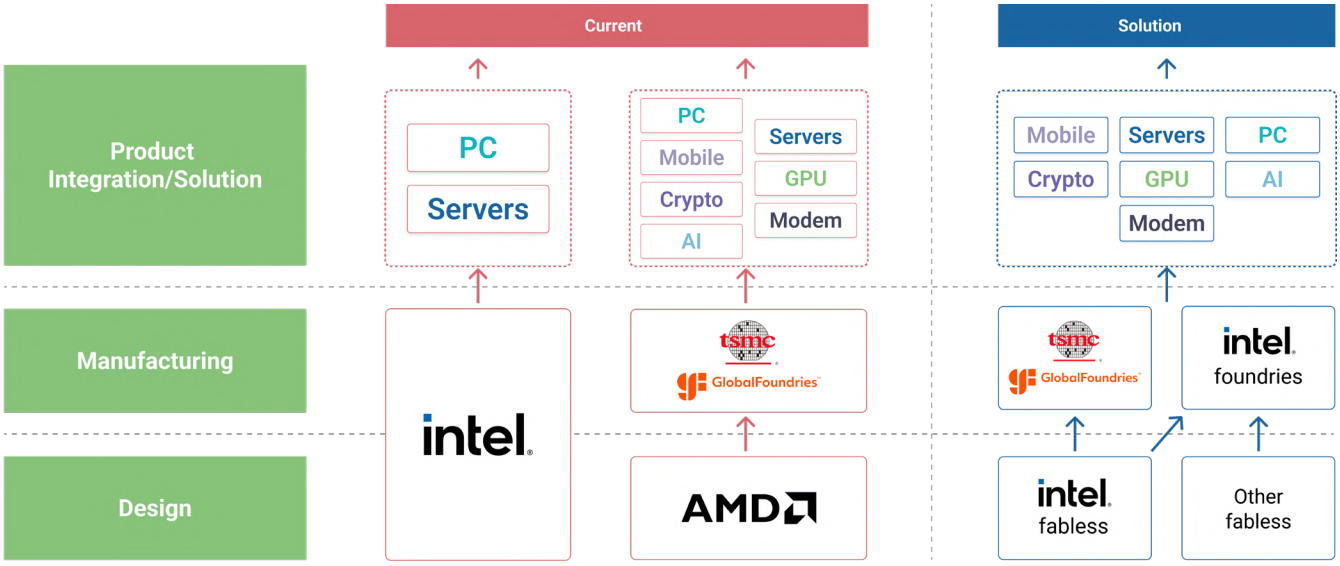
Following the spin off, GF maintained operational efficiency and expanded its chip manufacturing business to six factories based in the United States, Germany, and Singapore. These developments have allowed GF to become the third largest global semiconductor manufacturer with about a 7 percent share of the $86 billion semiconductor manufacturing market today.

The Pandemic: A Symptomatic Supply Chain

A sudden increase in semiconductor demand, catalyzed by the COVID-19 pandemic, has created a worldwide shortage of chips that has revealed hidden risks in the global supply chain. The automotive industry has been adversely impacted by this shortage, with companies such as Toyota and Ford forced to scale back vehicle features or temporarily cease production.

Governments have started to intervene to increase global

INCENTIVES ACROSS ALL PARTIES



Source: Vested Finance Inc.

supply. For example, South Korea is pledging to invest $452 billion into domestic chip manufacturers. The U.S. is also taking action by investing $50 billion directly into the domestic supply of semiconductors.

With various projections for global semiconductor sales set to double from approximately $450 billion in 2019 to $1 trillion by 2030, major foundries are trying to capitalize on this opportunity to gain market share. TSMC, Samsung, and GF have pledged $100 billion, $151 billion, and $4 billion respectively to increase global capacity over the coming years.

Manufacturing Consolidation: A Comparative Disadvantage

High labour inputs for semiconductor manufacturing pushed stakeholders to outsource to developing economies, leading to the consolidation of manufacturing in Asia—where 60 percent of chip manufacturing occurs today. Conversely, 55 percent of fabless chip operations remain concentrated in the United States, due to the need for highly-skilled engineering labour for microchip design. The pandemic uncovered hidden costs of concentrating high-capital expenditure operations in one geographic region, as supply chains failed to adapt to changing demand forecasts. Semiconductor consumers such as automobile companies quickly became exposed to the limited suite of manufacturing options for highly technical chips outside of Asia, particularly with TSMC, leading to product delays and increased costs. Intel's strategy of continuing to operate as an IDM and selling in-house designed chips makes them unfit to capitalize on the excess demand coming from spaces such as the automotive industry.

Navigating Chippy Waters

Intel's struggle has been evident in recent years — in 2020, they lost Apple as a client to TSMC due to stagnant innovation after being their primary chip supplier for 14 years. To overcome its struggles and capitalize on the current market conditions, Intel overhauled its management team. Newly-hired CEO Patrick Gelsinger's "IDM 2.0" strategy pushed Intel to design and manufacture its own chips while introducing a new business unit with foundry services for third-party fabless customers.

This ambitious strategy will see Intel increase its use of external foundries, such as TSMC, to manufacture some of its chips. To quickly enter the foundry space, Intel explored a deal to acquire GF, for around $30 billion in July 2021. However, the deal never gained traction due to GF's concerns that the combination would upset key customers such as its former parent AMD, Intel's largest competitor.

In 2002, IBM proposed an IDM strategy similar to Intel's IDM 2.0, offering foundry services to clients such as Sony and AMD while also manufacturing chips for its own high-end servers group. However, customers began switching suppliers because they worried that IBM would keep cutting-edge technologies for its own servers, only sharing them once the technology became mainstream. Ultimately, the strategy failed in 2014 as IBM gave GF $1.5 billion to take control of its foundry unit in exchange for manufacturing services of its chips for the next 10 years.

Like IBM, Intel's IDM 2.0 strategy may target and serve Intel's direct competitors. This could lead to the same poor customer relationships or limit the foundry division's ability

to target a significant share of the market. Intel's strategy also involves the increased use of external foundries which could create internal competition with Intel's own foundry services.

An Intel-ligent Solution

Intel should take advantage of the current market conditions by repositioning its business model. To overcome increasing global competition and avoid IBM's foundry mistakes, Intel should spin off its manufacturing division into an independent company.

Spinning off Intel's foundry division would strengthen Intel's manufacturing arm by allowing the new unit to focus on key success factors unique to the manufacturing space. These factors include prioritizing winning customer contracts to expand their weakening market share, and directing capital allocation towards manufacturing capabilities and increasing capacity.

By focusing on winning new customers and outsourcing chip design, Intel's foundries can access fabless customer innovations and build their manufacturing capabilities around these needs. This would position the foundry unit to meet trending product innovations from a manufacturing standpoint, while increasing the likelihood of winning incremental customers who are creating bleeding edge technology. This contrasts with the current IDM model, which is solely reliant on Intel's internal design unit for manufacturing innovation, and instead follows TSMC's successes of crowdsourcing innovations from its wide range of customers as an independent foundry.

With this strategy, Intel's foundries will have better access to M&A opportunities with less strategic and financial constraints. Conflicts of interest, such as those arising from GF merger would be eliminated, allowing Intel's foundries to strategically align with acquisition targets in the market during dealmaking. There are over 190 large foundries outside of Asia that can be targeted for acquisition across a range of chip sizes, which would increase the geographic diversity of the foundry.

From a financial standpoint, raising capital to make these acquisitions can be streamlined as it will be explicitly sourced for foundry M&A needs. This will align shareholders in the foundry unit around the manufacturing function, which solves Intel's current issue of budgeting across two units with different financial profiles when raising capital. This issue was evidenced by Intel's recent one-day 10-percent stock price drop on October 22, 2021 as investors became concerned that Intel's capital expenditure into the foundry business could significantly decrease overall company profitability in the coming years.

Focusing investments into developing leading-edge chip designs alone will allow Intel to better innovate in the future. The spin off will also give the design teams more flexibility in choosing manufacturing processes for their chips. Intel can use the foundry spin off for production of their current products and others in the low-complexity chip market, and increase its outsourcing to TSMC for innovative products supplying higher-end markets.

Since the foundry spin off meets the U.S.'s goal of increasing domestic chip supply, it can apply for subsidies to speed up foundry construction. Intel can also lobby for larger separate subsidies to fund design group research. The market appetite for a potential Intel foundry spin off would be high. Skeptics may look no further than GF's IPO on October 28 at $47, as it raised about $2.6 billion and saw a 37-percent increase in its share price following its first week of trading.

Disconnecting Chips

Intel has various options for how to structure the spin off transaction including spinning off either unit (fab or fabless) and involving either the public markets or private financial sponsors in the deal. Intel should shift some of its internal leadership to exclusively manage the foundry unit before offering a majority share of the new company to the public. The fabless unit should maintain a minority share in the new entity for at least the first stage of the foundry's transition to an independent entity, as it builds a customer rapport among fabless customers and establishes its unique capital expenditure needs. This would allow Intel's fabless division to partake in the new entity's upside without directly impeding on the unit's strategic focus on foundry operations.

Choosing to go public over finding a financial sponsor would be favourable with public semiconductor companies driving the NASDAQ to record highs in late 2021. A strong public share price would enable the foundry entity to begin seeking out acquisition targets, using public shares as potential acquisition currency to strengthen its market position.

Intel, once the leading semiconductor company across design and manufacturing, has lagged competition in both their design and manufacturing functions. Competitor case studies and strategic analyses have made it clear that long term success in the semiconductor supply industry lies outside of the IDM model. The undersupply of chips worldwide and government policy interventions offer a compelling opportunity for Intel to improve both their division's long term market positions through a spin off transaction.

TWITCH: THE PLATFORM FOR THE PITCH

To diversify itself amidst a crowded live-streaming market, Twitch should acquire the UK domestic broadcasting rights for the English Premier League.

Ali Aamir & Kyle Madden

Illustrations by: Emily Lao & Annie Tan

Twitch's Origin Story

Since its inception, Twitch has been at the forefront of the live-streaming industry, revitalizing a media format that had previously seemed unprofitable and unpopular. With a primary focus on gaming video content (GVC), Twitch established itself as a leader and pioneer in livestreaming. In 2019, Twitch boasted approximately 75 percent of total GVC market share and generated $1.5 billion in revenues, eclipsing leading competitor YouTube Live. Twitch's growth was amplified by the COVID-19 pandemic, with a 67-percent increase in hours watched in 2020 relative to 2019.

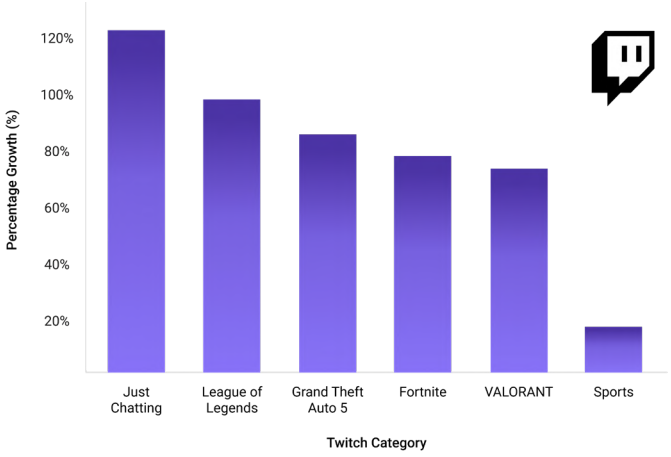
Twitch has largely been successful due to one key differentiator: community-building functionality. Streamers can chat directly with fans during livestreams and interact with other streamers by directing viewers to other channels once the stream has ended. The subscription tools are especially strong in driving network effects, as fans can donate money to streamers and earn custom badges. Once a streamer gains a subscriber, streamers will often either verbally express gratitude or play a song during the stream, driving focus to the subscriber and their donation. Subscribers can also influence the streamed content live through exclusive chat boxes with other subscribers and the streamer. While these features can be partially replicated by other competitive platforms, Twitch's first mover advantage and enriched focus on creating community-specific events has largely driven its growth. This unique selling point has been the focus of Twitch's growth strategy since its $1 billion acquisition by Amazon in 2014.

Out of Their League

As the livestreaming industry grows in profitability, increasing competition has fueled a need for diversification, primarily through exclusive content licenses. In 2020, YouTube Live acquired the broadcasting licenses of top streamers like Jack "CouRage" Dunlop and Rachell "Valkyrae" Hofstetter, as well as a partnership with the Call of Duty League to broadcast all games exclusively on YouTube. Similarly, Facebook Gaming partnered with the now-defunct, Microsoft-owned, Mixer streaming platform to transition Mixer-exclusive partners over to Facebook.

While Twitch has been able to lead its gaming categories, the non-gaming categories have faltered significantly. For instance, the sports category's average daily viewership on Twitch has nearly halved since its inception in July 2020. This category includes a partnership with the NFL, where Twitch simulcasts just eleven "Thursday Night Football" games per year which also air on FOX and the NFL Network. Twitch's partnership with the NBA only includes the rights to stream the US men's national team's warm-up games and 76 youth games for the Junior NBA during the 2019-2020 season. In addition, Amazon has hosted 10 percent of all English Premier League (EPL) games per season since 2019, but exclusively streams these games through Prime Video, foregoing the potential benefits that Twitch's community features could provide.

TOP FIVE CATEGORY GROWTH VS. SPORTS



Source: SullyGnome

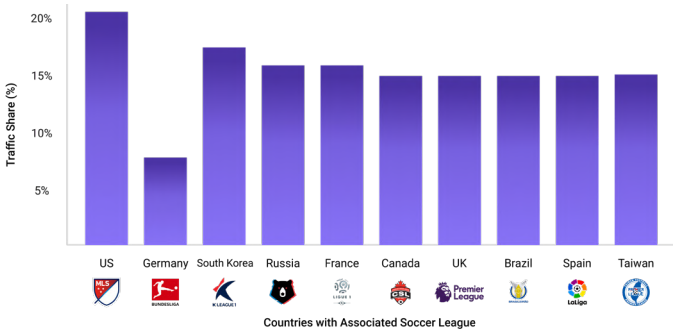
While these deals have been useful in testing the waters, they do not utilize Twitch's key value proposition of community building. Fans of these sports only have partial access to the games they want and must resort to other platforms for the remaining content, muting the network effects that Twitch can offer. Without immediate action, Twitch stands to lose the race on exclusive content licenses, and ultimately, fail to differentiate itself amongst a growing saturated market. Likewise, due to the lack of non-gaming content, Twitch is losing to other entertainment streaming platforms such as Netflix, who are also currently expanding via original content deals and licenses. Twitch's existing competitive advantage is not

sustainable for long-term growth, and with the opportunity of exclusive content to bolster its credibility, competitive positioning, and category performance, Twitch should act now.

A Different Kind of Game

While Twitch struggles to establish a foothold in non-gaming streaming amid an increasingly competitive livestreaming industry, the COVID-19 pandemic has presented a unique opportunity as sports leagues with declining profitability seek to restructure their broadcast licensing strategy. Even the largest global football league, the EPL, was exposed to issues in its current streaming structure, as they were forced to rollover the existing UK broadcast deal from the 2019 to 2022 cycle until 2025. As a result, the UK government established an Exclusion Order in collaboration with the EPL. This exclusion order outlined the circumstances under which the EPL could forgo its standard bidding process for broadcasting rights, recognizing the importance of football to national culture, social health and wellbeing. This was due to broadcasting revenues stagnanting in the UK since a content-sharing agreement was struck in 2019 between the current duopolic broadcasting incumbents Sky TV and BT TV.

SPORTS LEAGUE BROADCASTING TRAFFIC



Source: Similarweb

Likewise, the French football league, Ligue 1, suffered financially during COVID-19. Mediapro, the Spanish company responsible for 80 percent of Ligue 1 game broadcasts in France, began skipping payments in October 2020. After four months of legal battle, administrators of the French football league, the Ligue de Football Professional, terminated its €3.3 billion 2021 to 2024 broadcast deal. Though Amazon picked up the broadcasting rights to these games in August 2021, the value of the deal fell sharply to only €250 million per season, which is approximately a 75 percent drop. Similar to the EPL games Amazon broadcasts in the UK, these games are exclusively viewable through Prime Video and not Twitch.

These licenses represent major sources of revenue for both leagues. Many of the attempted initiatives to revitalize economic growth among European leagues during the pandemic were met with severe backlash by fans, including the proposed European Super League (ESL). The ESL received wide opposition from fans as it would exacerbate existing income inequality issues amongst clubs and leagues. Ligue 1 and the EPL also considered reducing the size of their league to include less clubs, which also turned the fans away due to the lack of competition.

An opportunity lies for both the EPL and Ligue 1 to resolve broadcast licensing issues and rebuild trust with audiences via Twitch. Through massive platform growth and community enriching features, Twitch offers a unique proposition to strategically align with these sports leagues and simultaneously build a robust competitive advantage.

Building a New Team

Twitch should acquire the UK domestic broadcasting rights of the 2025 EPL season to improve their underperforming sports segment and improve their position within the livestreaming industry. Until the proposed license acquisition in four years, Twitch should also replace Prime Video as the host of all Amazon-licensed Ligue 1 matches in France. Since the exclusion order takes effect until 2025, Twitch has the opportunity to use Ligue 1 games to transition its site into a hub for live sports entertainment over four years. Since Amazon has already secured the broadcasting rights to 80 percent of all Ligue 1 games, pivoting the live streams from Prime Video to Twitch would not present any major financial challenges in the short-term. Moreover, in order to avoid undermining Twitch's relationships with its gamer-centric user base, it is imperative for Twitch to begin live sports broadcasting with a league that has significant audience overlap with its existing customer demographics. The football-based FIFA video game series hosts the largest number of viewers and streamers relative to other sports-based video games on Twitch by a significant margin. As a result, the volume of audience overlap for football leagues would likely exceed that of any other sports league.

Financial Performance Benefits

Sky Sports, the current broadcaster of EPL, saw advertising income for fiscal year 2020 to be approximately $1.92 billion. Assuming only half of that advertising revenue is realized after migrating to Twitch, the income would cover approximately 40 percent of the $2.3 billion per year licensing cost, based on the rollover agreement commencing in 2022. Twitch would cover the majority of the remaining cost through its subscription-based billing model, which is comparable to the cost of a Sky Sports subscription. As Sky Sports does not have the same

community-building functionality tools as Twitch, fans will be encouraged to change platforms. On average, 1.9 million fans tuned into Sky Sports EPL broadcasts in the 2019–2020 season, which excludes games shown on mobile platforms or at pubs. Bringing this fan base to Twitch would skyrocket the sports segment viewership, and increase the total daily active users of Twitch by approximately 13 percent.

Levelling Up: Future Growth Opportunities

Depending on the success of Twitch's partnership with the EPL and Ligue 1, Twitch has the opportunity to work upwards in the football pyramid to acquire the broadcast licenses of the Union of European Football Associations (UEFA) Champions League. As part of a longer-term strategy, Twitch could even aim to partner with UEFA and FIFA to exclusively broadcast Euro Cup and FIFA World Cup matches. Twitch can similarly work down the football pyramid to stream games in the lower tiers of British football, such as the English Football League Championship. By acquiring and vertically integrating broadcast licensing targets in the football leagues, Twitch can increase barriers to entry for other livestream platforms.

There are also growth opportunities in advertising for Twitch within the two football leagues, such as club merchandise sponsorships and league partnerships. For instance, the current lead partner for the EPL is EA Sports. With Twitch's expanded affiliation between FIFA video games and the EPL, Twitch can wield its influence to also become an official EPL partner. These advertising opportunities pitch the EPL brand name to an international audience that overlaps with Twitch's existing game-oriented customers.

The Ball is in Twitch's Court

As Twitch's largest competitors rapidly gain traction through exclusive content licenses, financial losses in popular global sports leagues have created a unique diversification opportunity for Twitch. Through Ligue 1 and EPL game broadcasts, Twitch would be able to grow its non-gaming category viewership and improve its poise in a saturated streaming industry. Ultimately, by pairing its robust community-building tools with the world of football, Twitch can redefine its role in the sports streaming industry.

ASML: INNOVATING AT THE SPEED OF LIGHT

To defend against the slowdown of Moore's law and retain its dominance in the semiconductor supply chain, ASML should acquire Lightmatter and lead the next generation of photonics chips.

Desmond Li & Leisen Liu

Illustrations by: Frank Huang & Madhumita Nathani

The Moore the Better

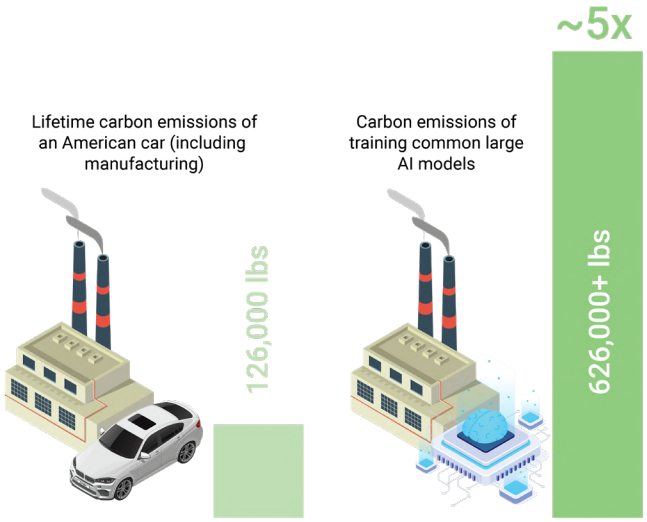
Moore's Law states the number and speed of transistors on a microchip double roughly every two years. However, this historic pace of processing power growth is slowing down. In 2019, Intel's 10-nanometer (nm) chips were delivered, a full five years after the previous generation of 14nm chips. These measurements approximate the size of one transistor in a microchip—smaller transistors can be packed more densely into a microchip of a given size. For reference, human hair is 80,000 to 100,000nm wide and human DNA is 2.5nm in diameter. Economists at Stanford and MIT determined the research effort required to uphold Moore's Law has risen by a factor of 18 since 1971. Computational progress will soon reach a point where marginal improvements will be unable to recoup ballooning R&D costs. However, since smaller transistors are critical to reducing the energy, cost, and time required for electronic computations, a slowdown in progress jeopardizes long-term growth for the semiconductor industry. With the increasing adoption of computationally intensive applications like artificial intelligence (AI), processing needs will quickly outpace the power provided by the current generation of chip architecture.

An analysis conducted by OpenAI found the computational power required to train the largest AI models has been doubling every 3.4 months. This trend is likely to continue, with several microchip startups developing AI-specific chips, signalling the birth of a new industry segment where players are racing to find a profitable niche or be acquired. The greatest limitation to this trend is cost, with AI training sessions requiring immense processing power and millions of dollars worth of hardware. With sufficient economic incentives, larger and more frequent training runs will drive the increase in power requirements. This predicted growth signals a need for improved AI chips; however, these chips come at a cost.

A Chip on the Environment's Shoulder

Coupled with the increased demand for processing power is a tremendous surge in energy usage. Researchers at the University of Massachusetts found that the process of developing and training a research-worthy AI model emits more than 78,000 pounds of carbon dioxide, nearly the equivalent of 40 round-trip flights between New York and San Francisco for one individual. This comes at a time where most industries are making commitments to reduce their carbon emissions in alignment with net-zero emissions timelines. These environmental factors compound the demand for energy-efficient chips.

ENVIRONMENTAL FACTORS



Source: MIT Technology Review

The semiconductor industry now faces a dilemma. Existing chip hardware will soon be unable to meet processing power requirements and will have to address the environmental costs associated with higher processing power. Without addressing these issues, existing microchips will quickly become obsolescent. The industry must develop a solution for the next generation of microchips that pushes the boundaries of Moore's Law, satisfies processing needs, and balances the environmental costs.

All About ASML

Founded in 1984, ASML Holding (ASML) is a global supplier in the semiconductor industry. ASML's core revenue streams consist of the development, production, and maintenance of extreme ultraviolet (EUV) photolithography machines that produce microchips. Using pizzas as an analogy for the semiconductor industry, foundries such as TSMC and GlobalFoundries are the chefs that bake the pizzas, the recipes for different pizzas are written by companies like AMD and Apple, while the pizza ovens are designed, built, and maintained by ASML.

THE SEMICONDUCTOR INDUSTRY

Recipes: AMD & Apple **Chefs:** TSMC & GlobalFoundries **Pizza Ovens:** ASML

Engage Against the Machine

Each machine is highly-specialized, consisting of over 100,000 globally-sourced parts. ASML's innovation and introduction of EUV machines revolutionized the industry, enabling patterns to be printed with greater precision utilizing wavelengths of only 13.5 nm, a 14x reduction compared to the previous generation of 193 nm wavelengths. With processing power dictated by transistor size, and new electronic devices using 7 nm chips, only ASML's EUV machines are capable of producing chips at such a small scale, driving their dominance in the photolithography space. This was made possible by ASML prioritizing cooperation and partnerships with key industry players in the earliest stages of the development of EUV machines. ASML maintains collaborative R&D as a core pillar of the company's strategy, investing 2.2 billion euros in R&D in 2020, representing 15.7 percent of total sales. ASML's dedicated research department's focus is to not only generate and explore ideas internally, but to also search for technological solutions for ASML's products and applications within the semiconductor industry and beyond. These technological innovations are integrated with ASML's systems or used to develop new applications, to drive forward ASML's machines and the industry.

Conducting Energy-Efficient Chips

However, while pushing the boundaries of Moore's Law, ASML is still making strides to reduce its greenhouse gas emissions by enhancing the energy efficiency of its products. At the front end of the semiconductor value chain, ASML's innovative lithography systems enable their customers to design and manufacture more powerful chips that consume less energy. A major challenge for ASML moving forward will be to meet customers' expectations of increasing product performance while simultaneously reducing energy consumption.

As a Light-matter of Fact

To strategically position itself against the slowdown of Moore's Law, ASML should acquire Lightmatter. Founded in 2018 by two MIT graduates, Lightmatter is a startup that makes photonic chips. The company has raised $113 million in funding from companies such as Google Ventures and prominent venture-capital firms Spark Capital and Matrix Partners. In doing so, ASML gains the necessary internal capabilities to develop photolithography machines capable of manufacturing photonic microchips. Using Lightmatter's innovative technology as a foundation, ASML will be able to develop machines capable of producing microchips that meet the growing computational requirements of end consumers while improving energy efficiency.

Case Studies: M&A-SML

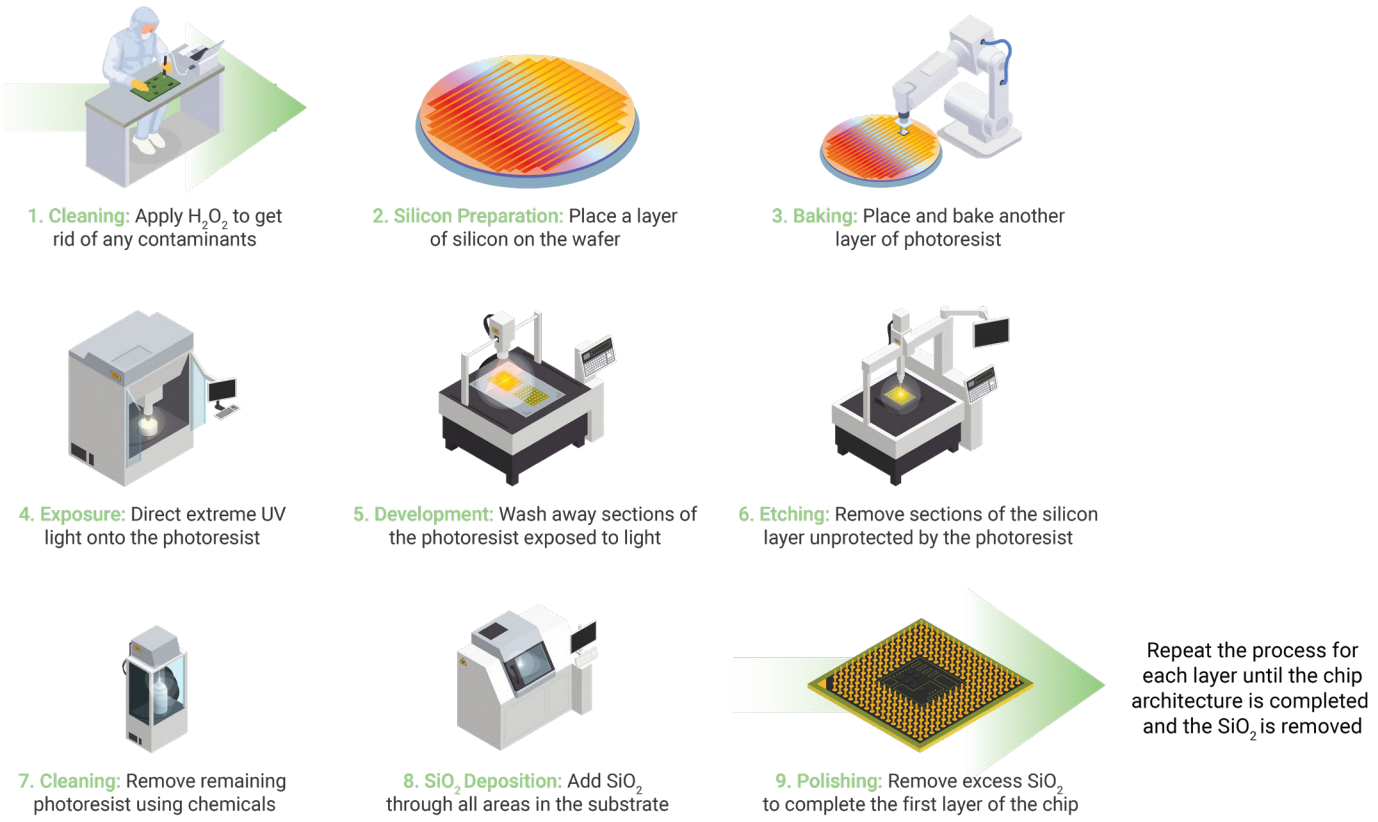
ASML has successfully completed several recent M&A transactions to fuel growth and technological advancement to complement their current product offerings. In 2013, Cymer, a manufacturer of light sources, was acquired to accelerate the development of EUV source technology. This acquisition allowed ASML to solve several technical challenges, allowing EUV infrastructure to meet customers' high volume manufacturing requirements, ultimately enabling ASML to become the world's only manufacturer of EUV lithography systems. In 2017, a 24.9 percent interest in Carl Zeiss was acquired to further the development of ASML's EUV systems and align both companies' long-term roadmaps, including the development of ASML's next-generation High-NA photolithography machine. Most recently in 2020, ASML acquired Berliner Glas Group, one of the world's leading providers of optical components and high-quality refined technical glass. This acquisition provided ASML with the technical capabilities crucial to securing the future roadmap for EUV and DUV products.

Lightmatter as a Heavyweight

Lightmatter's chips differ fundamentally from traditional microchips. To perform logical operations, traditional microchips utilize silicon transistors to manipulate the flow of electrons, and process information by reducing electrical pulses to binary signals through copper circuits. Contrastingly, Lighmatter's chips use photonic circuits to perform calculations by manipulating the path of light. Lightmatter's photonic chips are meant to perform calculations specifically for running AI programs. Lightmatter's internal testing has shown that its chips are able to run 5x faster than Nvidia's leading A100 chip on the BERT natural language processing model, all while using 85 percent less energy. This is because information can be encoded in different wavelengths of light, and manipulating light requires less energy than manipulating electrons through transistors.

Lightmatter has a long path ahead in order to solidify its photonic chips as the universal answer to the increasing demand for AI. To produce a chip using photons rather than electrons requires a completely different skill set and a complete retooling of development practices. Nick Harris, CEO of Lightmatter, indicates the company plans to use its latest April 2021 funding round to fuel the production of hardware and sell it by next year. Lightmatter plans to outsource its chip manufacturing to GlobalFoundries, a leading American foundry which produces other companies' chip designs. Getting a production device into the market is key for Lightmatter to convince skeptics of a cutting-edge design and extend its first mover advantage over potential competitors. Lightmatter has taken steps

THE MANUFACTURING PROCESS



Source: Jae-Hwang Lee

to help itself cross the chasm in the technology adoption lifecycle. Its server offerings fit into standard data center racks and support PyTorch, TensorFlow, and Onyx—languages and formats used to build neural networks.

A Merger That Matters

The fundamental decision in M&A is whether to develop something internally or purchase it from an external provider. Lightmatter's photonic chip architecture differs from ASML's chip manufacturing infrastructure, requiring a complete product offering overhaul. In addition, lengthy development time, extensive R&D costs, and a potential rise in competition creates an urgency for an acquisition rather than internal development. Photonic microchips are in an infant stage of the adoption lifecycle and are poised to become the industry's dominant technology in the AI computing space. ASML, once again, possesses the opportunity to establish a first-mover advantage in an emerging technology by acquiring Lightmatter's IP, just as ASML had similarly capitalized on EUV technology. By acquiring Lightmatter, ASML's R&D department can optimize Lightmatter's chip designs for mass production and make headway towards widespread adoption. ASML's substantive record of successful acquisitions is a strong indication of the company's ability to integrate Lightmatter, which in turn can fuel long-term growth and the technological advancement of photolithography machines. Beyond acquisitions, ASML's financial resources, expertise in manufacturing complex systems, network of business and technology partners, and experience in successfully supporting startups will play a considerable role in propelling Lightmatter's offering to new heights.

Continuous innovation and R&D has been a key success factor for ASML, enabling the development and commercialisation of EUV photolithography machines. However, as a result of growing demand for superior chip efficiency, ASML's dominant market share is threatened by competitors who are able to capitalize on the transition to photonic microchips. The acquisition of Lightmatter will allow ASML to maintain dominance in the semiconductor industry and continue to innovate at the speed of light.

BLACKROCK: **ROCKING THE BOAT OF CHINA'S RETIREMENT INDUSTRY**

To establish a successful onshore presence in China, BlackRock should exit its current joint venture and instead partner with WeChat to pursue a digital mutual fund distribution strategy.

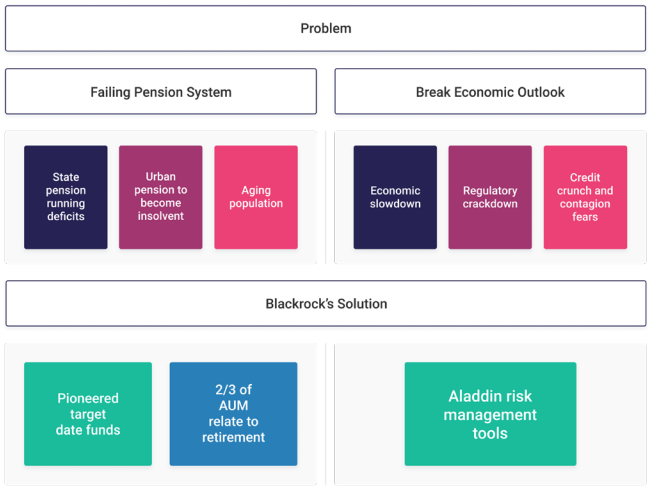
Leo Li & Kenneth Wang

Illustrations by: Frank Huang & Madhumita Nathani

Black Rockin' in the Free World

BlackRock is the world's largest independent asset manager, with clients in more than 100 countries and roughly $9.5 trillion in assets under management (AUM). Central to the firm's success is the core belief that technological innovation is essential to the delivery of high-quality asset management services. Through its investment management and risk advisory services, the firm has provided retirement solutions for millions of individuals and helped a multitude of institutional clients reduce portfolio risk through its Aladdin platform. Blackrock's Aladdin is a particularly valuable asset because the platform is used for risk analytics and provides insight into investment processes for various products, including equity, fixed income, derivatives, and commodities, among others.

PROBLEM OVERVIEW



Source: BlackRock

Despite being the world's second-largest economy, China's market has been elusive to foreign asset managers in the past few decades. Against the backdrop of reduced market regulation, BlackRock has hoped to establish a meaningful presence in China by helping Chinese consumers address their investment goals. In 2021, BlackRock became the first foreign firm to set up a wholly-owned subsidiary or joint venture in China's mutual fund industry. However, its current partnership with a state-owned bank is unsustainable and limits the firm's ability to capture market share.

Rocking Out to Liberalization

China's pursuit of market liberalization began with economic reforms in the 1980s, which used curtailed government regulation and incentives to attract foreign investment. Since then, China has joined the World Trade Organization, causing foreign investment to grow significantly.

Despite these reforms, the country maintains a protectionist approach towards its financial sector, fearing the effects of economic instability on its premature capital markets. However, in recent years, Chinese policymakers have gradually begun opening the asset management industry to foreign players to curb its retirement savings deficit and bolster international use of the country's currency. Currently, the pension shortfall is causing China to consider delaying the retirement age of its workers, which could incite problematic labour shortages in a population with an already declining birth rate.

Regulatory authorities helped facilitate a liberalized financial sector when they retired a 49 percent cap on equity ownership and encouraged local subsidiaries and foreign firms to reach retail investors with new mutual funds in 2020 directly. Capitalizing on these changes, BlackRock entered a wealth management joint venture with China Construction Bank (CCB) and Temasek, retaining 50 percent ownership. In September 2021, its maiden mutual fund raised $1.03 billion from more than 110,000 orders.

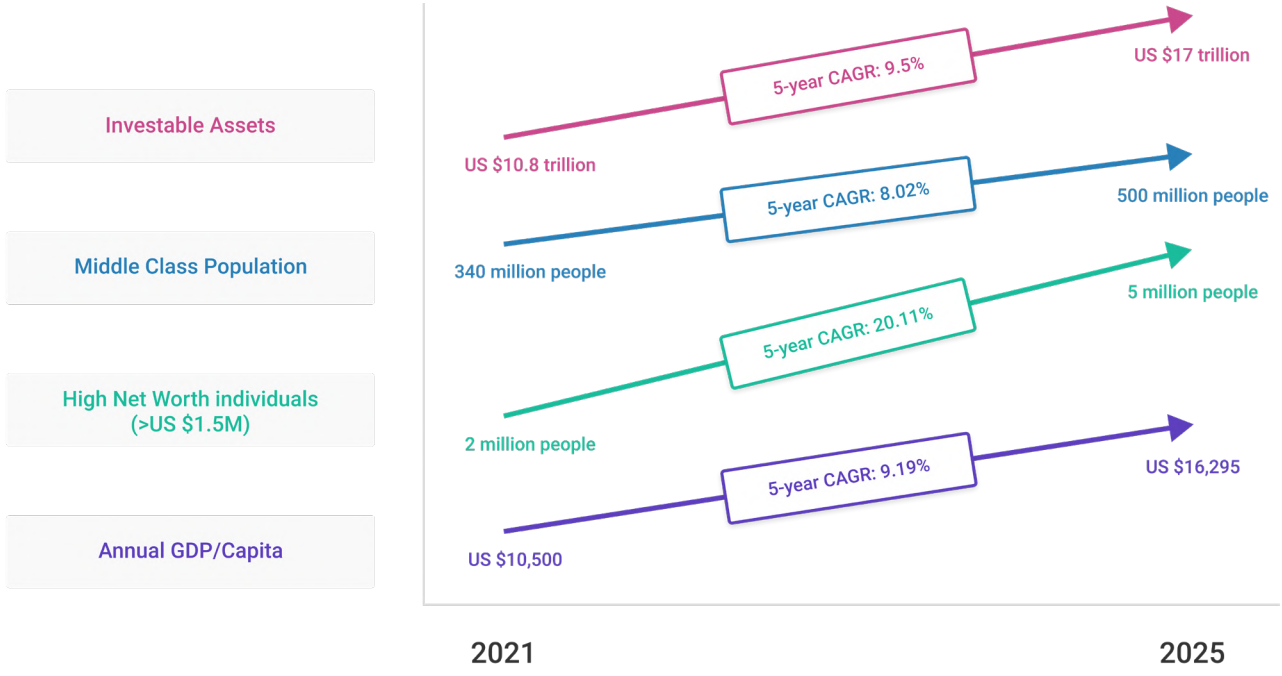
Capitalizing on Capital

With Chinese firms totalling $2.6 trillion in AUM in 2020, China became the wealthiest nation in the world in part due to an unprecedented amount of foreign and domestic capital flowing into the asset management industry. Despite an economic slowdown due to the COVID-19 pandemic, AUM is expected to grow at a CAGR of 10 percent through 2025; China's demonstrated commitment to overhauling aspects of its financial system to lower geopolitical risk could help it outperform competing regions like the United States. On the domestic front, Chinese households have one of the highest savings rates globally, at 45 percent of GDP, compared to the world average of just 23 percent, creating a large pool of uninvested capital in the hands of Chinese retail investors. Thus, reduced barriers in China's financial regulatory landscape have carved a unique opportunity for common retail investors to invest in higher-risk, higher-return products within the broader capital markets instead of simply contributing to their savings accounts.

Behind the Curtain

Despite growing demand, China's asset management industry lacks the investment products investors require to achieve their financial goals. China's asset management sector is currently dominated by wealth management products (WMPs), fixed-income assets from a portfolio of equities, bonds, and other financial instruments. Despite

CHINA'S GROWING WEALTH



Source: Bloomberg Markets and Finance, Data Commons

their popularity stemming from high yields, WMPs expose investors to high levels of risk because the industry lacks proper regulation. For example, one of China's largest property developers, Evergrande, tested the Chinese real estate market when it tried to circumvent lending restrictions by issuing high-yield WMPs.

As China's economic growth stagnates over time, it is increasingly evident that this high-risk economic model is not sustainable. Further, these practices also undermine the confidence and trust of consumers, deterring them from engaging with the asset management industry and resulting in a high savings rate. To address this, the China Banking and Insurance Regulatory Commission began imposing stricter rules on WMPs in 2018. This presents a challenge for BlackRock, as WMP reforms are expected to contribute to consumer confidence, increasing demand for WMP and incentivizing banks to develop their own WMPs. There are two problems that BlackRock can adequately solve and add value: the retirement crisis and increasing risk in the domestic market.

A Sinking Ship

China's struggles with its pension system can largely be combated by BlackRock. The Chinese pension system is built on three tiers: mandatory government-led public pension funds (Tier 1), voluntary employment-based pension plans (Tier 2), and commercial pension products sold to individuals by fund managers (Tier 3). Currently, the population heavily relies on the first tier. However, due to an aging population (the number of people aged 60+ is expected to increase from 18 to 21 percent), cash outflows from pensions are in more significant volumes and at greater length, while cash inflows into the system are decreasing. Specifically, the state pension is running an annual deficit of $113 billion and the pension fund for urban workers is anticipated to become insolvent by 2035. As a result, China is encouraging personal retirement savings plans in Tier 3, growing from $400 billion to $3.8 trillion, representing a CAGR of 25 percent over ten years.

BlackRock can help China solve this problem by offering retirement products to consumers while also encouraging greater capital flow into the markets. By developing its technological abilities to create safe and reliable products, BlackRock has set an excellent track record with retirement solutions: approximately two-thirds of the assets that BlackRock manages relate to retirement. By providing a diversified mix of equities and fixed income, these funds can help Chinese investors take more risks when they are young and gradually reduce risk near retirement.

Rocky Waters

Following a year of regulatory crackdowns on companies and a credit crisis that risks spreading throughout the economy, China faces a volatile economic outlook. Realizing that much of the country's growth has been fueled by unsustainable drivers such as real estate and

debt, China has begun shifting its focus away from "quantity of growth" towards "quality of growth." The government responded by imposing a series of sudden regulatory crackdowns on companies and industries viewed as hindering the country's long-term economic goals. These reforms cause the domestic capital market to be highly volatile due to their timing, scope, and uncertainty.

Economic tensions are furthered by the recent credit crisis experienced by Evergrande, a dominant real-estate developer whose $305 billion debt is on the brink of default. As the economy faces an imminent slowdown, Chinese investors will need asset managers who can generate satisfactory returns while managing risks in a volatile market.

Compared to immature onshore asset managers, BlackRock has a clear advantage in the area of risk management. Since 2000, the firm has provided Aladdin to institutional clients, including asset managers, insurers, banks, and pensions. Therefore, the right distribution channel should allow BlackRock to distribute its products and alleviate investor concerns.

Shifting Gears

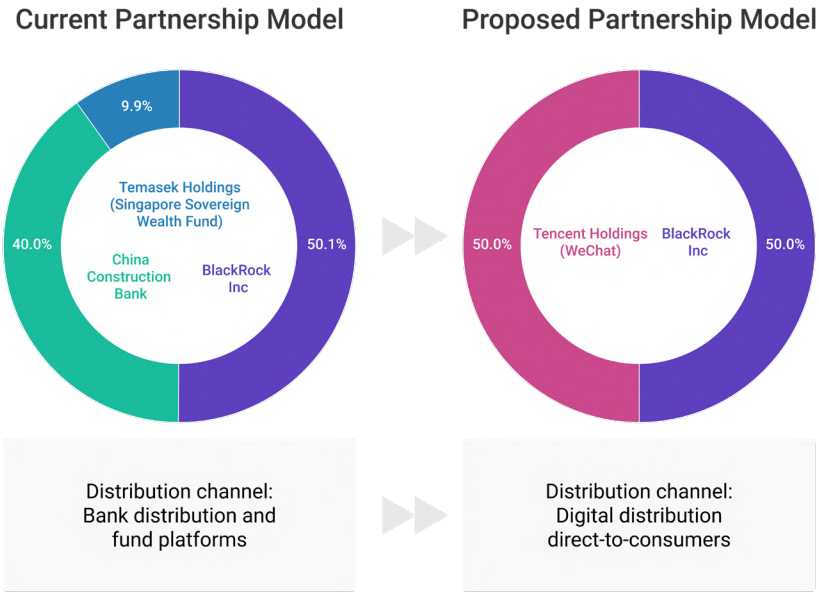
While BlackRock is positioned to solve many of China's pending problems, its current partnership with the state-owned CCB is less than ideal. The CCB's interest in the joint venture stems from the need to circumvent poor investor confidence in bank WMPs, by distributing products developed by Blackrock—a respected foreign firm in the eyes of investors. However, as existing asset management practices become overhauled by Chinese regulators, the CCB may be demotivated from participating in the joint venture due to the dilution caused by revenue sharing and a lack of operational control. Given the magnitude of the retirement crisis, state-owned banks have a mandate to increase the capital allocated into Tier 3 retirement. Therefore, the CCB could become a significant competitor to BlackRock in China by developing its own WMPs.

In BlackRock's eyes, the current partnership leaves something to be desired. Given challenging political landscapes and a lack of onshore brand recognition, BlackRock must find a new distribution channel if it wishes to succeed in China. As Chinese consumers rapidly adopted mobile payments starting in the early 2010s, wealth applications have become the primary point of interaction with their finances. If BlackRock does not quickly move into the online distribution channel, it risks state-owned banks developing their own apps and establishing themselves as a dominant distributor.

The Old Guard Falls

Technology companies have increasingly utilized their platforms to offer financial services, and this trend is

PARTNERSHIP MODEL CHANGES



Source: Financial Times

especially prevalent in China. Established players such as Tencent-owned WeChat and Ant Financial possess strong technological capabilities and brand recognition, which affords them a competitive advantage in the asset management industry. Compared to traditional banks with higher fixed-cost structures from owning physical locations, these companies pass those savings onto the consumer by offering products and services that are up to 10x less expensive. Additionally, synergies with moving money through existing platforms such as payments and wallets add value and convenience for the user. This is shown through a recent joint venture partnership between Vanguard and Ant Financial. In less than a year, more than 1 million users signed up for BangNiTou, a smartphone-based product offering robo-advisory services. The success of this strategy signifies a trend towards foreign asset managers bringing expertise and establishing trust through partnerships with domestic technology companies.

A New Dawn

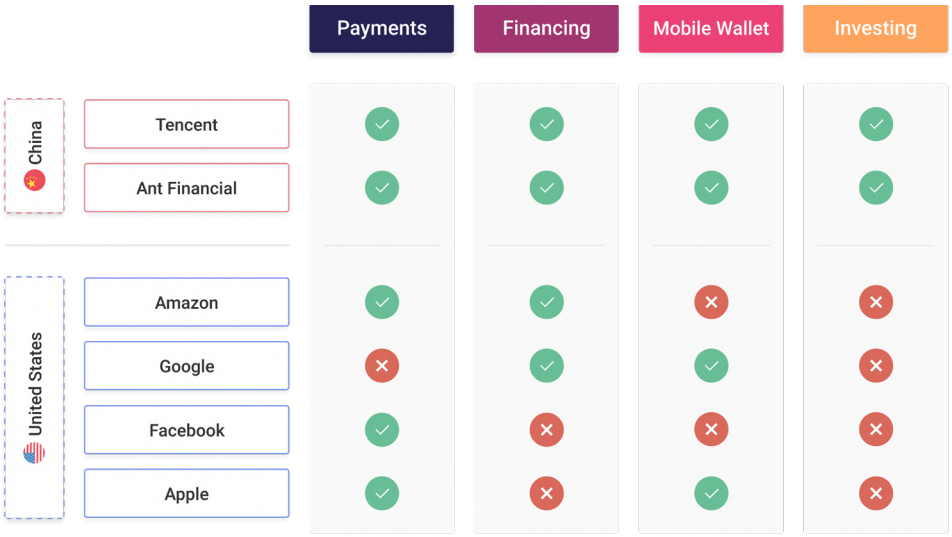
Given the tailwind of the industry's shift into financial technology, BlackRock should partner with WeChat to support the developments in their fund distribution unit (Teng An Fund) and play an advisory role to assist in the country's retirement crisis. As a social media app with over 1.25 billion active users and representing more than 78 percent of China's population, this partnership would offer Blackrock immediate access to billions of retail customers and accelerate the company's market share capture in China.

WeChat is currently lagging behind Ant Financial in the fintech wealth management area, which means the firm could benefit from BlackRock's retirement and risk expertise. Ant Financial's Yu'e Bao (a wealth management app) has reached $165 billion in deposits and 520 million paying customers in China, becoming the world's largest money market fund. By contrast, WeChat had only recently established its fund in August 2020.

With many problems lingering in the investment industry, BlackRock can provide Aladdin's technology to assist the Teng An Fund, adding new innovative products and ensuring that existing mutual fund products are suitable for consumers while properly ensuring risk management. Given BlackRock's history and track record of success, this will improve the credibility for WeChat to offer these funds, similar to Vanguard's strategy. Furthermore, BlackRock could sell its current mutual funds through WeChat as a new distribution platform and attract investors faster. Ultimately, this will significantly improve BlackRock's brand recognition in China and allow the company to aim for a larger share of China's mutual fund sector.

BlackRock can help solve China's retirement problem and improve investor returns in a volatile market. However, its current strategy is not sustainable because a lack of accessibility limits its market potential. By partnering with WeChat, BlackRock is one step closer to achieving its goal of becoming a dominant player in emerging markets.

CURRENT FINANCIAL SERVICE OFFERING OF BIG TECH COMPANIES IN CHINA VS. US



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INDIGENOUS RECONCILIATION: **THE ROLE OF UNIVERSITIES**

Canadian universities' endowment funds should invest in Indigenous impact investments to support ongoing economic development of Indigenous communities.

Vicky Jiang

Illustrations by: Andy Huang & Jessica Zhu

A Brief History of Indigenous Economic Challenges

Recent public discourse has shed light on the colonization of Indigenous peoples across Canada and its long-lasting consequences—community turmoil, intergenerational trauma, degradation of cultures, and inadequate infrastructure in Indigenous communities. Since North America's colonization, Indigenous groups have experienced unrelenting institutional oppression due to implacable social, economic, and political marginalization and oppression. To break this cycle of injustice, Indigenous leaders have prioritized self-governance to increase economic development and promote wealth generation.

Grassroots and Seed Funds

Aboriginal Financial Institutions (AFIs) were formed in the late 1980s by Indigenous leaders, the Government of Canada, and the Native Economic Development Program. These Indigenous-controlled, community-based institutions bridge a financial gap faced by Indigenous entrepreneurs by offering loans that traditional financial institutions would not provide. In 1996, a collective of AFIs established the National Aboriginal Capital Corporations Association (NACCA). This umbrella organization acts as a network for 59 AFIs across Canada to stimulate economic growth and provide access to capital for Indigenous individuals and communities in Canada. They outline best practices for lending capital to Indigenous communities and advocate their needs to the government and potential lenders. AFIs have subsequently become experts in identifying and mitigating risks for Indigineous businesses, as they are connected with Indigenous communities at the roots.

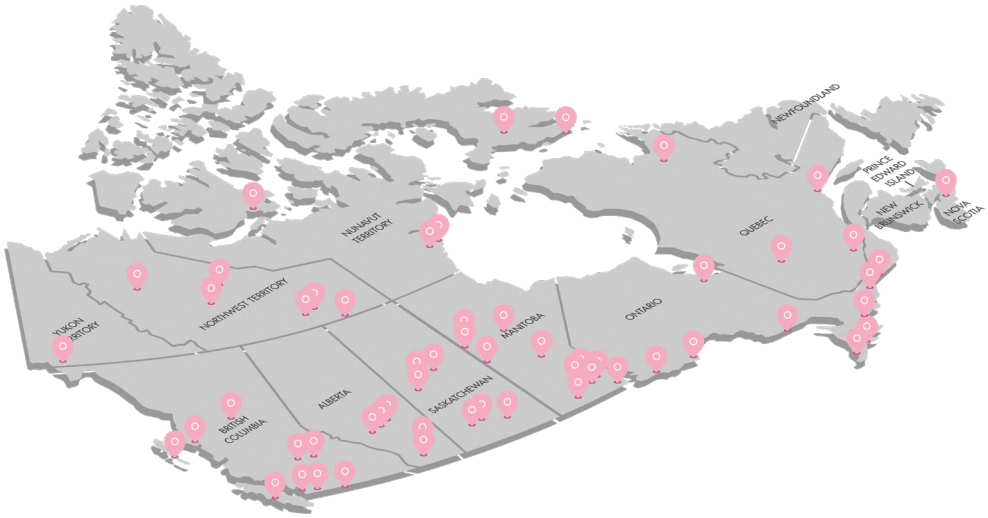
AF-eye on the Prize

NACCA and AFIs have been crucial in structuring Indigenous investment deals. In April 2021, the Indigenous Growth Fund (IGF), a debt fund that provides lines of credit to AFIs, which provide loans to Indigenous entrepreneurs, raised its first $150 million round. Under the management of NACCA, this will enable Indigenous entrepreneurs to receive capital to expand their businesses. The fund was structured with support and lead investments from the Government of Canada and Business Development Bank of Canada. The investment offerings were structured to accept accredited investors such as public and private foundations, Indigenous Trusts, Corporate Canada, and other institutional investors to provide Indigenous business owners with access to capital, and therefore autonomy over business decisions.

Inviting Interest from Institutional Investors

There are many Indigenous-centred financial institutions that support deal structuring and ensure their cultural values are aligned with business decisions. However, while funds like the IGF act as a new opportunity for Indigenous business owners to make autonomous financial decisions, NACCA has outlined the need for increased funding. Nearly one third of all small and medium-sized enterprises (SMEs) in Canada rely on business loans and lines of credit for operations, yet the IGF expects to only issue loans to approximately 500 Indigenous businesses in 2021 at full utilization. In addition, the average loan size of SMEs across Canada is more than double the IGF network average of $100,000. Given the IGF lacks sufficient funds to aid all Indigenous business owners who seek funding, the majority of Indigenous business owners

ABORIGINAL FINANCIAL INSTITUTION LOCATIONS ACROSS CANADA



Source: NACCA

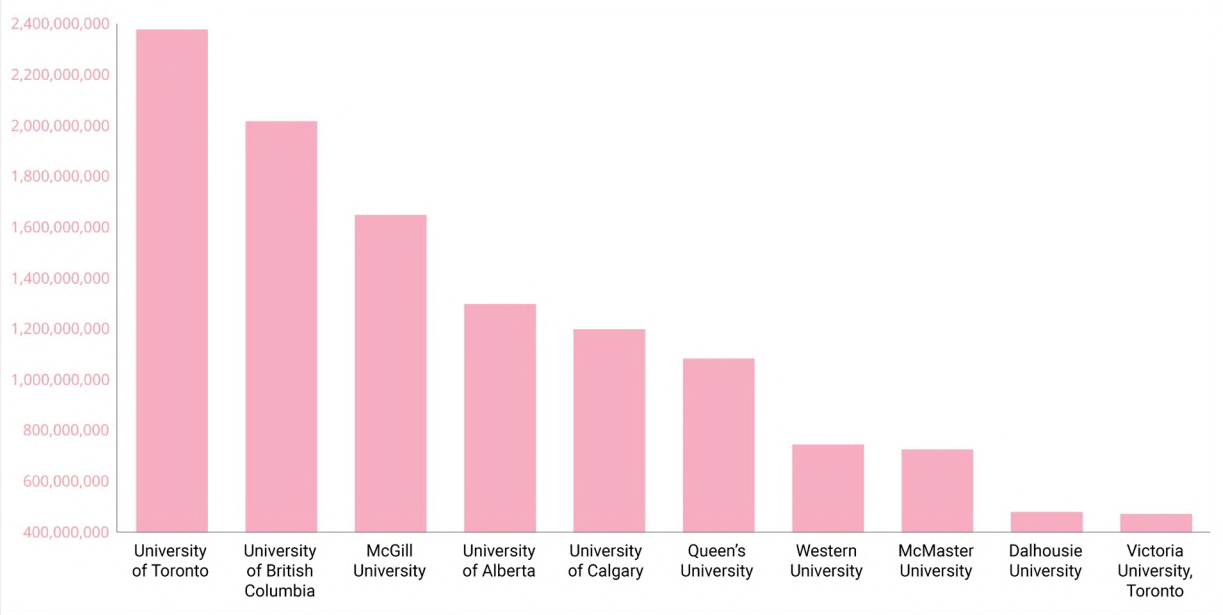
are forced to rely on high risk sources of financing such as personal savings. This propensity for using personal savings over the capital markets can be attributed to a lack of trust in financial institutions and difficulties in securing a loan from them. Indigenous business owners often face institutional bias, as they were historically seen as high risk borrowers-since property on reserves cannot be used as collateral for loans. As a result, one of the largest barriers for Indigenous economic development is access to capital and lack of interest from institutional investors. A 2015 report by Global Affairs Canada and the Canadian Council for Aboriginal Business reported that access to investment capital was the largest barrier for Indigenous SMEs in Canada, with 37.5 percent of owners identifying it as an "important or highly important obstacle to growth." AFIs are in a unique position to grow their balance sheet and provide a more secure source of funding for Indigenous SMEs. To achieve this, it is imperative to market these opportunities to traditional investors, build relationships with larger financial partners, and access traditional capital markets.

Classets

Endowment funds are financial assets that are donated to universities to generate additional income and growth for future expenditures. In Canada, the largest universities have endowment funds ranging from $400 million to $2.4 billion CAD, where the returns are used for teaching, research, and other public service projects for the university. University endowment funds tend to have strict investment policies and guidelines that dictate their asset allocation, the risk/return profile for each invested asset class, and restrictions on how capital is being spent. Typically, Canadian university endowments are externally managed, meaning investment directors select investment managers for certain asset classes such as public equities, fixed income, and alternative investments.

In recent years, investors and senior management across the financial landscape are beginning to integrate Environmental, Social, and Governance (ESG) factors into investment strategies. Consequently, an estimated $31 trillion USD worldwide has now been allocated towards investments with ESG considerations. Investors are also specifically looking for ways to improve current business practices that consider Indigenous communities and individuals. For example, a shareholder proposal for Indigenous reconciliation and inclusion was submitted to the TMX Group, which runs the Toronto Stock Exchange, by the Shareholder Association for Research and Education on behalf of the Atkinson Foundation. The request demanded TMX Group's management team develop internal programs and policies towards reconciliation and passed with 98 percent approval. Furthermore, consulting firms are also creating advisory arms specifically for Indigenous communities to access professional services, and foster cultural awareness of Indigenous values and practices. This further demonstrates a long-term interest in responsible investing, and commitment to Indigenous reconciliation and inclusion.

UNIVERSITIES WITH THE HIGHEST ENDOWMENT IN 2019 (CAD)



Source: University Magazine

Renaming and Reparating

Canadian universities have historically played a significant role in perpetuating and supporting the residential school system. In a 2018 speech by University of British Columbia president Santa Ono, the university acknowledged its role in training policy makers and administrators who operated the residential school system, limiting admissions to Inidgenous students, and remaining silent and compliant with oppressive policies.

For post-secondary schools, the path to reconciliation has traditionally involved formal apologies, building Indigenous research centres, adding on-campus Indigenous protection initiatives to remove barriers to education, and integrating the values of Indigenous culture at the institution. For example, upon the recommendation of the Standing Strong (Mash Koh Wee Kah Pooh Win) Task Force, Ryerson University has decided to change its name. The university was named after Egerton Ryerson, who advocated for the establishment of residential schools for Indigenous children.

Although these formal apologies and on-campus initiatives signal the universities' support, they do not address the root problem that past actions have caused. One of The Truth and Reconciliation Commission of Canada's Calls to Action includes eliminating educational and employment gaps between Indigenous and non-Indigenous Canadians. By using their abundance of resources, universities can improve reconciliation by supporting and reconnecting with local Indigenous populations and financially committing resources for the economic development of Indigenous communities.

Endow for Now

Canadian endowment funds have been integrating sustainability goals through environmentally focused investments, and are thus likely receptive to deploying more capital into social investments. Since this space is nascent to university funds, they would need to use partnerships to make impactful investments for Indigenous communities. By partnering with their regional AFIs, the endowment funds' investment committees can ensure that Indigenous values are maintained for those investment opportunities.

Endowment funds are required to make profitable investments to sustain the long-term growth of the fund. In parallel, impact investments must generate financial returns in addition to environmental and social impact. Therefore, university endowment teams should partner closely with their local AFIs to access reliable investment opportunities with financial upside, as AFIs are highly experienced in loaning capital and structuring investment deals for Indigenous entrepreneurs with growth potential.

However, with traditional investors providing capital to Indigenous businesses, there are reputational risks associated with "social-washing". Since traditional investors do not have the knowledge or expertise in the needs of Indigenous communities, they need to collaborate with Indigenous organizations. By partnering with AFIs, they can guarantee that Indigenous values are being considered when structuring an investment.

Conclusion

Indigenous entrepreneurs and impact funds have historically struggled to raise capital outside government entities. Simultaneously, Canadian universities' initiatives towards reconciliation are not sustainable solutions to support Indigenous lives. To move past performative activism, universities should deploy meaningful capital into Indigenous communities. By utilizing the expertise of AFIs, university endowment funds can maintain appropriate returns while making impact investments to support the generational economic development of their local Indigenous communities.

IROBOT: **WHY CLEAN WHEN YOU CAN CODE**

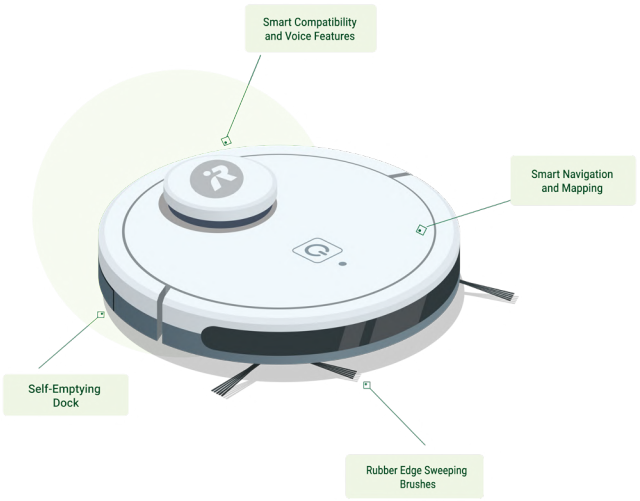
Amidst labour shortages and poor profit margins in the North American cleaning industry, iRobot should enter the industrial robotic cleaning space.

Kevin Meng & Richard Yang

Illustrations by: Andy Huang & Louisa Li

Automation is rapidly developing in everyday life, and iRobot is a company that has capitalized on this shift. Founded in 1990 and based in Bedford, Massachusetts, iRobot is a leading global consumer robot company focused on the development of household cleaning solutions, such as the Roomba and Braava. The Roomba is a vacuum robot, with models priced between $250-$1,099, while the Braava is a mopping robot, with models priced between $199-$450.

THE ORIGINAL IROBOT ROOMBA



Source: iRobot

The global robotic vacuum and mopping industry is predicted to be valued at $15.4 billion by 2028, representing a CAGR of 23.2 percent from 2021. However, with immense growth comes increased competition. Although they remain as the top player in the industry, iRobot's North American market share declined from 85 percent in 2017 to 75 percent in 2020. This was driven by more entrants into the market, such as low-cost competitors like Ecovacs. Despite iRobot's falling market share, the company has had an overall positive net income growth for the past five years. There is an opportunity for iRobot to look elsewhere to maintain their high net income growth post COVID-19 by servicing companies in the cleaning service industry and facilities with stringent cleaning requirements.

Rummaging Around the Room(ba)

The cleaning industry has recently been struggling with labour shortages as well as high employee turnover. Due to COVID-19, job responsibilities have become increasingly tough, leading to poor staff retention. Sanitation staff were faced with higher cleaning frequencies and standards, which led to overworking. With overworking and poor service, most cleaning companies experienced more than a 50 percent annual customer churn rate. In this environment, cleaning companies need to have the ability to consistently provide high-quality service in order to maintain their contracts and strong relations with clients.

While higher wages could retain more employees, a wage increase would significantly hurt a company's profitability in this labour-intensive sector, where wages are 43.6 percent of total revenue with an average profit margin of 4 percent. The cleaning industry is a highly saturated and mature space that is resistant to change, leading to risk-averse behaviour. Additionally, switching costs for customers are extremely low, resulting in low customer loyalty—clients are highly sensitive to changes in quality. The competitiveness of the industry means that any reduction in quality leads to a loss of customers. Therefore, cleaning companies need a solution to increase and maintain service quality while minimizing wage expenses to improve profitability. With short-term labour shortage issues, the need for consistent cleaning results, and the prevalence of low profit margins, iRobot could step in to change the cleaning industry landscape.

Hip, Hip, Bravaa!

Given these challenges, there is an opportunity for iRobot to introduce a product line focused on industrial cleaning robots. These robots, while larger and more powerful, would utilize the same mapping and navigation technologies found in its consumer robots. In addition to cleaning companies, iRobot should target hospitals and hotels. These aforementioned industries have a focus on cleanliness and sanitation in their operations, which means that they are exposed to human capital risks caused by labour shortages in the janitorial industry. Although iRobot will not be able to eliminate janitorial jobs entirely, they can play a key role in improving utilization rates and increasing consistency. As a result, custodial employees can spend more of their time on more valuable activities such as disinfecting high-touch surfaces and reducing potential for cross-contamination in high-risk areas.

yRobot?

iRobot should utilize its established reputation and customer trust in the residential space to secure commercial customers. Since automation within commercial cleaning is still in its infancy, trust and reputation are big considerations for clients when investing in a new product. Having been in the industry since 1990, iRobot is the most established consumer robot company. Its products have a strong reputation for quality and reliability among its residential customers, which makes iRobot the safest choice for commercial clients, many of whom are risk-averse.

Expanding into the commercial sector also helps iRobot take advantage of its economies of scale. Unlike existing

TARGET CUSTOMERS

Educational Institutions

Hospitality and Tourism

Healthcare Facilities

Warehouses

competitors within the industry, iRobot has established manufacturing processes, supply chains, and a vast international distribution network. Their existing IP and relationships can be easily transferred to a new segment, allowing iRobot to reduce fixed operating expenses as a proportion of sales and improve profit margins.

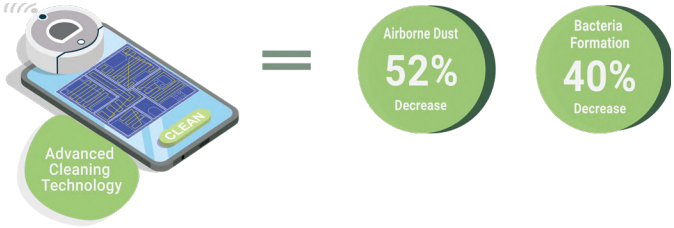
iRobot boasts industry-leading navigation technologies developed for cluttered home environments. With little fundamental physical differences between homes and commercial spaces, these technologies can be transferred smoothly to commercial settings with minimal modifications. Furthermore, with its consumer-facing success, iRobot has the most comprehensive and intuitive user experience in the industry, making it easy for even inexperienced commercial customers to set-up and use. This is especially beneficial for cleaning companies, hospitals, and hotels, where the main operators of the machines will be custodial staff. These technologies are supported and continuously improved by spatial, sensor, and usage data that iRobot gathers through its residential segment, which is a key competitive advantage. Its core technologies are also protected by over 1,500 patents, whereas its closest competitors, Neato and Ecovacs, only have 23 and 80 patents respectively.

The Need for Clean

The pandemic has led to increasingly stringent hygiene guidelines in the healthcare and hospitality space. As a result, there is an unprecedented incentive for clients to integrate advanced cleaning technologies. A study demonstrated that procedures which embrace advanced cleaning technology also improve indoor air quality, through a 52 percent decrease in airborne dust and a 40 percent decrease in bacteria colony formation, among other benefits.

Furthermore, diversifying iRobot's customer base can protect them from risks and fluctuations inherent to consumer-facing products. Unlike household consumers, industrial customers provide a more stable source of cash flow. For instance, a hospital with a greater need for consistent hygiene is more likely to become a long-term client as opposed to a household consumer. Additionally, given that many industrial cleaning companies have annualized contracts, there is an incentive for the companies to lease rather than purchase equipment. iRobot currently has the iRobot Select program, which is a subscription-based program allowing household consumers to receive a different model every three years. The company could expand this idea for a flexible option for cleaning clients.

BENEFITS OF ADVANCED TECHNOLOGIES



Source: Tennant Company

From Grease to Lease

Although other competitors like Avidbots, Tennant, and Ecovacs offer similar solutions for commercial uses, iRobot holds over $200 million in cash with no debt and spent $156 million on research and development in 2020. This strong financial capability can be put towards marketing and sales efforts coinciding with its market entry. With 75 percent market share, the company also holds the most brand awareness in the cleaning robotics industry. iRobot is uniquely positioned as the largest consumer robotics brand, both in terms of financial capability and existing IP, to successfully educate potential commercial clients on the benefits of supplementing custodial staff with powerful cleaning robots.

To best capitalize on the commercial opportunity, iRobot should use its experience from the iRobot Select program to primarily sell commercial machines through lease contracts. This pricing structure allows customers to experiment with the product and gives them the ability to cancel past the leasing period should they wish to do so, which minimizes the financial risk for customers. Additionally, given the unpredictable and competitive nature of bidding on cleaning contracts, leasing can provide flexible cost controls for companies during periods without contract work. Although there may be some consumers who are more risk-tolerant, the low profit margin nature of the cleaning industry suggests that customers would gravitate toward more flexible and lower-risk options.

From iRobot's perspective, this proposal will initially incur a variety of costs, the biggest being research and development. More costs would include rent for additional warehousing and wages for technicians to service and repair robots. With a minimum lease length of one year, there is also a need for delivery as robots change hands between renters. Furthermore, iRobot would need to expand their manufacturing facilities to account for higher production volume. However, given iRobot's strong balance sheet, it can afford to pursue this opportunity to capture significant market share in a largely untapped segment.

A Squeaky Clean Ending

iRobot has a unique opportunity to expand into the commercial cleaning industry in North America, where there are labour shortages and thin profit margins. iRobot could manufacture industrial-sized robotic cleaners which can help automate current business processes in a variety of cleaning companies. Not only will this offload labour costs, which make a significant portion of operating expenses, robots can also improve the quality of service provided. With increasingly stringent hygiene measures, iRobot's products can help companies manage the additional cleaning load. Roomba's motto was once "Let Robots Do Dirty Work," and this statement could continuously be realized in a new playing field for iRobot.

IKEA: **ASSEMBLING THE FUTURE**

To better sustain its charitable efforts towards education in India, Swedish furniture giant IKEA should partner with The National Institute of Design to produce locally-designed products and commit their proceeds towards the IKEA Foundation charity.

Maggie Chen & Annie Liu

Illustrations by: Charlotte Lemon & Louisa Li

A Build-It-Yourself Market

Founded in 1943, IKEA is a Swedish multinational conglomerate that specializes in simple, build-it-yourself home furnishings. IKEA currently operates 422 stores in 32 countries and is the world's largest furniture retailer. The company's deep understanding of what "home" means across multiple cultural contexts has been a cornerstone of its success; combined with its reputation for simplicity, affordability, and service, this has allowed IKEA to attract 825 million in-store visits at its big blue box centers and four billion website views yearly. Alongside impressive sales and publicity figures, IKEA has an impressive track record of environmental, social, and governance (ESG) campaigns that are among some of the largest philanthropic initiatives in the world. The IKEA Foundation is funded by the INGKA Foundation and donates tens of millions of dollars to charity from its profits each year.

IKEA's 2025 vision encircles a commitment to creating more sustainable, fair, and inclusive neighbourhoods in cities around the world. Specifically, this means providing meaningful work, promoting equality, and collaborating with partners to create sustainable, child-friendly, and connected communities. For example, the Green Entrepreneurship Initiative grants up to €1.5 million for environmentally-friendly initiatives that create employment opportunities within local communities. From co-creating products with Kids Labs in support of children's rights to giving the youth an opportunity to realize their designs with the SAGOSKATT initiative, IKEA commits to its belief that children are the most important people in the world. Accordingly, IKEA's future strategy should consider the diverse social and economic backgrounds of the 2.2 billion children on Earth, and use this opportunity to connect with communities previously unaware of IKEA's global brand.

In recent years, IKEA has made considerable progress towards its sustainability and social impact goals through refugee skill development programs, investments into renewable energy, and a municipal partnership with Swedish city Helsingborg to envision a sustainable city for the future. IKEA provides work placement for refugees, constructing a diverse and inclusive working environment as well as improving the skills of refugees. The furniture retailer has also partnered with local artisans and female refugees in Jordan, selling their products across IKEA stores in many Middle Eastern markets. This ability to reflect the diversity of local communities in its global operations has been key to IKEA's growth, and as such, it is imperative the firm broadens its customer base and taps into new markets.

Notably, IKEA has a proven charitable presence in India – as of 2013, IKEA invested €158 million to India through the United Nations Children's Fund (UNICEF). With a focus on improving the development and growth of the country's young population, a portion of this donation has been devoted to providing a quality education for children.

Unstable Building Blocks

India is en-route to becoming the most populous country in the world, but its progress is significantly hindered in part by an underfunded public education system. The 2018 World Bank Development Report outlines the positive benefits associated with creating an educated population, which include productivity, employability, and economic growth. However, District Information System for Education data reveals that only 53 percent of government schools, which represent the majority of schools in rural India, have electricity. In addition to this, less than 30 percent of the schools are able to provide working computer access for their students, and only 9 percent have an internet connection. Meanwhile, 70 percent of India's workforce resides in rural areas. The lack of modern education technology, sparsity of rural school locations, and poor infrastructure will affect the students' quality of life. As such, it is critical for these regions to invest in education infrastructure as a vehicle for positive socio-economic growth.

ROOM FOR IMPROVEMENT

Source: Financial Express

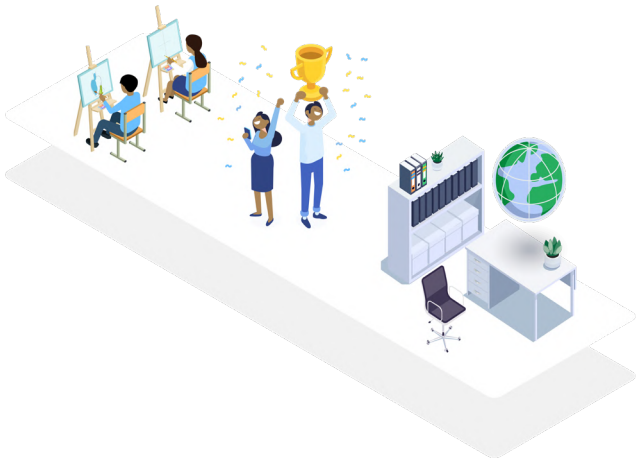
India is an attractive market for IKEA due to the rising middle class. Nearly 80 percent of households in 2030 are expected to be middle-income, up from 50 percent today. In addition, India's middle class could be the largest in the world by 2025. However, IKEA has only managed to capture 0.4 percent of the Indian furniture market, with just two locations in Hyderabad and Mumbai. Given that IKEA is the global leader in low-cost furniture, this presents a significant opportunity to grow its market share in an underpenetrated market.

India is a unique market that presents both a large-scale educational problem and rapidly expanding middle class. IKEA can simultaneously drive positive change in the lives of students in rural communities while growing its brand familiarity and reputation within India by entering the market with the intention to further pursue IKEA's environmental, social, and governance goals.

Delhi-vering to a New Market

IKEA should establish an open innovation project with a design institution in India. Successful furniture design proposals from design students will be brought to the mass market with the proceeds donated to educational institutions in rural India.

Established in 1961, India's National Institute of Design (NID) offers world-class design education at three main campuses across India. Offering a variety of design-based bachelor, master's, and doctorate degrees, including a furniture design program, the institutions provide students with the opportunity to build a repository of design knowledge, experience, and products. IKEA can partner with the NID schools, offering monetary grants in exchange for furniture designs. This would not be the first time IKEA partnered with a design institution; in 2000, IKEA collaborated with multiple Swiss schools to design furniture for the company. Similarly, IKEA can work with the NID schools to establish a unique product line while giving the design students international exposure. Proceeds from the furniture line will be donated to rural schools across India, in line with IKEA's philanthropic goals.



An open innovation project would invite students at NID to create unique designs for a specific type of furniture. Successful students would be rewarded through a grant system, where they could see their proposals transformed into classic constructible IKEA furniture. These products would be sold worldwide, with proceeds directly helping fund education infrastructure in India.

The partnership achieves a joint incentive model. For NID, this partnership would not only bring in funding but also attract international attention and acclaim to its work. Every successful iteration of the partnership could help propel the careers of NID's design students and faculty. On the other hand, this partnership represents a more direct, sustainable, and transparent mechanism for IKEA to contribute towards this goal compared to its existing donation program, while opening an avenue for its own product teams to work with and learn from a new pool of talent.

Case Study: The (PRODUCT)RED

The (PRODUCT)RED initiative is an existing example of a globally-successful implementation of donating to a cause through profits. Partner companies of PRODUCT(RED) introduce red-coloured variants of their products and donate a portion of proceeds from these sales to the charity, with its most prominent partner being Apple Inc. Throughout the past 15 years, Apple has introduced a wide range of (PRODUCT)RED devices, starting with the iPod Nano in 2006 and continuing today with new iPhone and Apple Watch announcements. This ongoing campaign has raised almost $250 million to fund HIV and AIDS research, providing over 10 million people with care and support services. Apple's 15-year-and-counting participation in (PRODUCT)RED suggests it sees measurable success through the initiative in improving its brand image.

While the products' bright red colour scheme indicates an individual's contribution towards the charity, they are still fundamentally the same well-designed and cutting-edge devices that Apple is known for. A consumer buying a PRODUCT(RED) iPhone receives no less of an end-user experience than if they had bought another colour. IKEA's partnership would aim for a similar philosophy—furniture shoppers should not have to compromise on design and style to feel good about their contributions to Indian education. The NID-designed products should bring a new twist to the quality, flat-packed pieces IKEA is already known for, while being a transparent way through which consumers can contribute to the cause.

Designing for the Long-Term

NID would be guaranteed autonomy in the design of furniture where students are encouraged to implement innovative designs through its curriculum. This helps it achieve many of NID's curriculum objectives for students interested in product and furniture design, including providing students exposure to real-life professional design settings and developing a sense of ownership of their own design decisions. Of course, IKEA could provide broad parameters and advice that would guide solutions to some extent, which can tailor proposals to suit IKEA's

current needs. For example, a proposal might request the generation of a new design that would replace an existing, outdated product. However, it is important that the designs themselves are home-grown and as authentic to the designers' visions as possible to meaningfully differentiate them from existing IKEA product lines.

Once successful designs are selected and prototyped, they would be translated into a flat-packed format for manufacturing and delivered to mass markets around the world. IKEA should promote the program both through traditional marketing channels as well as within the in-store experience. For example, these products can be specially marked in IKEA showrooms with a new logo and a different-coloured label explaining the program. Proceeds would then be regularly granted to rural Indian schools through the IKEA Foundation, IKEA's existing charitable arm. Importantly, this gives schools the autonomy to use the funds in a high-impact manner rather than narrowly prescribing a use.

In the long term, the partnership also has the potential to strengthen NID's brand among the global design community. Graduating students may move on to designing for IKEA itself, a company that has seen significant international acclaim for product and furniture design. Beyond the positive impacts of the charitable contributions enabled by the partnership, IKEA's product teams can learn from exposure and proximity to talented designers from a different culture.

Learning How to Build the Future

A strategic partnership between IKEA and NID will improve IKEA's contribution towards the Indian education sector beyond previous donation strategies. Simultaneously, IKEA can make recurring, sustainable donations to fund much-needed educational development in India while developing its own capabilities and brand image in an underpenetrated market. The transformation of NID students' talent into tangible impact for rural communities is an opportunity for IKEA to engage in circular value creation.

SQUARE INC: BANKING THE UNBANKED

To expand its global reach, Square Inc. should tap into Southeast Asia's unbanked market through a regional acquisition.

Amanda Graff & Ben Segal

Illustrations by: Charlotte Lemon & Tracy Wang

From Square to Diamond

Square Inc. is a financial technology (FinTech) company that focuses on simplifying financial products and cash transfers through the use of technology. Founded in 2009 by Twitter CEO Jack Dorsey and entrepreneur Jack McKelvey, Square began as a digital payment processor designed for businesses looking to accept credit payments. Its point of sales (POS) system offers small and medium-sized businesses a comprehensive method to track sales and other data, streamlining their day-to-day functions. With no upfront fees or applications, Square generates revenue through transaction costs of 2.5 to 3.5 percent per payment.

Square's product offerings have since expanded to a full suite of industry-specific financial tools, including business management solutions, physical terminals, and micro-loan advances. Square has also expanded its financial ecosystem with the internal development of the $40 billion peer-to-peer (P2P) lending platform Cash App. With these new offerings and its $29 billion acquisition of Afterpay, a Buy Now, Pay Later (BNPL) platform, Square aims to transform the payment process for stakeholders across the value chain.

The Circular Ecosystem of Square

Square's ability to revolutionize how merchants and consumers interact with financial institutions has been the core of the platform's success. Existing bank infrastructure is used on the back end, allowing Square's consumers to store money, transfer funds, buy stocks, and directly acquire cryptocurrencies. By developing a vertically-integrated digital ecosystem, Square can rival traditional bank providers and use its technology to usher in a new age of financial inclusivity.

Square's large user base is indicative of a larger trend towards the adoption of digital banking. The global digital banking market is estimated to reach $30.1 billion by 2026, growing at a CAGR of 15.7 percent over this period. This growth is matched by the increasing popularity of other digital payment services, including online payment systems, mobile wallets, and cryptocurrencies, which are catalysts for a "cashless age." Similar to Square, these competitors offer services through partnerships or licenses, and are rapidly expanding the current landscape of cashless payments, e-commerce, and digital banking.

Square's end-to-end product offering and advanced infrastructure presents it with a unique opportunity to expand its geographical reach. In particular, adoption of digital banking is rapidly growing in Southeast Asia. However, rather than building a presence in the region from the ground up, Square should look to acquire an existing player in the space and leverage its scale and infrastructure.

Southeast Asia: In the Right Shape

A largely unbanked middle class and high levels of digital literacy work in tandem to make Southeast Asia a prime market for Square. By 2022, the size of the Southeast Asian middle class will have doubled from 2012, reaching 350 million people. While these consumers have increasing disposable income and a demonstrated appetite for online shopping, only 18 percent in the region have access to credit, financial services or investment products. Both foreign and local startups are eager to capture this underserved and potentially lucrative market, as annual revenues generated from digital financial services is expected to triple to $38 billion from 2019 to 2025.

The large unbanked population has also become a significant concern for regional leaders, who see it as a hindrance to economic development. The extent of this issue has been highlighted by the Association of Southeast Asian Nations (ASEAN), which has named financial inclusion for economic development one of their top priorities for the next five years. Given that investments in financial inclusivity is a top priority for ASEAN governments, the population's access to digital banking is expected to increase. Similarly, digital and financial literacy is on the rise, with smartphone penetration reaching nearly 70 percent in Southeast Asia. As such, now is an opportune time for Square to enter this fast-growing and highly remunerative market before it reaches saturation.

AN OPPORTUNE TIME

Source: Macquarie Group, CSIS

Starting at Square One

Fintech providers entering Southeast Asia not only have the opportunity to onboard new consumers into the world of digital banking, but can also provide a full suite of financial services including lending and wealth management. Moreover, the digitization of financial services in other previously unbanked markets illustrates a potential pathway for Square's move into Southeast Asia. Between 2017 and 2019, the number of e-wallet users grew from 500 million to 2.1 billion, globally. Together, China and India, two previously underbanked regions, now account for 70 percent of all e-wallet users. When fintech companies launched their services in these countries, they started with a handful of simple offerings. As consumers became familiar with their services, the companies expanded their service lines. In China, Ant Financial, the parent company of Alipay—China's largest digital payment platform— is now a comprehensive finance platform that includes savings accounts, loans, and investment products. Square can use these precedents as a proxy for how it can usher Southeast Asian consumers into digital banking.

Dial 'M' for Merger

To successfully integrate Square into a changing Southeast Asian environment, it will take significant time and resources to acquire and retain customers. With a 55-percent increase in the consuming class by 2030 and digital payments expected to hit $1 trillion in the next five years, Southeast Asia's market is growing rapidly. While onboarding the 73 percent of the population classified as unbanked onto a new platform will create a challenge, Square's robust infrastructure and technical expertise makes it one of the only players that can undertake such a project. Since most of the unbanked population cite distrust as one of their key decision drivers, Square can build trust with an unfamiliar consumer base by combining operations with an existing fintech company. More specifically, super-apps in the region have seen rapidly growing demand. Super-apps are one-stop-shop apps that encompass many aspects of personal and commercial life, such as ride hailing, food delivery, online shopping, personal finance, and merchant payments. The concept was first popularized in China through the mass adoption of WeChat, and has since eliminated the majority of cash transactions. Since WeChat's success, many fintech companies in Southeast Asia have attempted to implement a similar business model.

Grab, a Singapore-based super-app, is an ideal acquisition target for Square. The company currently offers delivery services, ride hailing, payments, hotel bookings, and personal finance products to 180 million users across 330 cities and 8 countries in the region. Additionally, Grab had the highest brand score among Singaporean millennials in 2019. Given its massive user base and strong brand recognition, an acquisition would allow Square to successfully capture the Southeast Asian target market.

The proposed acquisition would also be attractive to Grab, as it would allow Grab to utilize Square's financial and technological assets to expand its product offerings. This would strengthen Grab's competitive advantage against other Southeast Asian super-apps in an increasingly competitive environment. GoJek, an Indonesian-based super-app, has become a stronger competitor against Grab through its merger agreement with Tokopedia, an Indonesian e-commerce giant. The deal expanded GoJek's user base and allowed it to develop new products like GoPay. Sea, another Singapore-based super-app, is also quickly growing its digital payments and financial services arm, SeaMoney. In Q3 2021, SeaMoney reached 39.3 million paying users and processed $4.6 billion in payment volume, representing 120 and 111 percent year-over-year growth. Moreover, commercial banks, recognizing the growth potential of digital banking, have launched their own e-wallets or partnered with super-apps.

Squaring Up for Southeast Asia

To compete with regional players and capitalize on increasing cashless payments in the region, post-acquisition Grab must maximize the breadth of its financial service and payments arm. Currently, Grab and Square both offer electronic wallets, consumer microloans, business insurance, P2P lending and BNPL. However, Grab currently lacks the physical payment infrastructure within Square's expertise. Once Grab introduces Square-powered merchant terminals to its product offering, it will be able to capture the entirety of the payments value chain and strengthen the presence of its ecosystem. Furthermore, this would accelerate the transition from cash to cashless transactions. On the personal finance side, Grab's personal investment service and rewards programs, as well as Square's cryptocurrency trading capabilities through Cash App, will offer both companies a more expansive product mix. In determining who will win in this space, consumers and merchants will look for a service that is trustworthy, innovative, and expansive. Combined, Square and Grab can produce a comprehensive digital financial ecosystem that captures the underserved Southeast Asian market for decades to come.

RBI: FROM DARKNESS COMES LIGHT

To alleviate its acute labour shortage and return to growth, Restaurant Brands International should introduce a new location concept—the shadow kitchen.

Jack Kenny & Marc Macaulay

Illustrations by: Emily Lao & Annie Tan

Restaurants in Recovery

While the COVID-19 pandemic has impacted all industries, quick-service restaurants (QSR) were one of the most affected. Restaurant Brands International (RBI), the parent company of global brands Tim Hortons, Burger King, and Popeyes, has been no exception, with a year-over-year revenue decline and a plummeting stock price that has yet to fully recover. In the third quarter of 2021, RBI's revenue reached $1.50 billion, slightly short of analyst estimates of $1.53 billion.

Despite these short-term challenges, RBI maintains lofty goals. RBI runs its restaurants using a franchise and corporate-owned model and is known for its cost-cutting tactics, strong brand management, and aggressive expansion. As of 2021, RBI operates 27,000 restaurants in over 100 countries, with the goal of opening 13,000 new restaurants over the next 7 to 9 years. RBI stores also generate over $34 billion in sales worldwide. Although these qualities will propel RBI forward in its post-pandemic recovery, the operational environment of the QSR industry has evolved with its own set of challenges.

No Man's Land

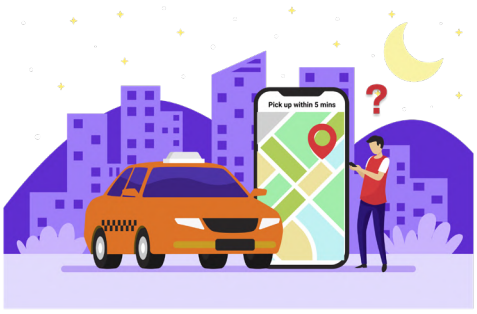
Labour shortage was a growing concern prior to the pandemic, but COVID-19 exacerbated the crisis within the QSR industry. Recent statistics from the U.S. Department of Labor shows that 5.7 percent of restaurant employees quit their jobs in June 2021, more than double the overall rate for the U.S. Additionally, QSR's employee turnover rate is the highest among any industry in the U.S. at 150 percent, with a study by the National Restaurant Association finding that 75 percent of restaurant owners agreed that hiring staff was their biggest concern. According to the US Bureau of Labor, the food and beverage serving industry has projected growth of 17 percent over the next decade. This will result in around 1 million job openings in the serving industry each year as current workers leave the industry. However, incentivizing these positions and allowing QSR to continue expanding operations will be very challenging because of the current labor crunch.

The root causes of the QSR labour shortage stem from pre-pandemic issues: poor working conditions, low wages, lack of benefits, and worker shortage within the overall economy. Workers also face a lack of flexibility to take time off, unpredictable scheduling, physically-demanding work, and 62 percent of workers cited abuse from customers.

QSR pay, which is typically in-line with local minimum wage, has stagnated in the last few decades. The U.S. federal minimum wage has remained at $7.25 since 2009, while the cumulative price increase from 2009 to 2021 has been 29 percent, and the living wage stands at an estimated $16.54 per hour. Given that the inflation rate is outpacing minimum wage growth, many workers are forced to pursue more lucrative opportunities to sustain basic living requirements.

Although the labour shortage is a global issue, its impact has been strongly felt within restaurants as they rely on employing a large rotation of workers. As a result, RBI's revenue growth has significantly declined, which can be mainly attributed to staffing crunches at its Tim Hortons and Popeyes restaurants, forcing the company to reduce operating hours and limit service models at select locations.

PAIN POINTS FOR QSR WORKERS



A Solution Lurking in the Shadows

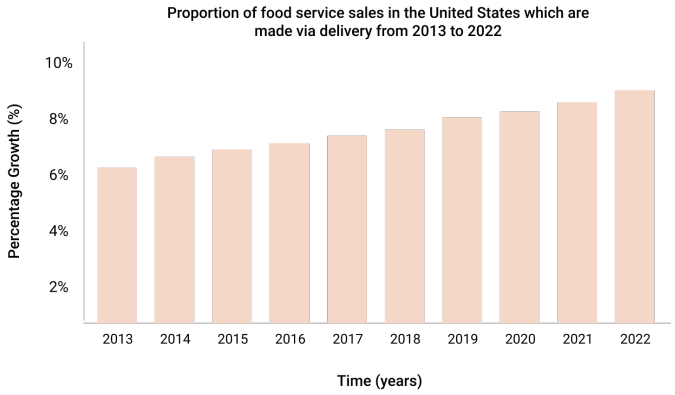
RBI can address its worldwide labour shortage by opening shadow kitchens. Although the shadow kitchen concept is not new, its novelty means existing operators have not fully capitalized on the concept. Through cutting operational costs, shifting demand to off-site kitchens, and helping fulfill greater demand for delivery orders, shadow kitchens can help RBI mitigate labour shortages.

Implementing Shadow Kitchens

In contrast to brick-and-mortar restaurants' all-inclusive dining experience, shadow kitchens differentiate themselves by offering reduced menus that cater

exclusively to food-delivery customers. Without communal seating areas, these kitchens can better utilize their space to maximize production and meet rising delivery demand, effectively introducing new growth avenues for RBI despite the labour shortage. Moreover, while the pandemic was the leading cause behind labour supply challenges, booms within the food delivery sector have created opportunities for RBI to capitalize on a rapidly growing space. With the U.S. food delivery industry more than doubling in size throughout the pandemic, RBI has the opportunity to capture additional market share through the implementation of shadow kitchens.

RISING DELIVERY DEMAND



Source: Statista

By avoiding in-person ordering and dining, shadow kitchen workers will not be required to perform standard traditional customer service and maintenance of dining areas; they will only be needed for the preparation of food and coordination with delivery services. This may aid in attracting potential workers who had poor experiences interacting with unruly fast-food customers or cleaning frequently unsanitary washrooms at previous workplaces.

This operating model will enable RBI to cut operating costs in its expansion as shadow kitchens do not require seating areas, furnishings, or interior design. RBI shadow kitchens can also lower rent expenses since a prime, high-traffic location is not necessary. In areas where the labour shortage is most prevalent, shadow kitchens can help sustain and supplement RBI's planned expansion. Instead of opening Popeyes, Tim Hortons, and Burger King brick-and-mortar locations, following the Multi Brand Ghost Kitchen Model, a single shadow kitchen would be capable of servicing the delivery and pick-up demand for all three brands while lowering overall operational costs through decreased labour and maintenance expenses.

Synergy Within Brands

RBI differentiates itself from other QSR players by owning multiple brands under the same corporate umbrella which synergies would play well into the shadow kitchen strategy. Pure-play shadow kitchen operators, such as the Canadian company Ghost Kitchen Brands, must solicit partnerships and supply agreements with existing restaurants. Companies that launch shadow kitchens without these partnerships in place will find it difficult to unseat established brands on delivery apps. While Ghost Kitchen Brands carries brands such as Quiznos and Lola's, the majority of its offerings are specialty stores like Jamba Juice and Cinnabon, or even consumer packaged goods such as Campbells and Nescafe. Alternatively, some chain restaurants have developed specialized shadow kitchen brands such as Denny's Burger Den and Chili's It's Just Wings. However, these specialized sub-brands do not enjoy the brand equity of their parents, which have been built over multiple decades at great expense.

Meanwhile, RBI will be able to launch with a reduced menu from globally-recognized fast food brands like Popeyes and Burger King. RBI brands are already highly established, and a consumer using a delivery app would simply see the usual marketing assets and branding. The variety of food between RBI's three (soon to be four) brands also complement the shadow kitchen concept, enabling one location to capture the demand from multiple customer profiles. In general, RBI and its franchisees would be a structurally superior operator of shadow kitchens compared to standalone operators and chain restaurants.

Into the Shadow Realm

RBI should begin implementing shadow kitchens by establishing corporate-owned locations and converting existing franchise licenses to shadow kitchen equivalents. The corporate locations would begin as pilot projects to validate the concept in locations with particularly acute labour shortages. However, the franchise model remains key to RBI's expansion plan and should not be supplanted by a large increase in corporate-owned stores, which may be seen as a threat by owners. To that end, after a few months of operation, impressive financial data from the trial kitchens can be shared with franchisees to secure their buy-in.

An offer can then be extended to franchisees to convert poor-performing locations into shadow kitchens. In particular, franchisees whose stores are serving a large amount of delivery orders or experiencing severe labour shortages are more likely to opt to convert their restaurants. New franchisee applicants can also apply for an RBI shadow kitchen if their proposed location meets

the low labour supply benchmark. In the medium-term, RBI can also consider derisking and recouping its investment by auctioning off the initial set of corporate-run shadow kitchens to franchisees, which would provide the buyer a proven business at steady-state.

However, shadow kitchens are not a replacement for regular storefronts. As the world reopens following COVID-19 lockdowns, walk-in dining will once again become the preferred channel for many patrons. Expansions into high-foot traffic areas in the absence of a severe labour shortage would still better be accomplished with traditional franchises, with shadow kitchens being a supplemental option to fill in coverage gaps. Above all, the shadow kitchen concept uniquely provides RBI with an effective mitigation strategy for the current labour crunch, made possible by its strong portfolio of brands.

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