IVEY BUSINESS REVIEW

SHOPIFY: SIMPLIFYING THE FUTURE OF RETAIL

Shopify has a unique opportunity to turn the retail industry on its head **| P.28**

THE IVEY HBA STUDENT BUSINESS STRATEGY MAGAZINE

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. Additionally, the publication's blog platform allows students and young alumni to further the *IBR* mission year-round.

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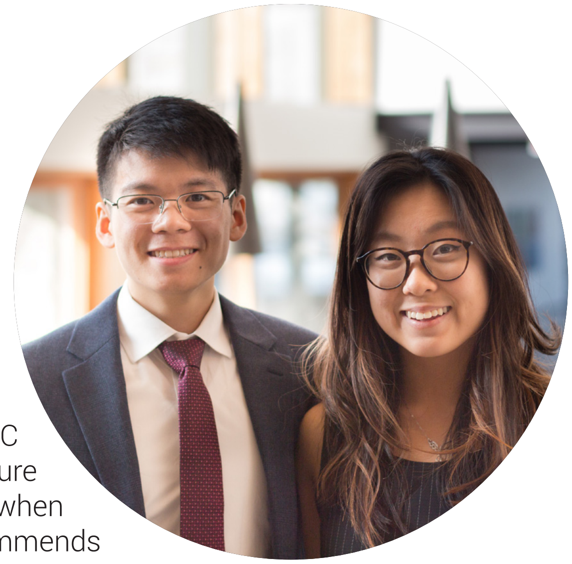

Slow Brexit discussions. Resource nationalization. The expiration of one of the most iconic Canadian partnerships. These are only a few of the many surprising developments from 2017. While some companies identify these developments as opportunities, others must address them to curb further deterioration in their business.

In light of regulatory uncertainty from Brexit, our article on HSBC illustrates how the bank can leverage its unique operating structure to increase market share. Businesses must also acknowledge when complacency jeopardizes their future success. Our article on Teva recommends a shift toward biosimilar drugs to diversify from the competitive generics market, while our article on AMD presents a compelling proposal for the company to become the leading provider of autonomous vehicle chipsets. In the face of new opportunities, our two articles on Shopify recommend the adoption of a "Simplex Retailing" concept and an expansion into service-based businesses to address changing customer demands.

With these new developments, our articles on Freeport-McMoRan, Aimia, and GoPro present bold strategies that address external threats ranging from government intervention to partnership dissolution. Finally, the growing intersection of technology and other sectors allow companies like Hydro One, Fitbit, and SpaceX to take advantage of recent technological trends to break into new markets and develop more sustainable business models.

As with all issues of the *Ivey Business Review (IBR)*, we hope you will be inspired by these refreshing perspectives. Through deep-rooted knowledge of various industries and a diverse team, *IBR* hopes to deliver the solutions for today with the vision of tomorrow.

Sincerely,

Leroi Yu and Eva Xu

Editor-in-Chief and Publisher

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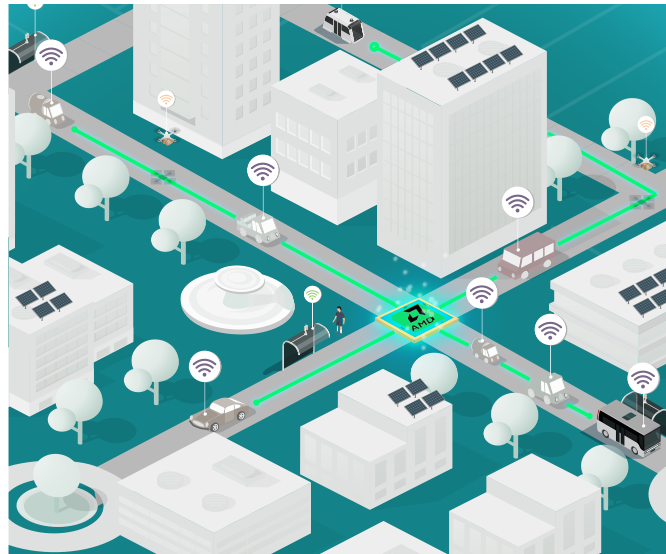


Interview: Dan Devlin and Mike Tevlin, both HBA '81

Founders of Give & Go | Creators of Two-bite Brownies

IBR: You both met at Ivey before pursuing your respective careers. How did it all start, and what motivated you to leave your jobs during your initial pursuit of entrepreneurship?

DD: We graduated from Ivey in 1981 and went to Toronto chasing the jobs down there. Mike went to work for Loblaws as a business analyst in the bakery department. While there, he met Paul, our future mentor and probably the best mind in the bakery business in North America.

Illustration by: Joey Yu

Mike was right in the middle of the action because Loblaws was a very cutting-edge company at the time. I went to work for the Hudson's Bay Company, training to be an executive. After a couple of years there, we both migrated into the food business with a company that manufactured frozen dough products. We spent about four to five years there and sales were just going through the roof.

MT: We were a good team, but the environment started to wear us down. Eventually, Dan and I said, what if we did something on our own? We're not afraid to work hard, and if we do something well, we'll feel good about it. We don't need to get rich, we just need to make a living, pay the mortgage. Neither of us was married yet so that was a big consideration. It was a lot more of a "why not" than a "hey, let's go build an empire".

IBR: How did you come up with the iconic "Two-Bite Brownies" concept? What was the key in making it into the culturally significant snack it is today?

MT: The Two-Bite Brownie was probably our eighth or ninth major product line, but it's the one that everyone knows about. The concept and the quality were just so good that it was magic. We had another younger partner, Steve, and he always kept an eye out for interesting products. He had been over at one of the grocery stores in upstate New York, and brought back these brownies; they were shaped like little muffins in this unattractive plastic dome container, and they were awful—but very cool looking. Around the same time, I was down in Texas and went to a small Whole Foods store; it had all these old-school brown paper bags that they were selling baked goods out of. I said to Dan, if Paul (the aforementioned mentor who had, by then, joined up with us) could come up with a way to make these brownies taste as good as the stuff our moms used to make—which was all our products were about—and they were shelf-stable, we could put them in a 1950s-1960s home-styled bag with a window. So, we put them in the bag, priced them so they could retail at $2.99, based on what we thought the market could handle, and ran the numbers on how profitable we'd be. If anybody talks to me about manufacturing and sales, I'll always tell them to do an exercise like that before you even get started.

It fit right into our sweet spot. We brought it to Loblaws and told the company it would have the product for three months exclusively. While Loblaws was promoting the heck out of it (with our help), everybody else was knocking on the door. The brownies started selling like crazy. We built enough into the margin that we could spend a little money on promotional allowances, but the main thing was that [Two-Bite Brownies] was an exceptional product. We never had a single person try the brownies who didn't think they weren't outstanding, because they really evoked the taste of a homemade brownie and that didn't exist in a grocery store anymore, because they're difficult and expensive to make. The story is the same for all our products: we start off making them by hand, and in a few weeks we're making them with slightly more advanced equipment. By the time we sold the business, we had millions of dollars of high-tech bakery equipment.

IBR: How long did the entire development and product launch process take?

DD: That'd be one of our strengths and one of the reasons we had such a good relationship with stores like Loblaws. Once the decision was made, we'd tell them we could have [products] out in their stores within six to eight weeks. They'd ask, "Well how can you do that?" The point was that we were small and we didn't have a lot of bureaucracy. We spent five to six weeks in development, and didn't go out and buy a million-dollar equipment line on day one. We would be nimble and buy smaller lines that weren't as efficient, but were cheap to get started. Once we got the volume, we'd start automating.

MT: Well Dan, the fact is that we never had any long-term debt in our business. We had a couple of machines that we actually leased instead of bought—but could have bought if we had wanted to. We just continued to have good cash flow, and looked before we leapt. In a growth environment, we always found that cash was king.

IBR: How did Give & Go's strategy change over time?

DD: The core of our strategy was good customer relations. The way we did it was by supplying what the retailers wanted on time, and at the quality and price that they wanted. It was this wonderful value proposition.

MT: Our reputation, quality, value, and extras—like driving for hours on a Friday night, or Dan driving to Niagara Falls to deliver some orders—strengthened the relationship with the customer. Another key aspect was that we identified a niche. That niche was, and I'm sure you learned it year one in class, high quality and fair price. You can be low-quality and low-price, and that's alright. Low-price and high-quality, that doesn't exist. We tried to be high quality, like your mom's baking, and fair-priced so people could afford it every week. Whenever an opportunity didn't fit, we said, "Sorry, we're not in that business. Let somebody else have it."

IBR: We know that Give & Go operates a variety of product lines. Was the overall corporate strategy designed with these decisions in mind? How were they related?

DD: We had our first one or two big hits with Homestyle butter tarts and tea biscuits (scones). That got our nose above water, generated some cash, and got us banking a pay cheque to pay our mortgages. There was a little bit of pressure because people would come to us and say things like, "Cinnamon rolls are old news. We beat the heck out of that last year and sales were through the roof. What's this year's big item going to be?" This became a defining aspect of the company. Every 12 to 18 months, we had to put together a new product line. It had to be something different, something with a spin on it that didn't cannibalize all our other products. We wanted people to buy the cinnamon rolls and the butter tarts, not just one or the other.

MT: Once in a while, my son will ask me what our corporate strategy was. I feel a little guilty because I'm not sure we had one. What we had were core values and we didn't vary from them. I think Ivey prepared us to be generalists; and with sales after our first couple of years continuously increasing exponentially, we had to learn how to strategically plan on the fly. Marketing plans to launch products, supporting the necessarily big egos of our top-performing team, making ROI decisions about when to automate - all these types of issues required a fluid management style and strategic plan.

IBR: Was there a time when you wanted to give up? If so, what really kept you going and what did you learn from that experience?

MT: We got some business for butter tarts, an order for 1,200 units. This was a big deal for us early on because we were essentially broke. We had two employees who came in early and helped us until the work day was over. We knew that we needed to get about 90% of the product to package. Well, of the 1,200 tarts that we baked, about 1,175 were stuck like concrete to the pan. So at around 3 a.m.—after starting at 6 a.m. the morning before—we were done packing these ugly things and our hands were all bleeding. We would probably only get $350 out of it, and we spent $500 on labour, and that didn't even include the ingredients, overheads, or margins. We were going broke; but then Dan looked at me and said, "Mike, stupider people than us have done this and made money from it. It's just our first time, and we have to be a little patient." I was a little more impulsive and hot around the collar than Dan, and he had the ability to calm me down. At the end of the day, we would remind ourselves that no matter what, we have to keep going because it is better than working for someone else.

IBR: You have both accomplished so much in your careers. After the sale of Give & Go, what have you shifted your focuses toward?

DD: I think we are both similar in a lot of ways. We have each sat on boards and been involved in philanthropic initiatives that are important to us. Mike and his wife have been amazing supporters of Tennis Canada. We often get asked if we miss the business. The answer for me is: not really. I miss the great team that we saw day after day for 15 years, but there are so many other things to turn your attention to. It was a great gift for us because we were given a good offer far earlier than we expected, and our kids were young, so we could spend a lot more time with them. We've kept busy and have never had a boring day since May 2003.

MT: Life is busy because if you are used to being busy, you will continue to be busy somehow. I feel like I live on Dragons' Den, constantly getting calls about advising someone's nephew on an idea. Now we have the luxury to be busy without having to worry about the pay cheque.

IBR: Students at Western and Ivey are becoming more interested in entrepreneurship. For those people, what kind of advice would you be able to share both in work and life?

MT: I believe anyone who is interested in being an entrepreneur should do something that is not particularly entrepreneurial at first in order to get a dose of the business world. Do not be reluctant to take a job in the corporate world for a while to get a feel for how things work in business and life away from school. The second piece of advice is, before you start your own business, do the numbers and have your best guess on what you require financially to survive. Then determine how many pieces of that product or amount of that service you need to sell, at your required margins, to afford that cost of living.

DD: Get out there and discover the rhythm of business. Do not put too much pressure on yourself by thinking that you are 22 and don't have that one "big" idea yet. If you have the one great idea, that's fantastic, but one in a million people are killing it at 22 years old. Mike and I were lucky to meet in business school, but we didn't get the great idea until we had been in the meat grinder for six or seven years. By then, we knew a lot of people in the industry who would let Mike come in the door and actually listen to a pitch. It's also really important to know every single cost. I guarantee you that no matter how often you go through the numbers, you will miss something. But if you are conservative, have a buffer, and it still works out—maybe that's the arrow pointing you to go for it and give it your all.

Interview: Andrew Macdonald, HBA '07

Uber VP Operations, Latin America and Asia Pacific

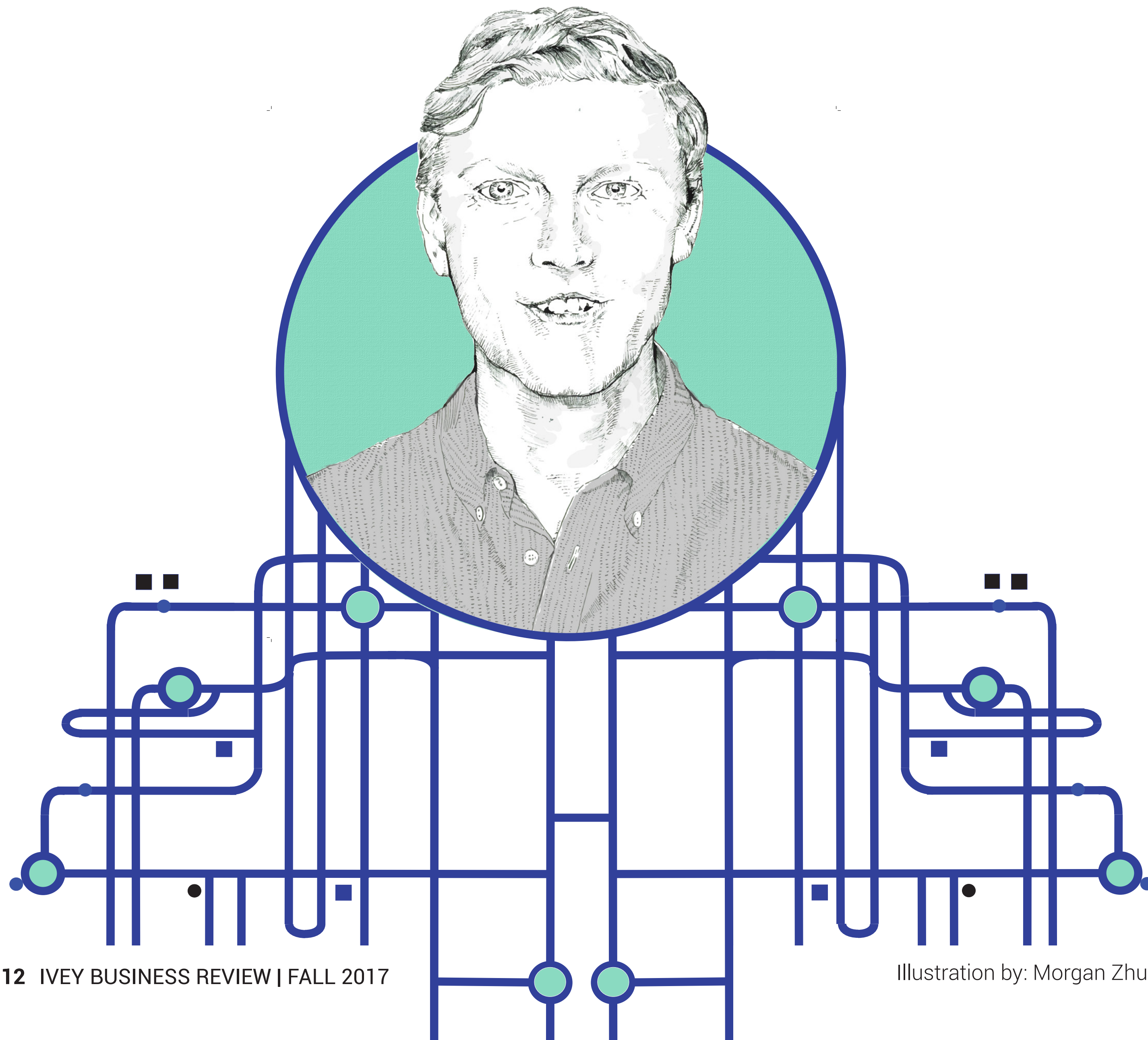


Illustration by: Morgan Zhuo

IBR: You had a direct hand in building uberX's Chicago and Toronto business. How different was your strategy when entering one market versus the other?

AM: I started out running our Canadian business in the spring of 2012. At that time, Uber was brand new to Toronto and was a young company overall. It was like creating a totally new company. We had to educate people on not just what Uber was and what the brand was, but the basics of the model. The other thing was that taxis in Toronto are very limited and very expensive, so people didn't think of taxis and limousines as a day-to-day transportation option. That was a little bit of a unique challenge.

We had already been established for a year and a half in Chicago and more than two years in the U.S. We were one of the first cities in the world to launch rideshare, so uberX. In Chicago, it was really about educating consumers about this concept of peer-to-peer ridesharing and getting into a car that wasn't a taxi. Breaking down the preconceived notions about peer-to-peer transportation was a big part. Creating a regulatory regime with local governments that actually regulated ridesharing was another major consideration. From a driver perspective, we're educating people on using their own car to earn a few extra bucks on weekends or evenings.

IBR: When you're comparing your experiences in North America versus Latin America and Asia Pacific, what were the biggest challenges and were they similar to those faced in the North American market?

AM: There are definitely sets of challenges that are common all over the world when bringing new technology and a new way for people to get around in cities. Often, that is disrupting or at least representing change from existing models. There are challenges when working with governments, stakeholders, and existing regulatory bodies about how cities and countries should embrace this new kind of transportation. Of course, there are the usual challenges of trying to start a new business in a new place. You need to establish your brand, build up your logistics network, and make the service reliable and high-quality. We also see local variants depending on the nature of the market. If you think about emerging markets, places like India, or Brazil, or the Philippines, the consumer set looks a little different. They use smartphones that are often old. They are more Android than iPhone. Cellular network connections are weaker. You have many more dead spots. Data is scarcer. People pay with cash instead of credit cards. Traffic is more extreme than what you see in North American markets and that is a unique case. Maybe the types of vehicles people use are different, like using motorcycles or really small cars, as opposed to larger models.

IBR: Uber uses a fairly decentralized structure with General Managers and VPs at the regional level. Would you say the regional level strategy is an extension of corporate level strategy?

AM: We're pretty deliberate about cascading our company level business and team priorities down to the regional level. When you think about our organization, we try to set out high-level company priorities whether those are about safety, low-cost transportation, or having the best team. Then, we extend those to our managers worldwide. They may add or substitute where it matters locally.

IBR: What strategies or qualities give Uber an edge in international markets?

AM: We are the only global player in the ridesharing space and frankly the only player in the food-delivery space as well. That gives you a lot of advantages you can draw on, but also some challenges. What's great is that we build technology that we want to deploy globally from day one, and we often invent things in local markets. For example, when Uber first launched, we were an all credit card transaction platform. One of the key value propositions that people loved about Uber in North America was that you could hop in and out without ever paying cash. Then we went to other markets and realized quickly that we needed to develop ways to use other payment methods on the platform. We experimented with cash in India. It worked well, and we expanded it to dozens of other countries around the world. We can innovate locally and deploy globally. That's an advantage. We're also building a global brand which I think is pretty powerful. Uber is a brand that is known in 80-plus countries around the world and that has value.

IBR: What is Uber's strategy when competing against local players?

AM: We face local competitors who tailor their engineering and product to local needs. At times, that means we need to balance being nimble with building global solutions and not chasing every little market nuance. Ultimately the list of things we could build is endless and we need to be better at prioritization. That said, competition is really good for the industry. It grows the category. The more people that are ridesharing, the more people that are going to ditch car-ownership, which is our ultimate goal. It pushes everyone to be better. We innovate faster, we move quicker, and it's good for consumers. Obviously, we want some competition. There's competition all over the world, and that's a really healthy thing.

IBR: Was Xchange Leasing used to introduce more drivers into the system? If so, how big of an impediment is the supply of drivers for domestic growth?

AM: One of the great things about the Uber platform is that we try to make it an economic opportunity that anyone can go after. We found that there were people who were signing up to be Uber partners but didn't have a car. We actually saw a double-digit percentage of people fitting this segment and considered filling this need. It was about giving earning opportunities to people who wanted to drive on the platform but didn't have vehicles. Matching supply and demand is a core part of what we do, and scaling our driver base fast enough to meet rider demand is a very important part of our operations and strategy. We're constantly seeking to balance the marketplace and grow our driver base. In certain markets, scaling drivers is definitely a challenge. What matters is that we're providing the best platform for drivers, and that means stability of earnings and flexibility. It also means that drivers feel safe and respected on the platform and feel valued by Uber. We're working on those things, and if we do it right, I think we'll be able to scale our driver base fast enough to meet demand.

IBR: How has Uber managed to ensure the loyalty of customers worldwide? How do loyalty programs translate in different geographies and markets?

AM: Loyalty is definitely something we're working on as a part of our overall strategy. Loyalty is driven by a lot of different things. We find that some riders want unique experiences or special treatment. That's where you'll see programs like Uber VIP filling a need. We've done that in a few countries around the world and feedback is generally pretty good. In other places, people want discounts for loyalty. In the U.S., we're experimenting with subscription products that let you sign up and pay an up-front fee to get a discounted ride over time. Other places, it's about premium products. We just launched a product in India called Uber Premier where you get access to higher-quality cars, better-rated drivers, and certain other benefits. We also recently launched our Uber VISA card in partnership with Barclays in the U.S. which helps generate loyalty. What we don't have is one central loyalty program like what you see from airlines or hotel chains. It's definitely something we're thinking about, but we're not quite there yet.

IBR: Governments are major stakeholders in your operations. How do they fit in your strategy?

AM: Working with governments in a positive and proactive manner is definitely something we have improved on as we continue to evolve as a company. Our goal when we launch into new markets is to do so in a collaborative manner with both governments and local stakeholders. That sometimes means moving a little bit slower. That's been an evolution for us but I think it's a worthwhile one. Transportation is a highly regulated industry, and we are connecting customers with transportation all over the world. I think to do well in that space, you also need to be a collaborative player and that's a big focus of ours going forward.

IBR: Uber has made many investments in self-driving cars and recently partnered with NASA to develop flying cars. How do these initiatives play into Uber's strategy?

AM: Self-driving at its heart is about safety. When you look at any set of statistics about this topic, it's clear that one of the leading causes of death, especially amongst young people, is car accidents. The vision for self-driving is that it will be far safer than human drivers who tend to make a lot of errors. It's also going to make transportation much more efficient. Shared mobility is very likely going to become the norm. Individual car ownership and the hassles of parking and traffic should fade and costs will come down. As costs come down, more people are able to access the platform and the shared mobility options. That is ultimately the linkage to our mission of making transportation as reliable as running water, everywhere, for everyone.

With regards to our partnership with NASA, we're a company that's betting on the future and thinking ultra long-term. I think there's enough there to recognize that these flying cars could be interesting down the road. If you could take your commute that was normally 65 minutes in traffic and make that 10 minutes through the air, I think that's very attractive to consumers. We ultimately are a transportation platform. If you want to get somewhere, we want you opening the Uber app and realizing that there are a lot of different ways you can do that.

IBR: Is the vision to have self-driving cars make up the entire fleet of Uber cars, or to act as a supplement to existing drivers?

AM: I think the reality is that self-driving is going to come online gradually and serve certain parts of a city, or even certain parts of the world. What we may see for a very long time, once self-driving becomes a reality, is a mix of human drivers and self-driving cars. That is going to provide the best service to customers. I think you're going to need this mix for years, if not decades, given the limitations self-driving will have off the bat.

IBR: How has Uber's strategy changed over time as the company grew from a startup to an established brand?

AM: We're a company that is somewhere around eight years old. In some ways, we're still a very young organization. However, we've scaled very quickly. When I joined the company in spring 2012, there were about 60 people at the company. We've scaled to more than 16,000 in the 5½ years that I've been here. We've also gone from one country to 80-plus countries, hundreds of cities, millions of partners, and tens of millions of riders rapidly. While we're the same age as a lot of startups, we have become a large global brand very quickly. I think that comes with a lot of expectations and responsibilities. We're a global brand, but we're still growing up as a company and it's our responsibility to do that quickly.

IBR: Uber prides itself on being a global transportation technology company. What's the most promising opportunity for Uber going forward, both in terms of geography and product offering?

AM: Ridesharing accounts for less than one per cent of the total trips taken today around the world. We actually feel like we have an opportunity in every market we're in to continue pushing that penetration level higher, and to encourage people to leave their car at home and take shared mobility options. So, when you think about this industry and replacing car ownership, you realize how early it is and how big this pie is, and how Uber and other companies in this space are just getting started.

AMD: **THE AUTONOMOUS DRIVE TO PROFITABILITY**

The changing industry leaves AMD vulnerable; it must reposition itself as a leading provider of chipsets for autonomous vehicles

Sankalp Hariharan and Remmy Martin Kilonzo

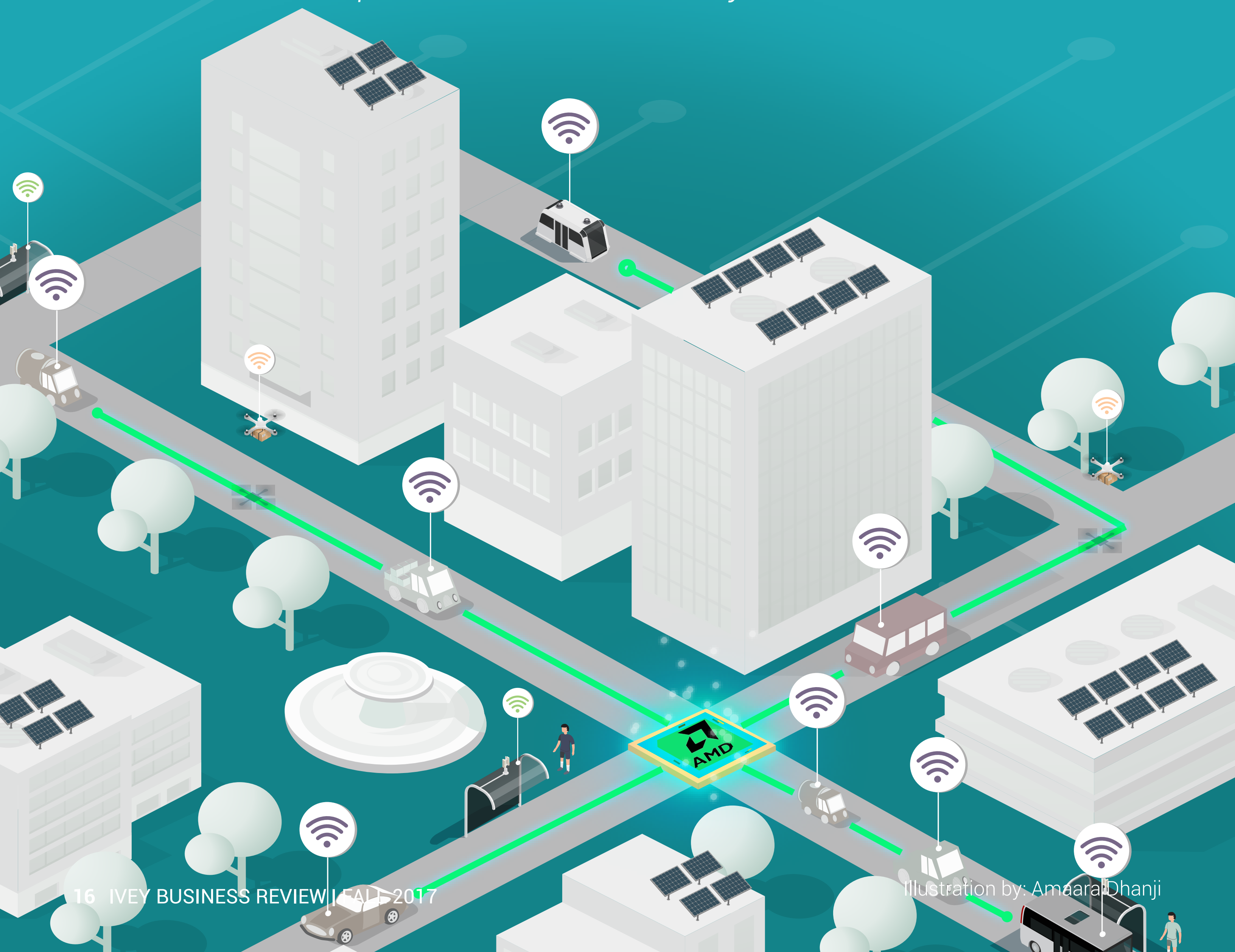


Illustration by: Amaara Dhanji

Advanced Micro Devices (AMD) competes in the semiconductor industry and creates the chips that provide the computational power and intelligence for technologies around us. Its role in supplying companies like Microsoft and Lenovo with processors has landed AMD's product at the core of essential goods such as gaming consoles and laptops. After reaching its zenith in market share and innovation back in 2006, a decade of product delays and uncompetitive products has resulted in the company's failure to turn an annual profit since 2011. Despite refreshing its product line-up in 2017, AMD's current strategy lacks the oversight to put the company on a trajectory of dominance. The rise of artificial intelligence (AI) threatens to upend much of the semiconductor industry, and while competitors have invested heavily to reposition themselves, AMD has remained stagnant and complacent. To continue providing its robust and reliable products, AMD must reposition itself as the leading provider for the promising world of autonomous vehicles (AVs).

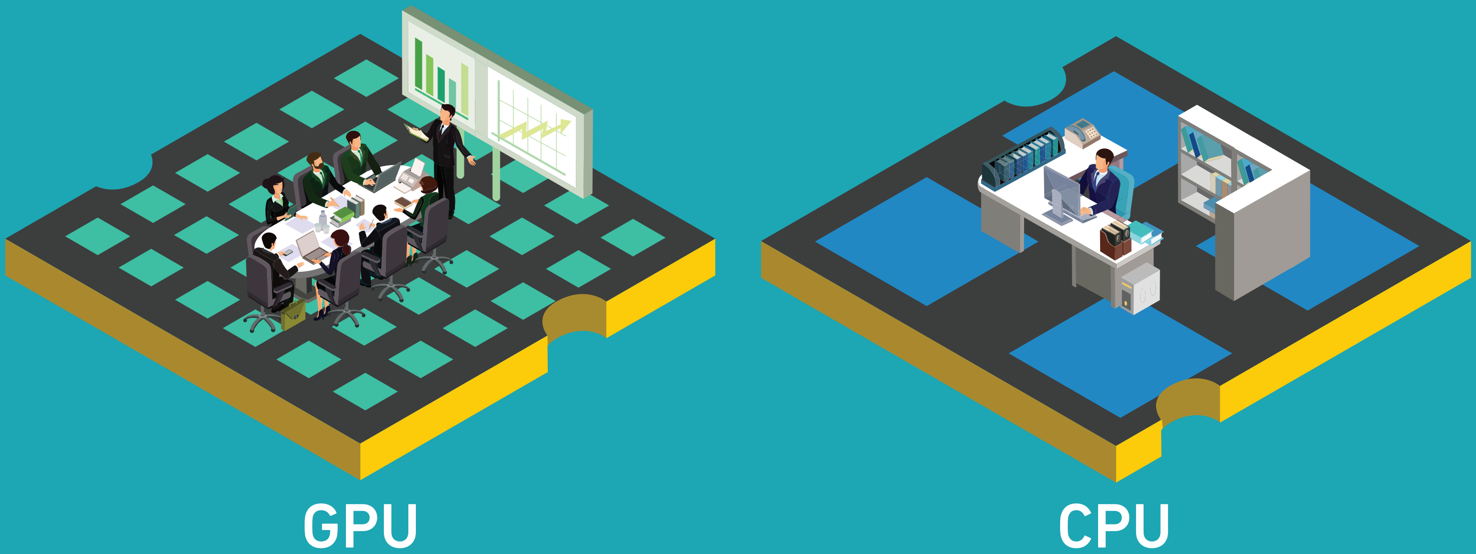
The Heart of Modern Technology

Semiconductors are the heart of every electronic device; from smartphones to computers, semiconductors have been essential in pioneering the information age. AMD, Nvidia, and Intel are the major players in the industry, with Intel creating central processing units (CPUs), Nvidia creating discrete graphics processing units (GPUs), and AMD capable of designing both. CPUs provide the logic and computational power for devices to process the workloads that applications demand. As the first-mover in the industry, Intel made the most powerful CPUs and came to dominate the market for desktops and laptops, holding a 96.5-per-cent market share and a near monopoly over data centre CPUs, as of 2016. In contrast to the flexibility of CPUs, GPUs are optimized to perform the calculations needed to render images on a screen. This can range from watching high-definition videos to playing graphically demanding video games. The market has been historically dominated by Nvidia, which controlled about 76 per cent of the market as of 2016. AMD is the only company that creates both types of chips and is consequently the sole provider of accelerated processing units (APUs)—a chip which combines a powerful CPU and GPU. This integration is superior to a separate GPU and CPU because it does not require connections between the two chips, thus, increasing the speed of data flow and improving energy efficiency.

AMD's Failure to Meet Changing Industry Trends

Within the last decade, the uses for GPUs have increased as big data and AI have gained momentum. While historically GPUs were used for image rendering, they are now at the heart of various AI applications. For example, voice recognition applications like Apple's Siri or Amazon's Alexa use GPUs to power their development. Likewise, GPUs power Facebook's facial recognition abilities. With GPU sales increasing 40 per cent from 2015 to 2016, soaring sales of these chips are the clearest sign of the newly emerging markets that require these powerful products. In this changing environment, Nvidia has been the largest beneficiary; it has invested significantly throughout the last decade to establish its GPUs as the de facto standard for all these new technologies. Even Intel and Qualcomm—who do not produce GPUs—have tried to benefit from this secular trend through various acquisitions. Unfortunately, AMD

GPU VS. CPU



has fallen behind the pack. Its current focus on desktops and laptops, gaming, and data centres is unsustainable and fails to gain market share in the multi-trillion dollar AI market.

The Current Game Plan

Desktops and laptops were historically one of the most significant end-products for GPUs and CPUs. Unfortunately, with the rise of cheaper and more portable forms of computing, this has led to a decline in unit sales of these products at a negative two per cent compound annual growth rate over the past five years. With such a grim outlook and steep competition from Intel and Nvidia who dominate the market, it seems unlikely that AMD will realize much growth. To make matters worse, AMD has had negative operating margins in this segment. Over the last three years, its average selling prices were 30 and 23 per cent lower than the competitors for CPUs and GPUs respectively, reflecting its historical position as a low-cost, economical chip-maker.

Currently, AMD is the sole provider of custom chips for the two major gaming consoles, PlayStation 4 and Xbox One. However, mobile gaming has transformed the market by putting cheap and often free games in the hands of anyone with a mobile device, reducing the demand for consoles. This shift has increased mobile gaming revenues by more than 42 per cent in 2013 alone, leaving console gaming to more serious gamers. With just 2.3 per cent anticipated growth in 2019, AMD should not expect large gains in this industry and should focus on new markets that have the chance to boost revenues significantly.

Data centres appear to be the most promising part of AMD's current strategy with the release of a new line of CPUs. For AMD to succeed here, it would be more feasible to expand the market by finding new customers, rather than trying to steal market share from Intel, which has a near monopoly over the industry. While AMD's new CPUs are on par with Intel's, the company certainly faces an uphill battle considering this segment is Intel's gold mine; data centre CPUs provide Intel with more than 58 per cent of its operating income and have the highest margins among other segments. Intel has spent the last decade building relationships, brand recognition, and investing in R&D in this space, and can easily continue to outperform AMD in any of these areas.

Changing Gears

With industry trends pushing GPUs to more exotic and innovative applications, AMD should position itself as a major supplier of these chips in these alternative markets. One of the most widely-accepted applications of AI is within the world of AVs. The opportunity cost of AMD neglecting to serve the AV market is incredibly high; with a total addressable market of more than 18 million vehicle units expected to be sold annually by 2035, the market opportunity for AMD is around $23 billion. AMD needs to venture into this nascent market in order to find new revenue sources with high-growth potential, increase its appetite for risk by venturing out of the safety of its traditional markets, and cement its leadership in a new market just as it did with gaming consoles. With the industry evolving from a competition amongst individuals towards new competitive interactions in the form of partnerships, it is imperative that AMD starts immediately in forming relationships with the leading companies in AV technology.

Two opportunities exist for the company in the world of AVs. The first lies in providing the in-car technology platforms to original equipment manufacturers, namely OEMs such as Toyota and BMW, as well as auto parts suppliers. These companies require custom hardware to power their AV technology and AMD's experience in providing semi-custom chips and APUs will offer a compelling value proposition. Second, data monetization will be a crucial differentiator among vehicle manufacturers. This requires data analytics and computational power which the OEMs and auto parts suppliers often lack as this is not one of their competencies. With AMD's new line of data centre CPUs, this will be an ideal opportunity for them to tap into this new emerging market.

Computers on Wheels

Each AV uses a collection of radar, lidar, cameras, and sensors to allow the vehicles to perceive the world around them. Interpreting the tremendous amount of data generated from these sensors requires powerful computers embedded in each AV. These machines are made up of GPUs that perform complex calculations and help the vehicles make safe decisions. Unfortunately, with no standard approach to developing AVs, there cannot be a one-size-fits-all hardware solution. For example, Google exclusively uses lidar while Tesla relies solely on cameras and radar. These different strategies imply that custom solutions are necessary for each of these approaches. Therefore, the primary parties involved in creating AVs—OEMs, auto parts suppliers, and software giants—need a personalized and uniquely tailored AV solution. For software giants like Google, creating their own in-house optimized chip is not a problem; unfortunately for OEMs and auto parts suppliers, manufacturing chips are not one of their core competencies, and thus, they must seek third-party assistance.

THE FUTURE OF CARS

Source: IBR Analysis

This gap in the market is where Nvidia has positioned themselves and has had a first-mover advantage in forming relationships. While Nvidia is the dominant leader, AMD's core competencies should enable it to have a compelling value proposition and foster partnerships with OEMs and auto parts suppliers. AMD has extensive experience in creating personalized chips for consoles and forming long-term relationships with console manufacturers like Microsoft and Sony. This dedication and commitment is something that OEMs and auto parts suppliers value highly, given how important it is for them to capitalize on AVs.

Each computer within each vehicle will require both a powerful GPU and CPU, and AMD is the only company that can provide this solution in a single chip via an APU. GPUs will be used to analyze the information from sensors and make decisions. CPUs, on the other hand, will be useful for providing in-car entertainment services and media. Entertainment services are expected to increase as telecommunication service providers look to expand their connectivity with vehicles. Internet access will lead to a proliferation of services such as Netflix or Spotify as the vehicles are transformed into entertainment platforms. These services would be accessed by installing software on the AV computer, for which a CPU is needed. In-car features will become significant differentiators for OEMs and auto parts suppliers, as vehicle owners' attention moves away from speed and performance as they are no longer the ones driving.

Stepping Outside the Vehicle and Into the Data Centre

AVs are expected to generate a substantial amount of data, not only regarding the vehicle and its environment, but also around rider statistics. Gathering and analyzing this data can further improve the overall experience for riders. In order for OEMs and auto parts manufacturers to leverage the data, they have two options: the first is to simply use cloud computing services such as Amazon Web Services or Microsoft Azure. The second is to build the infrastructure in-house to perform the big data analysis. While there are advantages and disadvantages to both options, it is clear that some companies would prefer developing the infrastructure in-house: Ford has announced plans to build a $200-million data centre to support its data-driven strategy. As data centres require both CPUs and GPUs to analyze and process the vast quantities of data, the greatest opportunity for AMD lies with companies like Ford that require both types of processors. Furthermore, this would allow the company to grow in the data centre market without competing with Intel for existing market share. In fact, for companies that do follow this strategy, AMD's value proposition increases significantly: OEMs and auto parts suppliers can use one chip manufacturer for all their computational needs inside the AV as well as in their data centres.

The Road to Profitability

For more than 250 years, the fundamental driver of economic growth has been technological innovation. With many industry professionals and academics touting AI as one of the most consequential new technologies of the modern era, the demand for AMD's products and computational power will only increase. Autonomous vehicles are a catalyst in enabling AMD to overtake its competition and ultimately lead the charge in powering the future.

LIGHTS, CAMERA, ACTION: GOPRO'S FIRST TAKE ON VIRTUAL REALITY

In the face of deteriorating demand for its line of camera products, GoPro needs to gain a more defensible market position in virtual reality broadcasting

Sherry Lu and Alina Zabolotsky

Illustration by: Amaara Dhanji

Ready, Set, GoPro

GoPro was founded in 2002, while founder Nick Woodman was on a surfing trip in Australia. Frustrated by the lack of availability for camera equipment to record extreme sports, he set out to create accessible cameras and equipment. Today, GoPro is a household name, known for creating the segment of action cameras while smartphones were disrupting the traditional camera industry. However, since its initial public offering (IPO) in 2014, GoPro has struggled to meet the expectations of investors, with its stock price trading down to $8 in mid-November 2017 from its all-time high of $98 in 2014.

GoPro's problems are multifaceted and include systemic problems like an oversaturated market and a lack of recurring revenues. Additionally, attempts to launch products in new verticals have been unsuccessful, such as the introduction of the Karma drone in September 2016. Within a month of launch, GoPro issued an indefinite recall citing safety issues as Karma Drones were reported to lose power and drop out of the sky. Recently however, GoPro has strung together some successes, experiencing strong, positive reception to the launch of the Fusion 360-degree camera and partnerships with the NHL. The public has been especially impressed by the launch of the Hero6 in late September this year, with doubled processing power that facilitated image stabilization and faster transfer speed to smartphones. This success has been made possible due to the GP1, GoPro's proprietary image processing system-on-chip (SoC) which replaced their previous processor supplied by Ambarella. Ambarella also supplied the image processors to GoPro's competition in the action camera market, which contributed to the indefensibility of GoPro's market position.

Putting Problems into Perspective

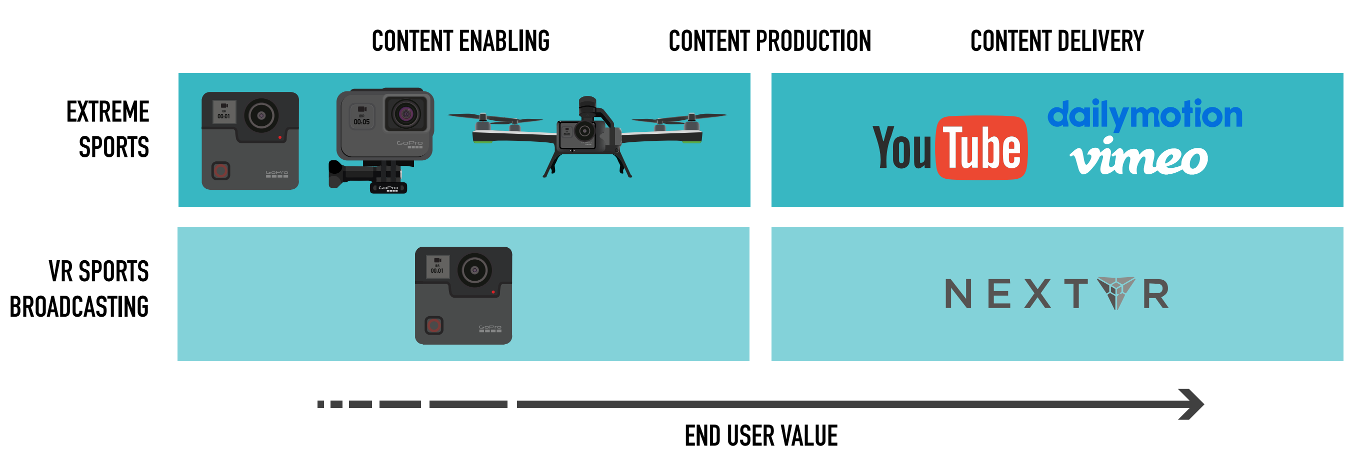
GoPro is stuck in the niche of producing extreme-sports cameras. Despite repeated attempts to diversify and become a media company, it has failed to make a significant breakthrough. The problem with being part of the extreme camera niche is twofold. First, despite projected industry growth of 15 per cent by 2021, the market is becoming increasingly competitive with highly similar, lower-priced offerings. Second, GoPro's recent product releases seem to be failed attempts at planned obsolescence vis-à-vis Apple's iPhone. While GoPro attempts to stay ahead of the pack through incremental product upgrades from model to model, few users upgrade their GoPros with successive product offerings, resulting in little recurring revenue. This means that every year, GoPro must convince millions of users to purchase its products for the first time solely to maintain revenue levels. In an attempt to encourage more repeat purchases, the company has rolled out a trade-up program.

In short, GoPro lacks a defensible market position and will struggle to find one if it remains in the stagnant extreme-sports cameras niche. While GoPro was the first-mover in what was a novel space at the time, GoPro must leverage its brand equity to capture another market and create a defensible position.

A Virtual Reality Check

Founded in 2009 as Next3D, NextVR was the first-mover in the VR broadcasting market. It was able to leverage the technology it had already developed for the 3D TV market before its collapse and use the unique compression techniques to offer fast-streaming VR broadcasts. Most virtual reality (VR) companies produce their videos by taking a series of consecutive pictures from multiple cameras and stitching them together for a panoramic effect. NextVR, on the other hand, creates a three-dimensional wireframe of the visual field captured by each of its cameras, then projects the videos taken onto this wireframe. This technique provides a competitive

GO PRO'S VALUE CHAIN



Source: IBR Analysis

advantage for NextVR as it produces a more authentic experience with less distortion and a more real-world scale. The lack of distortion and more accurate scale prevent the risk of migraines commonly caused by competitive VR offerings from Intel and FOX (Intel TrueVR and FOX Sports VR). NextVR's video is produced using compression technology originally developed for 3D content, which reduces redundancy by filming the viewing field of the left and right eye separately, allowing for smoother content transmission and less painful distortion for viewers. With 30 patents granted in the distribution, transmission, and processing of virtual reality images and videos, NextVR has a clear advantage over its competitors.

NextVR's strength also lies in its network of strong partnerships with sports organizations. Today, with the advent of Netflix, Hulu, and other non-traditional streaming services, sports remain one of the only barriers against cord-cutting for consumers. Networks such as ESPN and FOX buy the exclusive distribution rights of games from sports leagues and provide a convenient medium of consumption that keeps sports fans to such channels. Fortunately, big budget sports organizations are eager to try out new technology in an attempt to increase connectivity with fans—namely, virtual reality distribution. NextVR enjoys multi-year partnerships with the NBA, NFL, and Wimbledon, among other sports organizations. Furthermore, many networks do not see virtual reality streaming as competition, but instead as a complementary service.

Due to the large technological barriers to entry, it would be extremely difficult for GoPro to organically enter the market. If GoPro is looking to expand into content production and delivery within the virtual reality space, it must acquire a specialist in the field—and NextVR is the optimal target. Acquiring NextVR would expand GoPro's value proposition from content enabling in niche sports to content enabling, producing, and delivery across mainstream sports.

Next Steps for GoPro

GoPro has long attempted to move upstream in its value chain and become a media content generator. In an August 2016 Variety magazine feature, CEO Nick Woodman stated that GoPro was aiming to become more of a media company by introducing 32 short-form shows by the first quarter of 2017. However, by November 2016, GoPro had axed the division and its 200 employees and admitted that the company needed to revisit revenue generation opportunities. One of these revenue generation opportunities was moving into the sports broadcasting vertical. Its first foray into this vertical was the partnership it announced with the NHL in 2015 to provide a taste of the live content to fans during the All-Star Weekend. In late 2016, GoPro announced it was exploring select partnerships with the GoPro Fusion camera and Fox Sports, the Golden State Warriors and USA Today. In a different segment of the same vertical, NextVR has been successful in VR content production and delivery, becoming a leader through its proprietary software. The majority of its patents surrounds the "selective resolution reduction on images to be transmitted or used by a playback device," for example producing and distributing content.

As NextVR is upstream from GoPro in the sports broad vertical, this acquisition represents a natural next step in GoPro's expansion. By increasing its share of the value chain, the new combined entity becomes the go-to solution provider for VR content creators. GoPro would now be able to control the process through recording, editing, and ultimately broadcasting while also leveraging the existing, market-leading competencies of GoPro and NextVR.

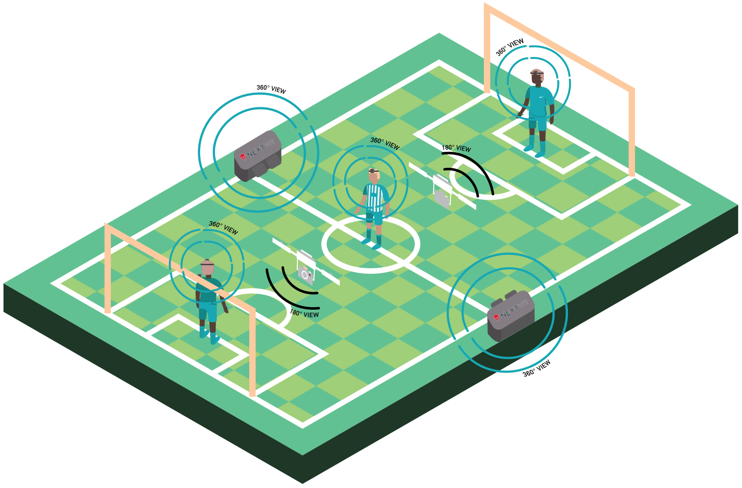
Capturing the Market in a Flash

The proposed combined entity would allow GoPro to not only achieve its long-term goal of expanding within its niche sports vertical, but also to have a market-leading presence across a larger vertical, such as mainstream sports broadcasting. NextVR has the best software in the market—customers have noted significant quality differentials over competition, including minimal headaches and enhanced realism. Furthermore, NextVR has the benefit of strong media partnerships with established content generators that have proven value. GoPro has the best hardware in

> *"The proposed combined entity would allow GoPro to not only achieve its long-term goal of expanding within its vertical, such as niche sports, but also to have a market-leading presence across a larger vertical, such as mainstream sports broadcasting."*

the market, an area in which NextVR has no expertise as the hardware used in the NextVR "rig" is third-party hardware, such as the RED Epic 6K. GoPro's Fusion VR camera has been touted by research analysts as the best in the market. GoPro also has the benefit of mainstream brand recognition that can bring NextVR into the spotlight. By combining the companies' complementary strengths, the resulting entity can provide end-to-end solutions for sports networks to distribute their content in VR.

VR SPORTS INTEGRATION



Source: IBR Analysis

Combining this with a potential first-mover advantage will allow GoPro to become the de facto standard for the Live VR Sports market.

In addition, GoPro will be able to leverage its newly found scale to continue securing major contracts with sporting organizations around the world. From this scale, network effects will serve as a barrier to entry for competition. Scaling revenues over a largely fixed cost base will make margins in this business progressively larger. The longer-term nature of these contracts, in conjunction with accumulating broadcasting deals, will contribute an increasingly meaningful amount of recurring revenues. These stable cash flows can be used by GoPro to re-invest in CapEx, R&D and M&A, crucial activities in a rapidly evolving industry. The strong pool of intellectual property and knowledge across both companies, where GoPro and NextVR own 320 and 30 patents respectively, will drive joint R&D ventures, while simultaneously securing their dominance. In sum, accumulating IP, scale, and contracts will reposition GoPro in a highly defensible market position.

A Picture Perfect Acquisition

GoPro has historically demonstrated a willingness to supplement its lack of capabilities in certain areas with acquisitions, a strategy which has been met with success. Examples include their 2015 acquisition of Kolor, a VR image-stitching software, and the $105-million acquisitions of Stupelfix and Vemory, both video editing software.

Despite this, NextVR would represent GoPro's largest acquisition to date; NextVR last raised capital at a valuation of $800 million in early 2016. Industry estimates for the market size of VR broadcasting range from approximately $400 million in 2018 for software only and roughly $1.5 billion in 2018 for software and hardware. Assuming a 25 per cent market share on the $400 million base case would be conservative, as NextVR is currently the standout competitor of four platforms including Fox Sports, LiveLike, Intel and TrueVR. The $400 million figure assumes growth to more than $4.1 billion in 2025, which is approximately 39 per cent in seven years. Based on this growth, a 12 times valuation on NextVR's estimated 2018 revenues is reasonable and implies a valuation of $1.2 billion. This represents a 50 per cent increase from the last valuation and is relatively in line with GoPro's total enterprise value of approximately $1.1 billion, which suggests that this is a merger of equals. Under these assumptions, the pro-forma revenues would be almost $1 billion higher than GoPro alone by 2020.

Seeing the Future Through a New Lens

Once the VR Sports market reaches critical mass, GoPro-NextVR can monetize beyond licensing fees. Application integrations can provide a host of ancillary revenues. For example, an Amazon button integration can allow viewers to view and purchase in-game merchandise. With a StubHub integration, users can select seats and purchase tickets for the next game. An UberEats integration would let viewers order wings while watching the game. In between quarters, Sony can play a trailer for its next Blockbuster VR game, while Expedia can showcase travel destinations around the world. In this future, GoPro-NextVR's live sports content will be the tentpole supporting these ancillary revenue streams.

After merging with NextVR, GoPro will successfully break out of its current market and reposition itself as an end-to-end VR sports company—this combination will blend both companies' unique capabilities, allowing them to dominate a quickly growing nascent market and ultimately resulting in a defensible market position. Once this position has been established, there is a world of possibilities for GoPro and NextVR to monetize and deliver a unique experience to customers.

Picture a customer sitting in her living room watching a soccer game on her headset. With a flick of her hand, she moves from the side-lines to the perspective of a Fusion camera on the referee. With another movement, she's flying above the pitch in a Karma drone, watching the arena from a bird's-eye view. She points at the ball, and an overlaid product listing shows up on Amazon; she flicks it into her shopping cart. After the game, she points at an empty seat, and purchases a ticket on StubHub for the next game. With a combined GoPro and NextVR, this vision is possible.

FITBIT: TAKING A STEP IN THE RIGHT DIRECTION

With cost-cutting no longer an option to reverse falling profits, Fitbit needs to enter gyms to increase its revenue streams and connect with a more engaged user base

Bryn Davis and Taylor Goodfield

With its humble beginnings as a wooden box prototype with a circuit board, Fitbit has grown to become a $1.5-billion public company that is synonymous with the fitness tracker industry. Despite developing one of the first commercially successful fitness trackers, Fitbit is struggling to retain its market share in the face of increasing competition and changing consumer needs. Smartwatch manufacturers such as Apple and Xiaomi have entered the space with the introduction of their own fitness bands and fitness-focused applications. The consolidation of the two wearable technology segments is making it increasingly difficult for Fitbit to maintain its differentiation in an increasingly competitive industry.

The Wearable Industry Kicks into High Gear

Having grown from $76.4 million to $2.2 billion in sales from 2012 to 2016, much of Fitbit's rapid gains can be accredited to overall industry growth. Fitbit was not

Illustration by: Alvin Tse

alone in understanding the increasing importance of data personalization. Wearable technology, including electronic accessories and garments, took the tech industry by storm in the past four years and grew at an annual global rate of 40.6 per cent between 2012 and 2016. Major technology companies, such as Xiaomi and Apple, were keen to cash in on this fast-growing market with the introduction of Xiaomi's Mi Band and Apple Watch's fitness applications. Fitbit had been able to maintain its market dominance in the past due to strong brand recognition and a wide range of products that covered a variety of price points and users. However, that dominance has been deteriorating, with Fitbit's market share falling to 12.9 per cent in the second quarter of 2017 from 24.1 per cent a year prior. Over the same period, Xiaomi and Apple became the leaders of the market as both saw increases in their market share to 13.4 per cent from 13.0 percent and to 13.0 per cent from 9.6 per cent, respectively. The falling market share contributed to a 22-per-cent decrease in revenues for the company in the third quarter of 2017 to $393 million from $504 million from a year prior. Reflecting the deteriorating investor confidence, Fitbit's share price has fallen from 53.1 per cent over the same period. The company recently laid off six per cent of its workforce to reduce costs. However, this measure will be insufficient going forward as Fitbit faces structural concerns regarding its customer base.

Where Have All These Fitbit-ers Gone?

FITBIT SHARE PRICE PERFORMANCE

Source: Yahoo Finance

Fitbit's decline is driven by the increasing popularity of both Xiaomi's and Apple's fitness devices combined with a maturing industry, where overall wearables sales are expected to grow only 16.7 per cent in 2017. Both brands have developed value propositions that target opposite ends of the spectrum. Xiaomi targets the price-conscious buyer with the Mi Band priced as low as $15 in the U.S, while Apple caters to the luxury buyer with the Apple Watch Series 3 priced at $329. Fitbit sits in between these two with its base model, the Flex 2, priced at $60. As a result, Fitbit's decline in the industry stems from its mass market strategy. Fitbit's focus on the average consumer means that it is at risk of being squeezed by competitors on both sides. It is unable to price competitively against low-cost competitors and is also unable to add the technology and design necessary to differentiate itself enough in the luxury segment. In fact, Fitbit's products appeal to only a few of the attributes that each customer segment values. In this highly competitive consumer market, switching costs are low and two distinct groups of buyers are either looking for value, or are willing to pay higher prices for premium features and a recognized brand. Without altering its strategy, Fitbit will struggle with its current positioning.

In addition, Fitbit's innovation has been small and incremental in the context of the industry. Its focus has been updating how consumers wear their device and increasing the metrics the device tracks. However, relying on incremental innovation is not sustainable as most permutations have already been done, are easily imitated, or do not add additional value. With a business model that depends on one-time purchases of each model, Fitbit's ability to sustain sales depends on the loyalty of its customer base. In fiscal year 2016, returning customers represented 26 per cent of new device activations, largely driven by the release of new products. With 74 per cent of activations stemming from new customers, representing 15.7 million activations, it is important for Fitbit to convert new customers into loyalists to sustain revenues with each model upgrade. However, active ownership as a percentage of total registered users has fallen to 46 per cent in 2016 from 73 per cent in 2013. This drop in active ownership is concerning, because if current users are disengaged, they will not make new purchases of either model upgrades or complementary products. Across all fitness trackers, there is an estimated 30-per-cent abandonment rate as users become bored with their devices or find limited opportunities to use them. With a maturing industry, Fitbit may find it increasingly difficult to continue acquiring new customers. As a result, it will need to focus more on loyal customers. Repeat sales are a function of loyalty and active engagement. Without either, Fitbit will face difficulty in sustaining revenues.

Trying to Keep Pace

To expand its portfolio to capture the premium segment of the customer base, Fitbit released Ionic, a luxury smartwatch priced at $300 in 2016. However, competing with Apple for the premium user is not sustainable. Apple is 600 times larger in market capitalization. Without the ability to outcompete Apple in terms of resources, human capital, or brand equity, Ionic will not be the saving grace for Fitbit. On a positive note, Fitbit has realized it needs to cater to other segments as well to remain successful. In 2015, Fitbit tried to pivot to the "fitness user" by releasing the Charge HR, its first product to measure calories and heart rate. Since then, Fitbit has launched headphones and an improved scale. Overall, this is a shift towards a more defensible segment of the market.

The fitness user is primarily at the gym and Fitbit needs to reach these users, as they represent a market size of more than 25 million people. The U.S. gym, health, and fitness club industry is fragmented with the market leader, 24 Hour Fitness, owning only 4.8 per cent of the overall market. It is primarily made up of traditional gyms that have open equipment and group classes as well as boutique gyms that offer group exercise specialized in only one type of activity. One of the new ways to engage members in these group classes is to use their physiological data to gamify the workout experience. For example, MYZONE produces a heart rate monitor and operates in the fitness segment. The device tracks the users' heartrate and gives them "Effort Points"; more points are given for higher heart rates reached. This innovation would improve the proportion of active to registered users and drive sustainable growth through repeat and extension product purchases.

Fitbit already has prior experience partnering with health clubs. In January 2016, Fitbit announced a partnership with Crunch Gym to launch a group fitness class powered by Fitbit. With only 225 locations nationwide, Crunch Gym is too small for Fitbit to organically grow its 'fitness user' base. However, the experience acted as a pilot project to demonstrate the advantages of a Fitbit-integrated gym. Other gyms have also begun partnering with third-party developers or creating their own wearable devices. MYZONE, which is partnered with gyms such as LA Fitness, Snap Fitness, and GoodLife, is currently the largest third-party fitness wearable being used in gyms to help members track their fitness.

Getting in the Zone

MYZONE is a leading producer of wearable technology for health clubs. Specifically, it focuses on selling a suite of heart rate monitoring products including an award-winning monitoring strap, watch, and technology-enabled apparel primarily to health clubs, through health clubs and direct-

FITNESS BAND USER SEGMENTATION

	EVERYDAY USER	FITNESS USER	HIGH PERFORMANCE USER
			
PRIMARY USE	Daily Activities	In the gym; during workouts	Training for Competitions
DERIVES VALUE FROM	Easy access to various tracking measures to monitor results and make easy improvements (i.e. steps)	Monitoring progress versus past performance and others to motivate and improve including gamification of fitness levels (i.e. points)	Accuracy and technical measurements to fine-tune training and improve timing in competitive sports (i.e. endurance running)
BEST SERVICED BY	Xiaomi (low-end) Apple (high-end) Fitbit (currently)	Fitbit (opportunity) MYZONE OTBeat (Orangetheory Fitness) Moov HR	Garmin Apps (Strava, MapMyRun, NikePlus)

Source: IBR Analysis

to-consumer. Through its partnerships with LA Fitness, Snap Fitness, and GoodLife, MYZONE can reach customers across more than 2,400 clubs in the U.S., Canada, and in select international markets. Including other independent gyms, MYZONE is exposed to approximately 3,500 clubs. With one of the most accurate trackers on the market, the patent-protected hardware and system allows users to track their workouts with 99.4 per cent accuracy. In addition to the hardware, MYZONE's mobile application serves to gamify the workout experience and to track fitness data. However, the software lacks the sophistication seen in the likes of Fitbit in terms of functionality. While MYZONE only has patents on its hardware, Fitbit has an extensive patent library in both software and hardware, ranging from music selection based on exercise detection to a method of providing biofeedback during meditation.

Fitbit currently has an application called Fitbit Coach which is priced at $40 for an annual subscription, and allows customers to workout virtually with their adaptive workout videos. In addition, Fitbit's recent acquisition of the Pebble smartwatch's software earlier in 2017 provides a suite of tools to build up its app ecosystem. Although it was only established recently, the Fitbit store has already partnered with the likes of Strava, Starbucks, Pandora, and numerous others, thanks to its commitment to an open application programming interface (API) that makes it easier for third-party development of applications. Prior to being acquired by Fitbit, Pebble boasted one of the largest app ecosystems available for a smartwatch, allowing for a high level of customization. On the other hand, MYZONE's core competency is in its hardware, which is one of its most valuable assets along with its relationships with gyms. If Fitbit is able to combine its software and brand with superior hardware technology appropriate for fitness users, it would then be feasible for the company to redefine its value proposition.

Getting Fitbit in Better Shape

While Fitbit could enter the fitness market through in-house development, there are barriers to entry in establishing partnerships. If Fitbit was to acquire MYZONE, Fitbit would be able to integrate into two of the four largest American gyms and the largest Canadian gym, while providing additional value to both the gym and its members. This is not including the independent chains in which Fitbit is already present.

Fitbit's sophisticated back-end technology brings additional value to gyms. Fitbit collects data about every user who interacts with its devices. Through an acquisition of MYZONE, Fitbit would have valuable information about the gyms' customers and fitness preferences. This would incentivize gyms to work with Fitbit as they would be able to buy the consolidated fitness information of more than 300,000 MYZONE users from Fitbit to better cater their services to their members. Fitbit could also use this information in its research and development to focus new innovations directed at the lucrative 'fitness user' segment. To further add value, an acquisition means Fitbit would acquire MYZONE's intellectual property, which includes its chest-based trackers and wearable clothing technology.

Partnerships with gyms present four potential revenue streams that would lead to increased revenues over time. The first stream is from new customer purchases of Fitbit hardware and hardware acquired from MYZONE. The second comes from fitness group classes using the newly acquired software and Fitbit's brand name. With the third stream, Fitbit can also develop a custom page on its app specifically for partner gym workouts, thus driving subscription purchases and an additional stream of stable revenue. The fourth revenue stream is comprised of the costs for the technology and data-sharing charged to the club. This revenue stream involves sharing the data collected from users with the club without identifying the user. For the club, useful utilization metrics would help determine which areas of the club are worth investing more into to drive member satisfaction and engagement.

Fitbit Gym – Coming to a Location Near You!

This acquisition will give Fitbit a stronger position in the wearable market with more engaged users and a focus on both recurring and one-time revenue streams. By capturing fitness users at the gym, Fitbit will be able to tap into both the active and passive daily movements of customers to give them a more holistic view of their fitness and stay in control of the wearable market. Reaching the fitness user is just the beginning to applying trackers to new markets. After all, a journey of a thousand miles begins with a single step.

SHOPIFY: SIMPLIFYING THE FUTURE OF RETAIL

Shopify has the opportunity to revolutionize its own revenue streams, as well as the retail industry at large

Alex Du and Yizhe Xia

Illustration by: Joey Yu and Rosie Fan

Shopify is a leading cloud-based, multi-channel platform that aims to enable and improve e-commerce for merchants globally. At its core, Shopify allows users to bypass technical, operational, and financial barriers by providing clients, entrepreneurs, small to medium-sized businesses, and large enterprises with an easy and intuitive way to establish an online goods store. The company also offers a variety of other services that range from processing payments to facilitating inventory. This value proposition has resonated strongly with customers, as demonstrated by Shopify's rapid 90-per-cent revenue growth. However, the company continues to incur annual net losses of $35 million in 2016 and $37 million in the first nine months of 2017.

As a company at the forefront of e-commerce, Shopify has the opportunity to revolutionize the retail industry. By moving toward a proposed Simplex Retailing concept—where retailers become curators of showrooms and suppliers ship directly to end consumers—Shopify will be able to distribute associated financial rewards among itself and its merchants.

Digitizing the Shopping Experience

Shopify's current business model is supported by two main revenue streams: subscription solutions and merchant solutions. Subscription solution revenues are primarily comprised of monthly fees charged for Shopify's core offering: an online storefront and an easy-to-use digital store management platform. Sales of features such as themes, apps, and domain name registrations also contribute revenues to this segment. Subscription solutions have historically allowed the company to enjoy high gross margins of approximately 80 per cent. In 2013, Shopify also began to establish additional revenue streams with an expanded merchant solutions product suite, including Shopify Payments.

Merchant solutions are a supplementary part of the business that provide additional value to the core experience of Shopify's merchants. Potential add-ons include transaction fees, shipping and financing services, and point-of-sale hardware. The company's payment gateway, Shopify Payments, is responsible for a significant portion of this segment's revenues and costs. As opposed to the fixed nature of Shopify's subscription solutions, revenues and costs for merchant solutions are variable: the success of merchant solutions services is directly correlated with the success of Shopify's merchants themselves. This creates an incentive for Shopify to maximize merchant success and fully reap the benefits of its merchant solutions segment.

Despite the supplementary nature of merchant solutions offerings, this segment has recently constituted a greater portion of Shopify's total revenues compared to subscription solutions, generating 52 per cent and 48 per cent of revenues, respectively. Furthermore, the merchant solutions portion of the business is the faster growing of the two, growing by 115 per cent in 2015 compared to 68 per cent for subscription solutions. However, despite this positive outlook, Shopify's merchant solutions segment lags behind its subscription solutions counterpart in terms

SIMPLEX CUSTOMER PROCESS

of profit. This is due to the high costs associated with providing merchant solutions, which constitute 64 per cent of revenues, compared to those of subscription solutions, where costs constitute only 19 per cent of revenues.

These lower margins are mainly driven by the need for partnerships with third-party organizations, such as Stripe, which provide ancillary services that Shopify does not offer. These partners take a cut of Shopify's profits; for example, payment processing through Shopify Payments requires credit card fees. Ultimately, Shopify must focus on optimizing merchant solutions to better take advantage of the segment's high growth.

Shopify can seek two primary methods to achieve future growth: obtaining customers in new markets and driving more revenue per customer. Currently, the company's strategy is focused on growing its merchant base. Fortunately for Shopify, e-commerce is still projected to grow more than eight per cent in the U.S. until 2020, largely due to a major shift from traditional to online retail. By taking advantage of the Simplex Retailing method, Shopify can further capitalize on both growth drivers.

Catering to the New Consumer

In a post-Internet society, consumers have access to an immense amount of information on the availability, prices, and quality of products. Increased product diversity and information transparency have resulted in more selective and price-sensitive consumers. Customers are often willing to give up instant gratification and in-person service for a chance to receive lower prices, with more than 75 per cent of consumers willing to wait two or more days for items to be shipped. Online retailers generally have an advantage over brick-and-mortar stores in this regard, as they have greatly reduced overhead costs, particularly in rent and utilities. However, 85 per cent of consumers still prefer being able to physically see and handle a product prior to purchase, indicating that brick-and-mortar stores still provide significant value in the purchasing process. Unfortunately, physical retailers often fail to capture this value due to the phenomenon of "showrooming"—browsing at a brick-and-mortar retailer, and subsequently shopping for the best price online. Access to information is highly valued by consumers in their purchasing journey, and even with access to sales associates and physical items for inspection, 82 per cent of consumers still consult their phones for additional information. As illustrated by the recent bankruptcies of Sears Canada and Toys "R" Us, physical retailers must adopt new strategies to adapt to increasingly dynamic consumer purchasing habits. Shopify, as a platform provider that focuses on growing small and medium businesses, is strongly equipped to aid retailers in this process.

Simplex Retailing: A New Way to Buy and Sell

Consumers' preferences toward showrooming allow brick-and-mortar retailers to embrace drop shipping, a business model in which retailers have suppliers directly ship products from their warehouses to the end consumer. The Simplex Retailing model allows retailers to sell products without having to carry inventory, eliminating the need for stockrooms and creating significant cost savings in rent, storage, and shipping expenses. This model is most impactful for small and medium-sized businesses with relatively linear supply chains and products that customers feel the need to see before purchase.

Drop shipping essentially shifts the retailer's value generation from product provision to product curation. Instead of merely providing products, retailers should select particular products to show in a meaningful way, offering a distinct value proposition. Shopify has already begun to facilitate this paradigm shift through its 2017 acquisition of Oberlo, a dedicated drop shipping platform.

Retail stores that embrace the Simplex Retailing method will have the opportunity to radically redefine their customer experience. Take a small designer phone case store which has adopted the Shopify platform and drop-shipping methodology for example. When customers walk into the store, they enter a showroom adorned with designer phone cases on display, with each product sporting an individual "Shopcode"—Shopify's QR code format—that directly takes the user to the product page on the retailer's Shopify store. Additional product information, reviews, and specifications can be displayed on the page, potentially eliminating the need for sales associates. In this model, customers are able to both physically examine products, as well as review detailed information online. If customers decide to purchase a phone case, they can do so instantly on their mobile device. This process is not only convenient, but potentially contributes to impulse purchases as well, which represent almost 40 per cent of all spending on e-commerce. The phone case is then drop shipped directly to the customer's home a few days later.

The Simplex Retailing model should serve four main purposes to provide value to its merchants:

1. Host the retailer's website and database so its products can be retrieved when prompted by a beacon or code.
2. Store user payment and shipping information to provide users with the convenience of one-tap purchasing.
3. Act as a central storage system for each customer's purchase receipts and browsing history; and,

4. Operate as the link between retailers and its distributors, and automate dispatch of the products.

Shopify currently supports more than 500,000 merchants on its platform; as a market leader in the e-commerce space, Shopify is in a prime position to implement this unique retailing model.

Shopify's existing business already fulfills the first and second purposes, leaving only the third and fourth to be implemented. Since Shopify already stores user information across its websites, it will be able to use its existing technology to eventually create universal Shopify accounts for these users. This will allow it to act as a central hub for customers' browsing and purchasing history. Ultimately, Shopify should look to serve as the connection between all levels of the Simplex Retailing model.

Simplifying the Backend

When consumers purchase a product, the transaction is processed through Shopify's proprietary payment gateway. After a successful payment, the order is sent to the distributor's Shopify account; the account could connect with existing logistics software via an application programming interface (API), although Shopify could eventually move toward a fully vertically integrated solution by developing its own logistics software. Simultaneously, Shopify will automatically create a shipping label and tracking number based on the distributor's API. This data is automatically sent to the consumer, as well as the warehouse for packaging. Shopify then forwards the payment to the warehouse and distributor.

In every step of this process, Shopify should charge a small percentage fee to use its network. Shopify posted a gross merchandise volume of $15.4 billion in 2016, which has historically doubled every year. If it charges a platform transaction fee of even two per cent—and assuming 25 per cent of merchants making up Shopify's gross merchandise value use the platform—the company could receive $77 million in additional revenue, equivalent to roughly 20 per cent of total 2016 revenue. This model would also offer significant savings for small-to-medium businesses, given that existing marketplaces such as Amazon and eBay charge a rate of five to 15 per cent of net sales.

Retailers also benefit from significant operational savings, as they require fewer staff members while reducing inventory and storage space. For example, suppose a new business owner wants to assess the profit potential of starting a shop. In a traditional retail model, the entrepreneur would need to first rent a location, ideally in a trendy area. In 2017, a 500-square-foot retail location in downtown Toronto could rent for approximately $30,000 per year. Assuming in-store inventory of around $20,000, $50,000 for two minimum wage in-store representatives, and startup costs including leasehold improvements, an entrepreneur would require roughly $150,000 in the first year.

Under a Simplex Retailing model, the savings are immediately evident. With smaller inventories, less space is required for storage; reducing even 100 square feet of rented space translates into approximately $6,000 in savings. The entrepreneur is also able to avoid most of the $20,000 upfront investment in inventory, assuming around 10 per cent of inventory is maintained for displays. The business owner also benefits from time savings as a result of procuring inventory from a business-to-business marketplace, as opposed to forming and maintaining complex supply chain relationships. Also, the digital platform could reduce back-end labour by one minimum wage employee, saving an additional $25,000. In the Simplex Retailing model, assuming the same miscellaneous expenses, small-to-medium business owners can achieve total savings averaging almost $50,000 annually.

The Simplex Retailing model also attracts new merchants, who might otherwise have been deterred from starting a business due to inventory management costs and other logistical challenges.

A New Era of Commerce

In light of this new retail landscape, Shopify has an opportunity to revolutionize both its own business model as well as the retail industry. Not only does Shopify gain an additional stream of high-margin revenue through Simplex Retailing solutions, it also encourages a new customer base to engage in its existing subscription and merchant solutions segments. Using a Simplex Retailing model, long-term success can be found in reducing costs for merchants, as well as incenting end consumers and merchants alike to use Shopify's services. Ultimately, this strategy will further Shopify's mission of making commerce better for everyone.

TEVA: DON'T BE SO GENERIC

In the face of squeezed margins in the generics industry, Teva must diversify revenues into the nascent biosimilar space to remain profitable.

Sooruj Ghangass and Gordon Sun

Teva's Troubles

This past August, strong industry headwinds forced Teva Pharmaceuticals, an Israeli-based pharmaceutical company that focuses primarily on manufacturing generic drugs, to report a $6.1-billion writedown on its U.S. generics business. The poor financial performance resulted in a sell-off of the stock that wiped out more than 40 per cent of Teva's market capitalization within a week. The industry trends that forced Teva to write down the value of its generics business can be largely attributed to both an increase in buyer power due to demand-side consolidation as well as heightened competition from increasingly sophisticated foreign manufacturers. To maintain its market position, Teva will need to shift its focus towards a more defensible segment of the market.

Teva's focus is currently on manufacturing generic drugs, representing 55 per cent of revenues in fiscal year 2016. These are cheaper, but chemically-equivalent alternatives to brand name drugs. A common example is ibuprofen and its branded version of Advil. Over the past 50 years, U.S. national health-care expenditure has tripled as a percentage of gross domestic product (GDP). Thus, at an average of 70 per cent of the price of its branded

Illustration by: Alvin Tse

counterpart, generic drugs offer a way for public payers such as the government, and private payers such as health insurance companies, to manage the increasing cost of providing care for an aging population. Filling one out of every six generic prescriptions in the U.S., Teva develops drugs that millions of people use daily to treat diseases such as asthma, multiple sclerosis, and cancer.

Demand Side: Consolidation of Buyer Power

To combat the increasing cost of providing health coverage, health-care payers ranging from government organizations, such as the National Health Service and the Centers for Medicare and Medicaid Services, to private insurance companies, such as Aetna and Anthem, have focused on reducing the exorbitant prices of pharmaceuticals.

In addition to stating strong preferences for generic drug prescriptions over their branded versions, some payers have begun implementing tendering systems to further reduce costs due to the commoditization of these drugs once they are off-patent. When a tender is issued for a generic drug, pharmaceutical manufacturing companies, such as Teva, bid to own a temporary monopoly in supplying the given market. These tendering systems that have been implemented across the EU have resulted in extreme price competition among manufacturers, with prices of generic drugs decreasing up to 90 per cent post-tender in some instances. The empirical success of this system in the EU has acted as a model for other governments, including Quebec's provincial government, which are seeing tenders as a method of controlling health-care spending.

In addition to government tendering systems, recent consolidation downstream in the value chain among retail pharmacies has increased buyers' purchasing power. In 2016, McKesson, a pharmaceutical distributor, bought out Rexall for C$2.9 billion. More recently, Metro announced a deal to acquire Jean-Coutu for C$4.5 billion and Walgreens finalized a $4.4-billion deal to buy the majority of Rite Aid stores. This pattern of consolidation has ultimately reduced the negotiating leverage of generic drug manufacturers.

Supply Side: Increased Competition

The exponential increase in the supply of generic drugs by international drug makers is another aggravating factor exerting downward pressure on prices. In particular, Indian firms are aggressively expanding their U.S. operations in pursuit of international growth opportunities. India's top 10 drug makers grew their share of the U.S. generics market to 24 per cent in 2017 from 14 per cent in 2010. This supply phenomenon can be traced back to two factors: the acquisition of U.S. assets by Indian firms and loosened U.S. regulation in an attempt to stimulate market competition.

Historically, Indian pharmaceutical companies have been unable to penetrate the U.S. market due to stringent FDA regulations and product quality issues. To navigate this, Indian firms have invested heavily in acquiring their U.S. counterparts, spending $1.5 billion in 2015 alone. Purchasing the underlying U.S. company assets gave Indian firms compliant production facilities and cleared them for manufacturing drugs that require domestic production such as opioids. Coupled with India's low labor cost environment, these foreign manufacturers have aggressively expanded into the American market.

Furthermore, the FDA has expedited approval processes to increase competition and drive down generic prices. By the end of its fiscal year 2017, the FDA approved 763 new generics, more than the agency has ever approved in a single year. As a result, Indian firms have taken advantage of this by securing 40 per cent of all FDA generic approvals during the first half of 2017.

Current Strategies are Failing

Major generic pharmaceutical companies have combatted declining margins by consolidating to achieve economies of scale. However, while record merger and acquisition activity in the pharmaceutical industry occurred in 2016, these deals have not held accretive value. In fact, when analyzing the top five largest generic pharmaceutical mergers from 2008 to 2017, the average stock price change 12 months after the acquisition completion was an abysmal -16.9 per cent. This is contrasted by a small 4.5-per-cent drop in stock prices for the top five non-pharmaceutical acquisitions of 2016.

Exemplary to this is Teva's $40.5-billion acquisition of Actavis, the generic subsidiary of Allergan, in August 2016. Less than a year later, Teva wrote down the value of its U.S. generics division, which includes Actavis, by $6.1 billion signalling to the market that it had overpaid for the company. In summary, industry consolidation for generic drugmakers is not a viable long-term strategy if the entire industry is falling off a cliff due to pricing pressures. As such, Teva must formulate a strategy that focuses less on traditional generics revenue streams and instead utilizes its core competencies in search of the next big growth opportunity.

Biosimilars vs. Generics

A compelling opportunity for Teva to hedge the risk of further pricing pressure on generic drugs is expanding into the market for biosimilar drugs. Both generic drugs and biosimilars are effectively off-brand versions of their

BIOSIMILARS VS. GENERICS

BIOSIMILARS	GENERICS
Similar to, and not identical to reference product	Bioequivalent and identical to reference product
20-30% discount over reference product	80-90% discount over reference product
$100 - $200M in development costs	$1 - $5M in development costs
8 - 10 year development timeline	3 - 5 year development timeline
No interchangeability or automatic substitution	Interchangeable with reference product

Source: IBR Analysis

branded, reference molecule. However, the difference in classification lies in the structure and production method of the drug.

Generic drugs are relatively simple molecules, such as ibuprofen or aspirin, which are the exact bioequivalent of their branded small-molecule counterparts. In contrast, biologics are complex molecules that are manufactured in living cells through genetic engineering. The result is a highly complex and sensitive product, making it impossible for biosimilars to completely replicate its branded "biologic" counterpart. Instead, biosimilars are only required to be highly similar and possess no clinically meaningful difference from the branded biologic. Consequently, the regulatory approval process for biosimilars is much more exhaustive than it is for generic drugs, which can be easily proven to be chemically equivalent to their branded counterparts.

These biologics and their biosimilars have found widespread use in treating chronic conditions such as rheumatoid arthritis. Although biologics often target overlapping therapeutic areas as existing small-molecule drugs, biologics have the advantage of targeting the disease more specifically, leading to drugs that are oftentimes more efficacious than the small-molecule alternatives. Biologics are often some of the most profitable drugs due to their high price, reflecting their complex and expensive development processes. Unlike generics which are steeply discounted to their branded counterparts, the complexity of manufacturing biosimilars results in larger and more stable margins for this class of off-brand drugs.

The biologics market was $210 billion in 2016, representing 20 per cent of the total pharmaceutical market with $67-billion worth of biological products coming off patent by 2020. By 2025, the biologics market is anticipated to grow to $400 billion, driven by the development of biologics that target previously untreatable diseases as well as biologics that supplant current treatment options by targeting diseases more efficiently. With such rapid growth, biologics offer an opportunity for Teva to capitalize on its competencies of producing off-brand versions of the drugs, while preventing the erosion of its margins by the unfavourable outlook of generic manufacturing.

Strategy: Biosimilars, Biosimilars, Biosimilars

Despite the clear growth opportunities with biosimilars, they represented less than 1.8 per cent of Teva's annual revenue in fiscal year 2016. Specifically, Teva's current pipeline of 25 drugs only has two drugs that are biosimilars: CT-P103 (Rituxan) and CT-P63 (Herceptin). Although Teva is one of the early entrants in the biosimilar space, the company must answer two key questions to successfully capture a significant foothold in the global biosimilars gold mine. In particular, where it should operate and how to streamline promotions strategies to gain prescriber/physician and patient acceptance.

Market/Region: Focus on Developed Countries (U.S. First, Japan Second, EU Last)

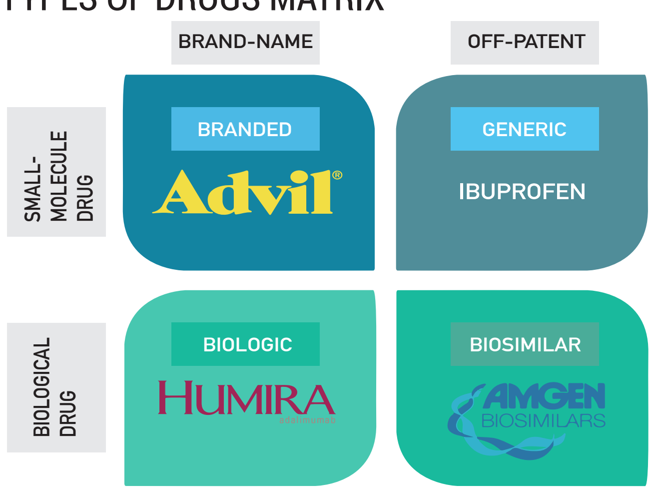
Understanding which regions for biosimilar manufacturers to enter plays an integral role in capturing the largest revenue opportunities, and also helps firms navigate through regulatory hurdles. Six key areas to consider when selecting a region to operate in are: current access to affordable biologics, regulatory environment, payer advocacy in favour of biosimilars, prescriber acceptance, patient acceptance, and biosimilar presence. Upon analyzing countries across these dimensions, developed countries (U.S., Japan, EU) reign superior in terms of a favourable regulatory environment and incumbent biosimilar presence. In fact, the first biosimilar framework was created in the E.U. in 2003 by the European Medicine Agency. Existing biosimilar presence is especially important as it navigates through any regulatory hurdles and normalizes biosimilar consumption for increased prescriber and patient acceptance. As such, Teva should focus its biosimilars growth strategy on developed countries starting locally in the U.S. where it already has large generic presence; expanding long term into Japan, and then the EU.

Japan is a leading candidate for Teva's biosimilar international expansion, as generic drug penetration is relatively lower compared to other developed countries. This is predominantly driven by two forces: the consumer perception that generic drugs are inferior to their branded reference products and slower generic review times in the drug approval process. Fortunately, Japan is anticipating a 60-per-cent generic drug penetration rate in fiscal year 2017. This speaks to Japan's motivation to drive down drug prices while maintaining the product efficacy of biologics, the cornerstone of the value proposition behind biosimilars.

Promotions/Marketing: Win Physicians & Patients through Interchangeable Status and Grassroots Marketing

Biosimilars require specific physician and patient marketing to gain adoption over branded biologics. In contrast, generic drugs are completely interchangeable with their branded counterparts, indicating that patients are free to request a generic version of their branded prescription at the pharmacy if they wish to seek a cheaper treatment. However, since biosimilars have slight variances from their branded counterparts, the patient is unable to interchange a branded prescription at the pharmacy for the cheaper biosimilar. Consequently, biosimilar manufacturers must focus on developing a marketing plan to gain adoption from both physicians and patients alike.

TYPES OF DRUGS MATRIX



Source: IBR Analysis

One potential avenue for Teva to investigate is the opportunity to put its biosimilars through an optional regulatory process that is more stringent to gain this status of interchangeability. If approved, Teva would be able to make a strong financial case to consumers and payers due to the astronomical cost of these complex biological drugs.

Drug manufacturers find it economically feasible to sell biosimilars at discounts upwards of 30 per cent of the corresponding biologic's price, making it a much more attractive alternative. As a case study, an examination of the cost savings of the Herceptin biosimilar that Teva is currently developing points to the high costs of branded biologics. At an annual cost of $54,000 a year for the branded breast cancer drug, many patients find the financial burden of the treatment to be a barrier. Even for patients with health insurance plans, the private payers that ultimately pay for the treatment would prefer biosimilars that can produce similar clinical outcomes for a greatly reduced price.

In addition to gaining interchangeable status, Teva must also gain patient acceptance and awareness. Although most of the developed countries have strict rules against direct-to-consumer pharmaceutical marketing, there are numerous "patient advocacy groups" that can accelerate patient awareness. Some examples of these groups include *Patients for Biologics for Safety & Access* based in the U.S. and the Global Alliance for Patient Access in Europe. Developing partnerships with these stakeholders to educate local markets about the financial benefits of biosimilars will be integral for Teva's success.

Similar Strategies; Not the Same

In the face of extreme pricing pressures on its extensive portfolio of generic drugs, Teva must refocus its efforts on the production and sale of biosimilars. In doing so, it will benefit as a first-mover in this young, nascent industry while maintaining its core competency of reverse engineering existing pharmaceuticals and undercutting prices.

To combat the rapid increase of public health-care expenditure, the continued production of low-cost generic alternatives necessitates the profitability of generic pharmaceutical manufacturers. Only then can manufacturers like Teva continue to challenge intellectual property rights, prevent price gouging and democratize pharmacare access for the greater good of society.

SPACEX: **THE BIG FALCON PROBLEM**

In order for Elon Musk to achieve his goal of colonizing Mars by 2022, SpaceX must fill its cash gap through commercializing the rocket launch supply chain.

Bianca Miele and Cameron Hands

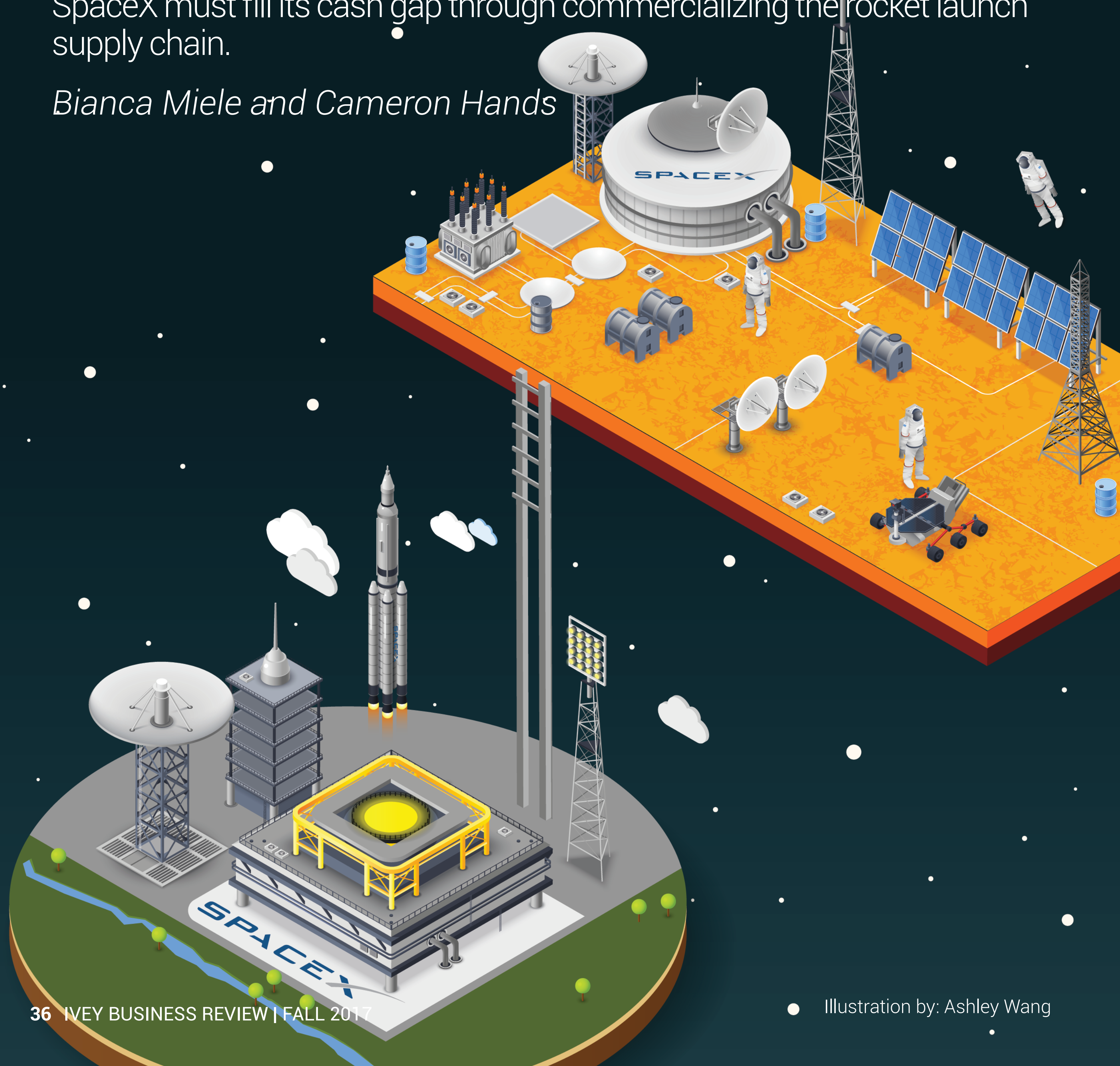


Illustration by: Ashley Wang

The Journey to Mars

Since 1993, NASA's funding has been steadily decreasing following the end of the Cold War era space race, and is now less than 0.5 per cent of the federal budget. After the Commercial Space Launch Amendments Act legalized the privatization of space travel in 2004, many private companies moved to fill the void left by NASA's discontinued operations. With rapid industry growth, investments have flooded into commercial space startups. Venture capital firms invested $1.8 billion in 2015, doubling the cumulative amount of venture funds invested in the previous 15 years.

Space Exploration Technologies Corp. (SpaceX), one of the industry's pioneers, was founded in 2002 by Elon Musk, who is still currently serving as the CEO and Lead Designer. The California-based company was founded on the overarching goal of making humankind an interplanetary species. SpaceX is aiming to start its mission to Mars by the year 2022. Although rich in venture capital, the company requires billions more to complete the development of its next-generation interplanetary launch system to colonize Mars.

SpaceX Needs Cash

In Musk's recent presentation on colonizing Mars he revealed that SpaceX is in the process of developing a next-generation launch vehicle codenamed Big Falcon Rocket (BFR). The BFR is a multipurpose system intended to replace the Mars launch duties of the Interplanetary Transport System (ITS) with an estimated development cost of $10 billion.

To fund projects, SpaceX has historically relied on equity financing. Following a $351 million Series H round of funding in July 2017, SpaceX is now worth approximately $21.2 billion, making it one of the most valuable privately held corporations in the world. Only six other venture-backed companies are worth $20 billion or more. However, SpaceX cannot continue to rely on equity financing to fund the company.

To date, many investors have invested in Musk due to a belief in his long-term plans and ambitious mission statements. In other words, Tesla's mission to create a mass market for electric cars and Solar City's plan to accelerate society's transition to sustainable energy. This belief is unsustainable, as the failure of one of Musk's companies destroys the credibility of his promises and subsequently, his ability to raise future capital. Tesla Motors, Musk's most mainstream venture, has been frequently criticized for its high cash burn rate. As a result, Tesla has been pursuing alternative sources of financing, such as requiring hefty deposits on orders to help fund the company through its production challenges. Like Tesla, SpaceX will need to find other internal methods of generating cash flow moving forward.

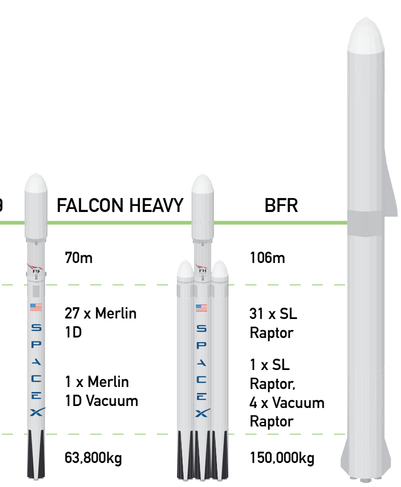
A Five Billion Dollar Black Hole

Currently, SpaceX solely operates in the rocket launch segment of the space industry. According to a Bryce Space and Technology study, this makes SpaceX only privy to approximately $5.5 billion of the total $339-billion space market. This is 1.6 per cent of the total annual revenues generated by the space industry, which is dominated by satellite companies. The quantity and frequency of rocket launches depend on the activity of outside entities such as governments, militaries, and companies reliant on the deployment of satellites.

Companies operating within the rocket launch industry are differentiated based on pricing and their launch capabilities. SpaceX is differentiating itself from other competitors, such as the United Launch Alliance (ULA), by undercutting their costs. This is accomplished through backwards integration, in which more than 70 per cent of manufacturing is done in-house. In addition, SpaceX parts have reduced costs by around 40 per cent versus competitors, a reduction attributed to the practice of reusing rockets and other expensive components.

SpaceX currently offers two multi-staged rocket systems. The Falcon 9 can deliver a payload with a maximum weight of 18,300 pounds to a geosynchronous transfer orbit (GTO); reaching this level of elevation is essential for many types of satellites, such as those needed for television and radio broadcasting and communications. The Falcon Heavy has significantly more thrust and can deliver 58,860 pounds to a GTO. Assuming a 2018 launch window and a "standard payment plan", SpaceX charges $62 million and $90 million respectively per launch.

ROCKET COMPARISON



	FALCON 9	FALCON HEAVY	BFR
HEIGHT	70m	70m	106m
ENGINE - FIRST STAGE	9 x Merlin 1D	27 x Merlin 1D	31 x SL Raptor
ENGINE - SECOND STAGE	1 x Merlin 1D Vacuum	1 x Merlin 1D Vacuum	1 x SL Raptor, 4 x Vacuum Raptor
LEO PAYLOAD	22,800kg	63,800kg	150,000kg

Source: Spaceflight101.com

Based on these launch prices, there is a gap between the level of cash that can be generated and the cash SpaceX needs. Assuming an average launch cost of $62 million to be conservative, a target rate of one launch per week, and a generous 40-per-cent margin, SpaceX will net a little less than $5.2 billion from 2018 to 2021. This suggests a shortfall of approximately $5 billion, assuming the $10-billion development cost for the BFR. The company will most likely not lower costs below $62 million as no other competitor has come close to threatening SpaceX's position as a cost leader.

Houston, We Have a Problem

Due to the hyper-competitive launch industry and the $5-billion funding gap, SpaceX must find another source of revenue to foot its multibillion-dollar bill for developing the BFR. To do this, SpaceX plans to launch 4,425 interconnected satellites by 2025 to provide global broadband Internet. However, there are three reasons why this strategy is insufficient: the aggressive 4,425 launch schedule is operationally unrealistic, the overall increase in advanced pure-play competition will drive down SpaceX's market share, and the satellite broadband industry generates a mere $2.0 billion in annual revenue.

First, this operation would require a record number of annual launches within tight windows, something that SpaceX has been unable to do thus far. In terms of a cost breakdown, each satellite weighs around 386 kilograms and the entire project is expected to cost $10 billion. With a payload of approximately 11,000 pounds per Falcon 9 launch, SpaceX would need at least 302 launches with 14 satellites per launch to reach its goal of 4,425 satellites by 2025; this equates to roughly 43 launches annually. This aggressive launch schedule far surpasses SpaceX's current performance metrics with only 15 Falcon 9 launches this year as of October 2017. Second, advanced competitors already exist in the satellite Internet market. OneWeb Ltd, a global communications company, has already secured the necessary rights to international radio frequencies needed to deliver high-speed Internet signals. OneWeb has raised $1.7 billion of venture capital to build and deploy their "constellation" of 648 satellites and construct its factory opening next year, which is capable of building 15 satellites per week, a record for the industry. Its constellation will launch in three batches and broadband service is expected to be available to consumers by 2019, one year before SpaceX. OneWeb has projected that by 2025 it will support one billion consumers worldwide. Lastly, this $2.0 billion global satellite industry grew by a modest two per cent in 2016, which was below worldwide economic growth of 3.1 per cent. This means that for SpaceX to fill in the $5-billion gap, the satellite broadband industry must not only grow 400 per cent by 2025, but SpaceX must also achieve an unrealistic 100-per-cent market share.

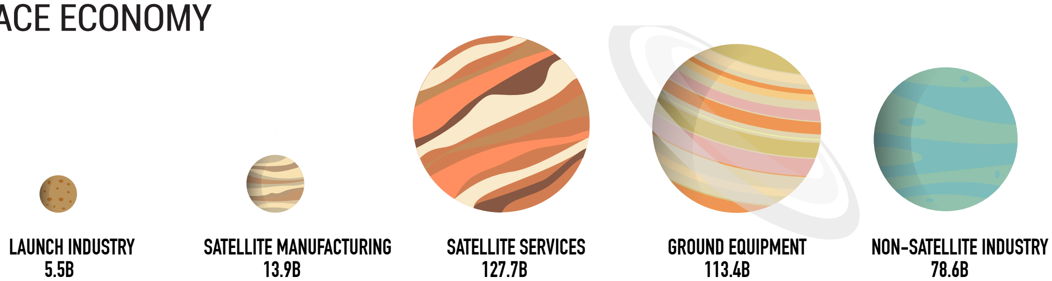
In sum, an aggressive and unprecedented launch schedule, a growing number of advanced competitors, and the small $2-billion satellite broadband industry will make it incredibly difficult for SpaceX to fill the $5-billion gap to fund the BFR. As such, Musk must develop alternative cash-flow generating strategies to complement SpaceX's current satellite launch strategy to achieve his goal of colonizing Mars by 2022.

An Advantage in a Competitive Space

SpaceX has become competitive in the rocket launch industry by adopting a cost-leader strategy since its incorporation in 2002. SpaceX can afford to offer significantly lower prices than its competitors due to the reusability of SpaceX components. Historically, rockets were not designed to be reusable as many components would either not survive the fall back to Earth, or would be abandoned after they had plummeted into the ocean. Following years of research and billions of dollars spent on development, SpaceX is leading the reusability race. Musk has stated that the first stage of a Falcon 9 is designed to be launched 10 successive times before any hardware replacements are necessary, and 100 times before moderate refurbishment is necessary.

Naturally, because of the significant cost savings involved with reusability, some competitors are beginning to make small investments in next-generation launch systems. That is to say, systems which aim to be less expensive, more reliable, and have increased levels of reusability. For example, the ULA has secured $201 million in funding from the U.S. Air Force in addition to that secured from private sources to develop "Vulcan", a two-stage-to-orbit (TSTO), heavy-payload rocket similar to Falcon Heavy.

GLOBAL SPACE ECONOMY



Source: Satellite Industry Association

Like SpaceX's current portfolio of launch vehicles, ULA is designing Vulcan to be reusable. ULA believes that the Vulcan's first flight will occur sometime in 2019 and that the base cost for a launch will cost $99 million.

There are two key advantages to SpaceX's reusable rockets. First, SpaceX's reusable Falcon 9 rockets, priced at $61.2 million per launch, are sufficiently cheaper than competitors. This is mainly due to expertise in research and development (R&D) and manufacturing that falls in line with SpaceX's cost leader strategy. Furthermore, SpaceX is the only company to publicly state plans to achieve second stage reuse. This means recovering the upper engine of rockets, which is a harder technical challenge than recovering the first stage or lower engine.

As such, SpaceX's expertise in reusability both financially and technically positions the company to generate revenues through either selling parts or providing services to increase reusable rocket launch efficacy. An analogous industry where this strategy has been applied to is the mobile phone landscape. As the industry moves towards organic light-emitting diode (OLED) screens for edge-to-edge displays, demand is increasing for suppliers of OLED technology. Samsung, the clear leader in producing OLED screens, acts as the sole supplier to build Apple's iPhone 8.

Rocketing Towards Supply Chain Commercialization

SpaceX can commercialize parts of its supply chain to satisfy the $5-billion funding gap of the BFR development. SpaceX can leverage its capabilities in manufacturing, and R&D to outsource reusable components to other space companies launching rockets. Reusable rockets have a clear advantage in this industry, and other competitors are increasing investments into designing reusable parts leading to their compatibility with SpaceX parts. This initiative also aligns with SpaceX's mandate of promoting space innovation to reach Mars.

The major cost components of any rocket include the first-stage engine, second-stage engine, and rocket boosters. The average cost of these components in the industry is $68 million for a one-time launch. Conversely, SpaceX can sell the same components for $39 million at a 40-per-cent margin for 10 launches before replacement is required. Evidently, procuring reusable parts provides significant cost savings for SpaceX consumers.

In addition, to make these components compatible with its customers' rocket designs and to provide the services required to operate these parts, SpaceX can incorporate a $40-million service fee into their sales. This service fee includes all the necessary assistance needed from SpaceX to ensure successful launches. This brings the total "package" cost to procure SpaceX components to $79 million for parts that can be reused up to 10 times. After 10 rocket launches, a SpaceX customer will realize up to $590 million in savings.

At a 40-per-cent margin, SpaceX would need to sell 90 packages to generate the $5 billion in cash it needs. There are approximately 17 manufacturers of space rockets internationally in which major competitors have invested into reusable components, and 134 scheduled launches for 2018. Initially, sales will be limited to manufacturers who currently have the capabilities to incorporate reusable engines into their rockets. However, supplying SpaceX engines in the market should lower the technical barriers for other manufacturers to begin developing the necessary reusable components to also become SpaceX customers. With its superior reusable technology and significant cost savings, it is reasonable to expect SpaceX to achieve this target in time for the BFR deadline.

Conveniently, acting as a supplier within this industry already has precedent. Aerojet Rocketdyne, a public company operating in the defence and aerospace industry, develops and manufactures several types of propulsion systems for rockets and missiles. Aerojet sells as a prime contractor or a subcontractor on a project-by-project basis. One of the company's largest customers is ULA, which currently uses Aerojet Rocketdyne engines for Delta-IV launches.

One Team, One Dream

SpaceX is different from most multi-billion-dollar companies. It operates in a brand-new industry that is incredibly complex and may be out of reach for many investors. To depend less heavily on equity investors, and to increase its operational financial stability, SpaceX should behave in a more orthodox manner. By commercializing parts of its supply chain, SpaceX will be able to close the $5 billion BFR funding gap through the sale of reusable products and services to strengthen success rates of launches.

Although it may seem counterintuitive to help competitors who are operating in the same industry, the race to Mars is not purely a business opportunity, but also a societal one. Musk has always believed that colonizing Mars will save humanity and that commercialization is an integral catalyst toward this goal. Given Musk's past open-sourcing of Tesla patents and belief in free market ideas, the adoption of the commercialization strategy by SpaceX is realistic. After all, it was Musk who emphatically stated that the goal of Tesla Motors is to "accelerate the advent of sustainable transport by bringing compelling mass market electric cars to market as soon as possible."

HYDRO ONE: RE-ENERGIZING WITH MICROGRIDS

Hydro One has a unique opportunity to utilize sustainable energy and storage technologies to improve grid reliability and position itself better for the long-term

Jonathan Copeland and Gazal Grewal

For most provinces in Canada, citizens typically focus on healthcare, jobs, or taxes as their most important provincial concern. However, this is not the case in Ontario. In recent years, Ontarians have been confronted with the highest electricity rates in Canada. This highly-charged issue has put the public spotlight on those involved in Ontario's electric ecosystem, with one firm in particular embroiled in a continuous heat of controversy: Hydro One. In order to address concerns regarding an aging power grid and growing risks, Hydro One needs to pursue an innovative strategy shift.

Shocking Prices, Crumbling Infrastructure, and Incoming Storms

Responsible for electricity transmission and distribution across 68 per cent of Ontario's population, Hydro One owns the energy grid that supplies electricity used for daily functions. It purchases electricity from power generation companies like Ontario Power Generation and transmits the electricity through high voltage lines before distributing the electricity to its consumers. As such, it must maintain its assets regularly to offset depreciation in the grid. However, maintenance costs are expensive. Hydro One invested C$1.7 billion in capital projects in 2016, representing 26

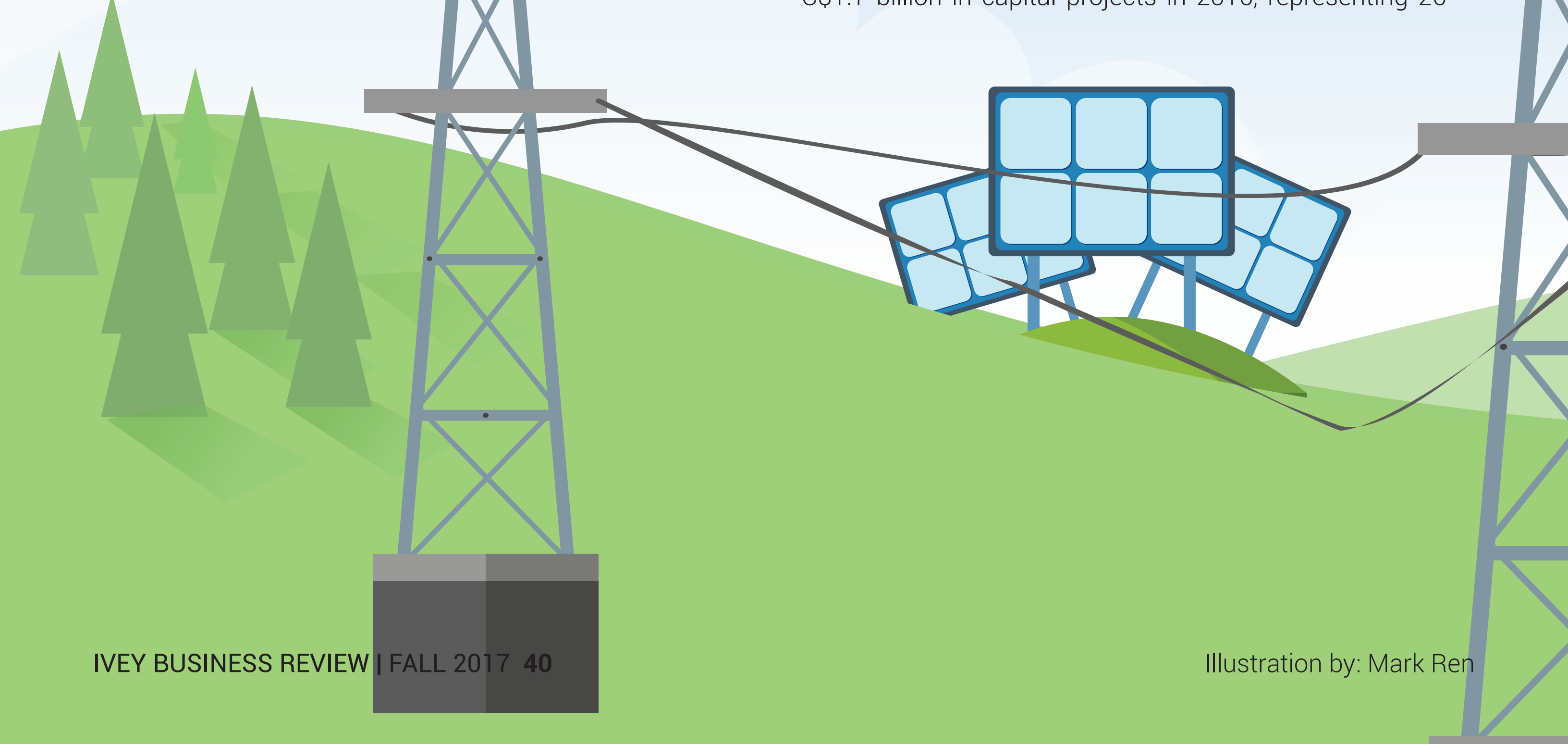


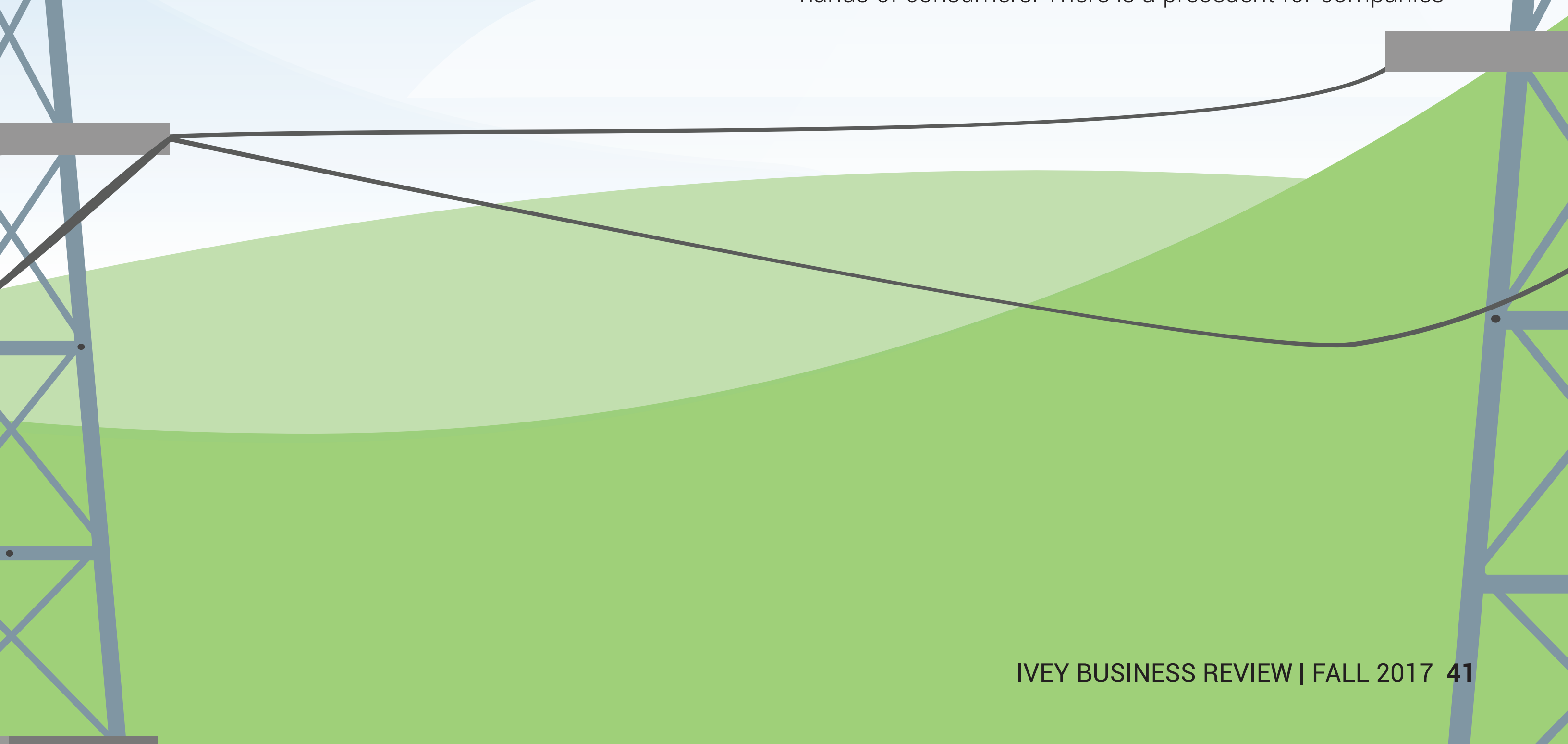
Illustration by: Mark Ren

per cent of revenues. 67 per cent of these investments were directed toward sustaining operations. Even with the large amount of investment, Hydro One is still plagued by issues of low reliability. Compared to 2010, power outages in 2014 were 24 per cent more frequent and 30 per cent longer because of aging equipment and damage from insufficient management of trees near power lines. In an effort to replace its deteriorating infrastructure, Hydro One is looking to commit C$6.4 billion over the next five years.

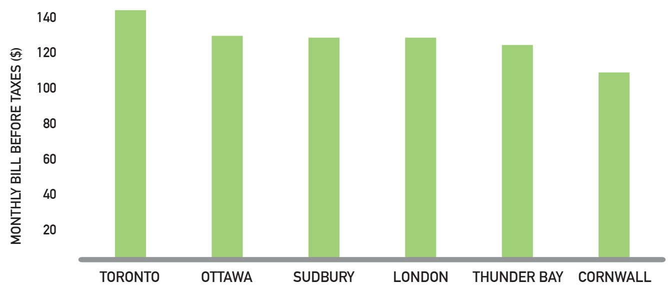
However, Hydro One lacks the flexibility to set its own prices to fund these investments. Prices are instead set by the Ontario Energy Board, a governmental regulator that determines hydro rates by setting prices at a level that would allow Hydro One to make a profit margin on top of its investment and demand projections. The inherent problem with this type of traditional electrical utility business model is that it incentivizes utility giants like Hydro One to increase infrastructure investments to grow its bottom line. Innovative solutions that have the potential to decrease infrastructure costs and increase sustainability are not intrinsically incentivized under the current business model, and may even face resistance. However, with escalating electricity prices reaching a tipping point in the public's consciousness, the government-controlled Ontario Energy Board is facing immense political pressure to freeze hydro rates. Consequently, the Ontario Energy Board has mandated Hydro One to reduce infrastructure investment by C$126 million in 2017 and C$122 million in 2018. With the Ontario Energy Board's firm control over Hydro One's ability to generate revenue, Hydro One must look to alternative business models to improve reliability without neglecting its aging infrastructure.

The costs associated with deteriorating infrastructure come from decreased reliability in energy distribution and transmission and increased operating costs. These issues are exacerbated during periods of extreme weather. For example, Toronto's massive ice storm in 2013 resulted in C$12.9 million in total additional costs for the local distribution company in the area. The frequency of extreme weather events in the province, including floods and severe winter storms, is expected to increase in the future, and is already drawing concern from the government regarding its consequences on infrastructure. Hydro One is vulnerable to the same issues, and may see strain on its system going forward from scenarios such as physical damage to power lines during storms and unanticipated increases in consumption. Increased strain on the aging grid will lead to an increasing number of blackouts that Ontario residents have already been experiencing.

Losing power has even greater economic consequences to manufacturers, making them an attractive candidate for a new solution. During the 2003 blackout in Ontario, residential users had power returned to them in one day, but businesses faced power restrictions for more than a week. This resulted in the loss of 18.9 million employment hours and C$2.3 billion in manufacturing shipment. Accounting for 19 per cent of all energy consumption in Ontario, manufacturing facilities represent a significant portion of the consumer energy market in Ontario. While Hydro One historically benefitted from a monopoly, it risks losing valuable industrial consumers who may opt to switch to more reliable power generation methods off of the grid. With advancements in power technologies, it is becoming increasingly feasible for the dynamic of power management to shift from utility companies to the hands of consumers. There is a precedent for companies



ESTIMATED MONTHLY RESIDENTIAL BILLS



Source: Ontario Energy Board

that are already exploring alternative methods of energy storage. One such example is Ford's partnership with Detroit Edison to install a 500 KW solar microgrid at its Michigan Assembly Plant.

The problem for Hydro One is clear: funding for infrastructure investment must be found to protect the main grid from being vulnerable to costly blackouts. However, with prices being capped by the Ontario Energy Board, Hydro One must find another way to finance the cost of maintaining its existing infrastructure. As such, the company must learn to adapt to the shifting industry landscape and focus on a long-term strategy that maintains its influence in emerging models.

Microgrids: A Forward-Thinking Solution

Microgrids have the potential to fundamentally change the way society thinks about electricity – transforming power consumers into power producers. Simply put, microgrids are small power grids, localized so that they can operate autonomously to the main grid. Microgrids can be powered using a wide range of sources such as distributed generators, batteries, and more popularly, with renewable resources like solar. They usually function alongside the main grid, giving users the benefits of having electricity transmitted in parallel from two sources, which essentially acts as an extra lifeline. The ability for microgrids to disconnect from the main grid has become increasingly vital as it allows the decentralized electricity system to continue generating power even if an extreme weather event takes down the main grid. Traditionally, diesel generators have been used for backup power, but these generators quickly become useless in the event of any extreme weather disaster as fuel needs to be replenished. In such situations, solar panels offer a much more viable solution. However, absent a microgrid, solar panels shut off with the rest of the grid, rendering them useless when they could be providing the highest value. With a microgrid, the solar panels can store power in high-capacity capacitors in a secure location.

In an effort to improve the resiliency of the electric grid and further integrate renewable energy sources, microgrid adoption has seen a remarkable uptake in the Northeastern United States following the devastation of Hurricane Sandy in 2012. Overall, the United States currently has 1,600 MW of microgrid power in deployment. Using New York state capacity as a proxy, Ontario's output capacity for solar energy is estimated to be around 350 billion MWh annually. The province, however, is currently only producing 460,000 MWh annually. As a result, there is plenty of opportunity to introduce microgrids in the form of solar panels in Ontario. Compared to residential applications, industrial and institutional applications are an attractive area for microgrid application, where the cost of power failure is much more detrimental.

One of the great barriers of microgrid adoption to date has been the high levels of regulation in Ontario. Furthermore, operational challenges in microgrid capacity constraints, forecasting capabilities, and quantifying benefits make it difficult for companies to rationalize the investment. With Hydro One's competencies in field operations, asset management, and regulatory relations, they are well-positioned to partner with current microgrid providers to rapidly scale commercial microgrid deployment. By entering into the microgrids business, Hydro One can tactically begin its transformation from a heavy utility giant reliant on heavy infrastructure investments into a nimbler supplier that can sustainably survive into the future.

The Deal

Hydro One should partner with an existing microgrid implementation firm, such as Siemens, to implement commercial microgrids for large energy-consuming companies that have factories in Ontario, such as Ford's Oakville Assembly Plant. All three firms will share the investment to build these microgrids, but Hydro One will retain ownership over the microgrid as well as the responsibility of maintaining the infrastructure. In return, industrial companies with installed microgrids will pay Hydro One a slightly higher premium of two per cent for their electricity consumption. Structuring such a three-way deal is difficult, as it requires all three parties to come out of the equation better economically than had they decided to operate alone. This is how each counterparty benefits:

Industrial Companies – i.e. Ford

While residential consumers of electricity might find a blackout to be merely a nuisance, commercial companies that rely on electricity to power their factories' throughput can incur much larger economic costs. For example, if Ford's Oakville Assembly plant lost one day of productivity, it directly results in C$18 million in lost potential revenue.

With the likelihood of inclement weather causing power outages increasing in the future, this is an ongoing concern. Large-scale manufacturing companies clearly have the incentive to upgrade to a more reliable dual-pronged power source that utilizes both the main grid and their own microgrids.

Commercial companies will also save costs through the ability to smooth their power consumption from the main grid. During peak consumption times, large consumers of electricity must pay Global Adjustment (GA) charges issued by the province's power generation facilities. Power generated during these peaks are extremely costly to power generation companies and GA charges are an attempt to reduce the heavy strains during these times. By drawing on both the microgrid and the main grid, Ford can avoid GA charges by relying more heavily on its own microgrid during peak hours before smoothing out demand during baseload hours. GA charges often contribute to the largest proportion of an industrial consumer's energy bill, amounting to C$500,000 per MW. For Ford's Oakville Assembly Plant, paying a two-per-cent premium for electricity from microgrid facilities installed on site, would only increase electricity costs by C$336,000 per year. With carbon pricing's imminent implementation, there are additional savings that Ford could gain by upgrading to a renewable energy source.

Microgrid Implementation Companies – i.e. Siemens

Although Hydro One possesses vast experience with field operations in relations to the main grid, it does not possess the equipment to implement microgrids on its own. Siemens Energy is a power generation and distribution company that has already made an attempt to enter the microgrid industry by selling and deploying microgrid power generation solutions to institutional users in Ontario. Recently, the company secured a successful arrangement with Algonquin College that has already generated a positive return on investment.

Successfully installing a microgrid facility can take upwards of five years, with costs that are likely projected to be around C$1 billion. The cost of solar panels and batteries needed for the microgrid will likely average out to C$5.8 million. Combining the shared expertise of Siemens microgrids and Hydro One's understanding of the main grid can substantially lower the likelihood of cost overruns and speed up implementation to only two years. The microgrid industry is still nascent in Ontario; Siemens would leverage an early-mover's advantage by partnering with Hydro One to scale up quickly and establish itself as a main player. Siemens also benefits by sharing the risk with Hydro One, so that it does not have to incur heavy upfront investment on its own.

The Traditional Utility Company - Hydro One

According to the *MaRS Advanced Energy Centre's [Micro] grids Today* report, the high levels of provincial legislation and regulatory framework in Ontario are the greatest barrier to microgrid adoption. Hydro One, still 49.9-per-cent owned by the government, would have a much clearer understanding of how to navigate the regulatory controls, an advantage that Siemens does not possess. In addition, as microgrids still function in accordance with the main grid, having Hydro One operate both grids will allow for a more optimal flow of energy through a centralized control room.

Hydro One benefits from this arrangement in multiple ways. While it may seem like Hydro One would be cannibalizing sales by encouraging companies to wane their demand on the main grid, Hydro One would be proactively positioning itself to capture the new market in microgrids. This innovation will likely propagate with or without Hydro One's support.

Hydro One's traditional utility business model is no longer working. By stressing less on infrastructure and more on reliability, Hydro One will be positioned more sustainably for the future. This may seem like a very long-term view, but it is important to note that utility companies often hold very long-term decision-making frames, often up to 30 years. As such, it is important to adapt early to a shifting landscape. In the short-term, Hydro One will benefit by keeping its clients and earning more short-term cash flows. In the long term, Hydro One must decrease the reliance on the main grid which will help decrease the investment needed to maintain it.

Conclusion

Over the past century, electrical utility companies presiding in the industry were protected in an enviable position that guaranteed comfortable, consistent returns on investment. Today, those cozy returns are no longer as comfortable. Regulatory constraints and changing industry dynamics have put electrical utility companies in a precarious position. On one hand, the advancements made in renewables and energy storage can provide a more sustainable source of revenue. However, these technologies also enable private consumers, residential and commercial alike, to shift their position in the market from electricity consumers to electricity producers. The challenge for electrical utility companies moving forward is adapting to this shifting landscape in a way that preserves their long-term survival without impeding environmental and sustainable progress.

FREEPORT-MCMORAN: A MAJOR MINER CHALLENGE

With new restrictions from the Indonesian government, Freeport-McMoRan has a unique opportunity to change its practices and maintain its influence in the country

Frank Dong and Trevor Wright

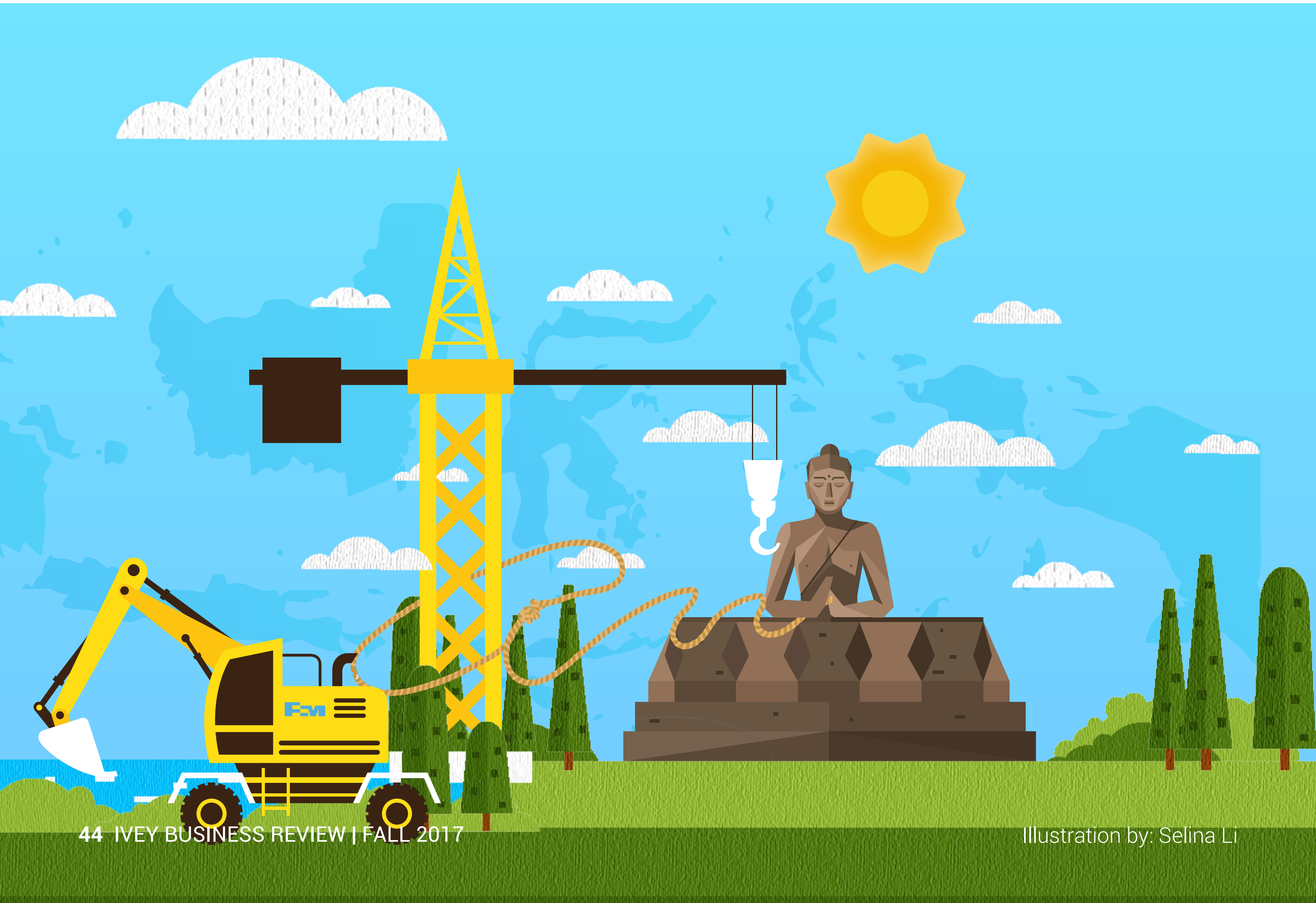


Illustration by: Selina Li

Freeport-McMoRan (Freeport) is one of the world's largest publicly traded copper mining companies, specializing in copper extraction and refinement from mines in the U.S., Peru, Chile, and Indonesia. Historically, Freeport has had a close working relationship with the Indonesian government, which has recently become strained as the latter has committed to keeping an increasing amount of its resource wealth within national borders. A dispute since 2009 climaxed in August 2017 when Freeport and the government reached a tentative agreement requiring the company to divest 51 per cent of its shares in its Indonesian subsidiary, build a $2-billion copper smelter in the country, and pay a 10-per-cent royalty on revenue from Indonesian copper sales. Although the valuation of the mine has yet to be finalized, Freeport must be proactive in establishing a long-term strategy to maintain profitability and operational capabilities within the changing Indonesian landscape.

Scratching the Surface

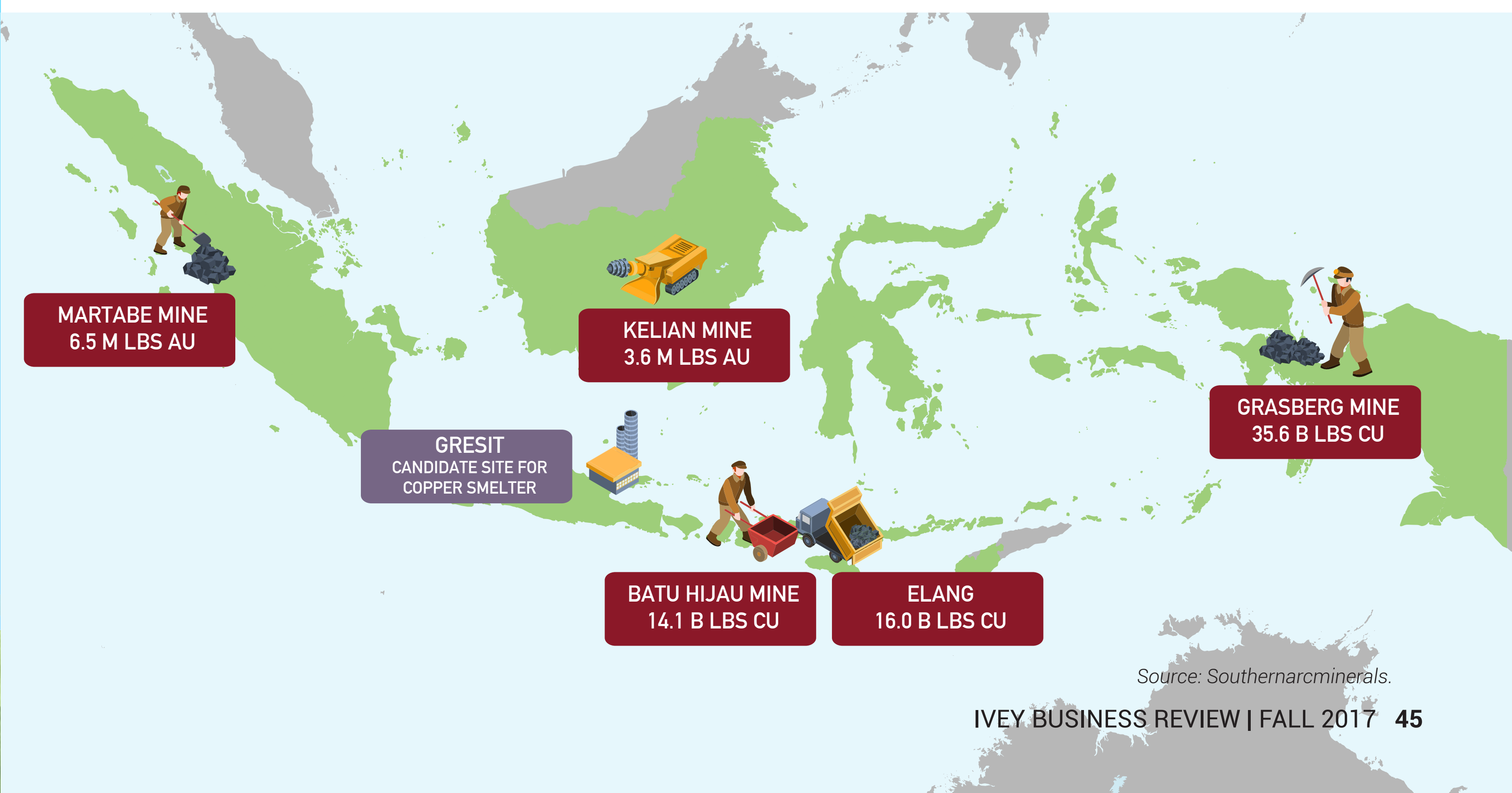
The outcome of this dispute reflects a perpetual and necessary risk mining companies face in the developing world: resource nationalization. Developing governments have shown a willingness to make decisions that favour their constituents, often at the expense of international companies operating in the country. For instance, in August 2017, Zambia shut down power to a Glencore copper mine after a dispute over an electricity price increase. Barrick Gold is facing a tax bill equal to four-times Tanzania's GDP for its gold operations in the country. Although this is an assumed risk of operating in the developing world, companies often find themselves on the losing side of legislation.

Indonesia's approach to foreign ownership has shifted over time. For years, Freeport and its peers operated in Indonesia with little government interference. However, years of public outrage regarding foreign ownership of Indonesian resources peaked in 2009. In response, the government passed the *Law on Mineral and Coal Mining No.4*. In addition to increased regulation and taxes on mineral wealth, the law requires foreign owners to divest up to 51 per cent of their interests in Indonesian resources. This prompted Newmont Mining, the second largest copper producer in the country, to sell its stake in one of the world's largest undeveloped copper and gold mines in 2016. Around the same time, BHP Billiton, one of the world's largest coal producers, also divested its Indonesian interests. The volatile Indonesian political environment is deterring new entrants to the industry; exploration spending and total investment has fallen 22 per cent and 31 per cent from 2014 to 2015 respectively. These metrics demonstrate the current skepticism in the global mining community with respect to doing business in Indonesia.

Digging Deeper into the Problem

Freeport's primary property in Indonesia is the Grasberg mine in West Papua. Grasberg is the largest known gold

INDONESIAN MINERAL WEALTH AND SMELTERS



Source: Southernarcminerals.

deposit and second-largest known copper deposit in the world, generating 22.2 per cent of Freeport's total revenues in 2016. After eight years of negotiations between the company and Indonesia, the government halted the export of copper concentrate from the Indonesian Grasberg mine in early 2017, causing Freeport to lose roughly $1 billion in revenue. The Indonesian government has illustrated its willingness to exercise substantial control over Freeport's revenues in order to protect the sovereignty of its resources. In the month following the tentative agreement between Freeport and the Indonesian government, the company's share price fell 7.1 per cent. CEO Richard Adkerson described the deal as a "major concession," further eroding investor confidence. Investor relations are critical within a capital-intensive industry such as mining, where equity markets are often used to fund new projects. Specifically, Freeport has raised $3.5 billion in three equity offerings since 2015. Given that resource nationalization is a strong deterrent for investors, Freeport must develop strategies to foster healthy working relationships with the countries in which it operates.

After copper ore is mined, it is transferred to a smelter facility where the raw metal is processed. The refined copper is then sent to a central warehouse where it is stored until sold to the end consumer. Presently, the Gresik smelter, which is 25-per-cent owned by Freeport, is the only smelter in Indonesia and is capable of producing 300,000 tonnes of copper. This falls short of Indonesia's approximate demand

FREEPORT SUPPLY CHAIN

Source: IBR Analysis

of 390,000 tonnes of copper per year, requiring users to import the difference. A $2-billion smelter investment will increase production capacity in Indonesia by an estimated 300,000 metric tonnes per year, based on similar smelter investments in other countries. This will enable Indonesia to reach its goal of copper self-sufficiency as well as create excess for export. In aggregate, the company can shift from mining and exporting concentrate to other countries, which then process the copper themselves, to ensuring that the entire extraction and production process remains domestic. In 2016, the Grasberg mine produced concentrate worth around 482,000 tonnes of refined copper. Assuming Grasberg production levels will remain the same in the near future, Freeport must sell its smelting capacity to other copper miners to maintain efficiency. This would involve charging companies a "tolling" fee to refine ore, while the mining customer retains mineral ownership throughout the process. Large amounts of ore in Indonesia and neighbouring countries will provide sufficient volume to keep the smelter operating at near capacity. To ensure that operations run smoothly within Freeport's supply chain, the company must ensure it adheres to all regulations and operates in accordance with government mandates.

Mining for Minority Stakes in Existing Reserves

One of Freeport's strengths is working with volatile governments to achieve the goals of all parties. Operating within resource-rich developing countries is an inherent part of the business model for all mining companies, which take on risk in hope of achieving a greater potential profit. In return, modern mining practices act as a vector for development within the often fragile economies of developing nations. Freeport's Indonesian operations pose an interesting dilemma, since the company is one of Indonesia's largest taxpayers and employs thousands of local workers. Nevertheless, given the Indonesian government's recent actions, it is paramount that Freeport consider the government's position when developing any strategy within the country. In this case, the Indonesian government's goals are twofold: firstly, it must represent the interests of constituents. Indonesian citizens are unwilling to allow foreign entities to control large amounts of mineral wealth, and thus significant pressure is placed on the government to use legal devices such as transfer of ownership and revenue royalties to stop these outflows. Secondly, the government aims to promote economic development and ensure the well-being of its citizens. As such, any future business strategies in Indonesia will have to consider the needs of the local population. Ultimately, to fulfill both the government's goals as well as those of its shareholders, Freeport should purchase minority stakes in existing Indonesian copper reserves. This long-term strategy will protect the $12 billion Freeport has already invested in Indonesia, ensure maximum efficiency of its smelters, and appease the needs of the Indonesian government.

There are still an estimated 124 million ounces of unrecovered gold and 75 billion pounds of unrecovered copper in Indonesia. As other multinationals are leaving the country, Freeport should secure its stake in these future profits while remaining as one of the only global mining companies committed to working alongside and providing opportunities to the Indonesian people. In 2016, Freeport sold much of its oil and gas reserves generating substantial amounts of cash; as the cash is not currently providing any future economic benefit, Freeport should offer to purchase Medco Energi Internasional's (MEI) share of PT Amman Mineral Internasional (AMI). AMI owns the Batu Hijau and Elang mine properties, which together hold an estimated 30.1 billion pounds of copper and 42.2 million ounces of gold. Medco purchased 50 per cent of the mine in a deal worth $2.6 billion in 2016.

The partial ownership of AMI would benefit Freeport through three main verticals: first, the company would have access to 40 per cent of the future profits generated by Indonesian copper reserves, and since the purchase implies minority ownership, majority control would still be held by Indonesian companies. The government's offer to let Freeport continue operating the Grasberg mine may suggest that Freeport has capabilities that are valuable for the Indonesian mining community. By purchasing minority stakes in multiple mines and helping refine operations, Freeport can maintain its presence in Indonesia without controlling the copper industry and antagonizing the local population. Additionally, AMI announced in March 2017 that it would invest $1 billion in a smelter near the Batu Hijau mine, introducing a new competitor to Freeport's Gresik smelter and threatening Freeport's share of the Indonesian copper smelting market. Freeport's current smelter in Indonesia sources 20 per cent of its copper requirements from Batu Hijau, business that would potentially be lost to the new smelter. The vast majority of value in the production process is created during the mining stage; value added from smelters are magnitudes lower. This illustrates the importance of Freeport's ability to control any new smelters that are built in the country so as not to forfeit any opportunities for profit. Lastly, Freeport can use its significant scale, which allows for a lower cost of capital, to reduce development and commercialization costs for the Elang property. Medco's cost of capital on USD-denominated bonds is 6.1 per cent whereas Freeport's average cost of borrowing is 4.2 per cent. Reducing interest costs by 1.9 per cent will also help entice the other Batu Hijau owners to support Medco exiting the investment.

Relationships to Build Riches

To ensure this recommendation can be adopted, Freeport should take advantage of its newfound relationship with Indonesian mining companies to foster better relations with the local population. The significant economic weight Freeport holds in West Papua has led to locals blaming the Grasberg mine as the source of economic and social anguish in the region. One of the largest factors presently contributing to local unrest towards Freeport revolves around a disregard for environmental policies. The local Indigenous people of Kamoro are especially upset with the company, as poverty, disease, and environmental degradation have damaged their previously fertile land. Freeport should aim to increase the amount of environmental scrubbers and filters both in Grasberg and in the new mines they will hold a stake in, as well as work with local citizens to address previous concerns. By making strides towards environmental restoration, Freeport will be able to better cultivate trust with locals and gain greater favour with the Indonesian government. Furthermore, Freeport should adopt an affirmative action hiring policy focusing on increasing the representation of Indigenous West Papuans within the Grasberg workforce. Making more Native-Papuans benefactors of Grasberg will build rapport with the local community and reduce social opposition against the company. Ultimately, the issues Freeport is facing are reflective of developing countries' frustration and belief that the mining industry's longstanding practices are exploitive. By reducing negative environmental externalities and increasing the number of people who benefit from the wealth of the mine, Freeport will be able to build a stronger relationship with the Indonesian people and subsequently its government.

While Freeport cannot control the regulatory environment, the company can make strides to solidify its importance in the Indonesian copper industry. By taking advantage of the exit of other Western companies, Freeport can secure ownership of important properties in Indonesia developed through operational expertise and economies of scale. Coupled with increasing environmental efforts and providing development opportunities for the local community, this strategy will demonstrate Freeport's commitment to Indonesia, thereby improving its reputation and economic potential within the country.

AIMIA: **LOYAL TO A FAULT**

By doubling down on the B2B market and focusing on data analytics, Aimia's Aeroplan program can weather the loss of a major partner, Air Canada

Harshith Bhaskar and Mark Krammer

Illustration by: Mark Ren

Mayday

The Aimia and Air Canada partnership went awry this summer when the airline announced it would not be renewing its contract upon expiration in 2020. Instead, Air Canada plans to launch an internally-developed loyalty program. Markets were quick to respond, with Aimia's share price falling more than 60 per cent the morning following this announcement. The evaporation of C$850 million in company value reflected the serious doubt cast on Aimia's long-term viability. This dramatic value reduction came as no surprise given that each year, almost half of all Aeroplan member points are redeemed toward Air Canada seats.

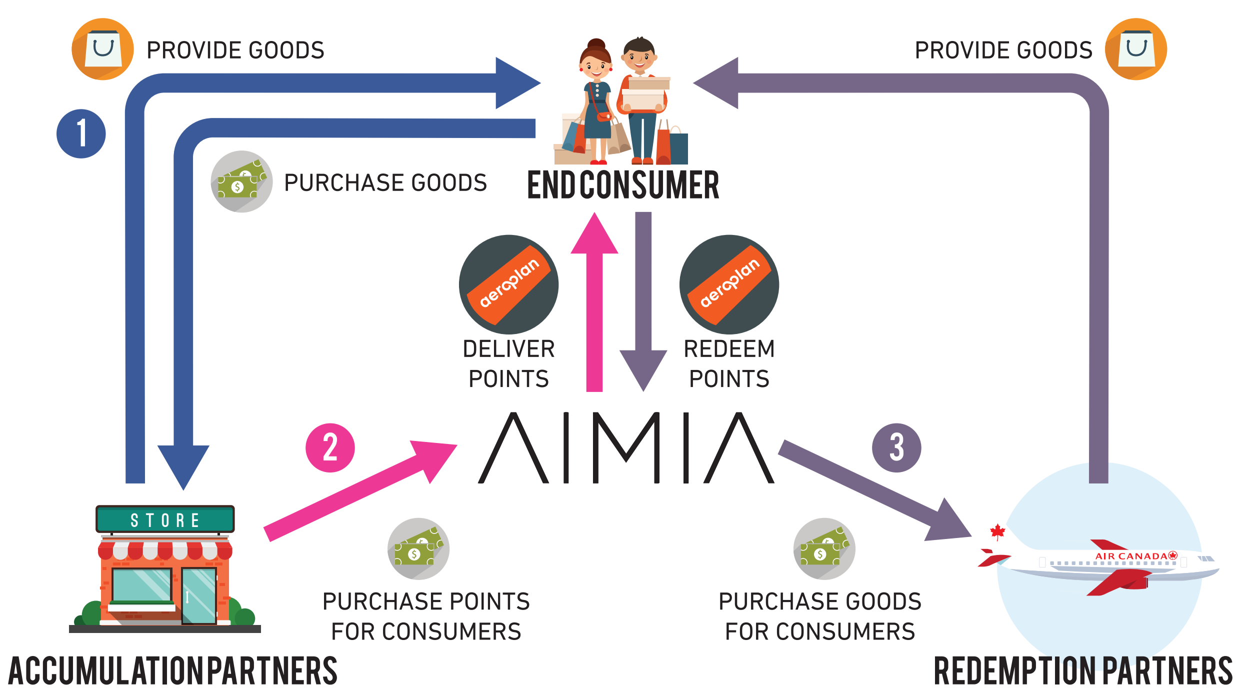
Overexposure risk is a fickle topic: while securing a sizable contract from a single vendor can help the bottom line, such dependence can lead to disastrous consequences should the business relationship turn sour. Historically, Aimia has been a company with a track record of dependence on Air Canada. Of Aimia's C$2.3 billion in gross billings over the last fiscal year, 57 per cent was derived from the Aeroplan coalition loyalty program. Due to Aeroplan's network of various organizations, most of which are in non-competing business verticals, the program can provide customers with a greater variety of rewards and benefits than a traditional single-company loyalty program.

Turbulence and Tailspin

In years past, Aimia and Air Canada have enjoyed a mutually beneficial arrangement from the operation of the Aeroplan program. The airline purchased Aeroplan Miles from Aimia and in turn, Air Canada awarded loyalty points to its clients. Air Canada enjoyed the intangible benefits associated with participating in a recognized coalition loyalty program, including increased customer retention, cross-business promotion, and the possibility of gaining new customers. Over the past decade, this relationship proved beneficial to both companies as Aimia's revenues grew to C$2.2 billion from C$709 million and Air Canada's to C$14.6 billion from C$10.1 billion.

The severe impact of Air Canada's decision to not renew its contract highlights a number of key strategic miscalculations made by Aimia over the years. Ever since the company's inception in 2002, a sizable portion of Aimia's income has been dependent on the performance of the Aeroplan program. The company has attempted several haphazard diversification efforts throughout its existence, but many were ultimately divested. In Aimia's eyes, these divestitures were an opportunity to "focus on [its] core assets," as stated by former CEO Rupert Duchesne. In reality, these efforts perpetuated Aimia's heavy reliance on Air Canada with no recourse in the event of contract cancellation.

AEROPLAN POINT REDEMPTION CYCLE



Source: IBR Analysis

The opportunity to outsource operations of a loyalty program was initially an effective value proposition to Air Canada. However, as Air Canada transitioned from a company on the brink of bankruptcy to the multi-billion-dollar behemoth it is today, its internal capabilities and brand also grew—eventually dwarfing Aeroplan in brand recognition. Furthermore, Air Canada's two main domestic competitors, WestJet and Porter Airlines, both operate their own loyalty programs: WestJet Rewards and VIPorter. Compared to Aeroplan, these loyalty programs offer customers a streamlined experience when earning and redeeming rewards, providing the carrier increased control over the program. To Air Canada, the value encapsulated in Aimia's services was no longer adequate to justify the cost of remaining a partner. Given the airline's increased capabilities and competitive positioning, developing an internal loyalty program made strategic and operational sense.

The strong association between Aeroplan and Air Canada significantly impacted the perceived attractiveness of the coalition loyalty program following the airline's exit. Aimia needs to leverage its expertise as a provider of travel services and its base of more than five million Aeroplan cardholders to dissociate itself from Air Canada and provide meaningful value to its customers and remaining partners.

Emergency Maneuvers

For the foreseeable future, Aimia cannot stop offering flights as a rewards option. Most redemptions are for travel-related services, and abandoning this offering would alienate consumers, reducing the company to one of many undifferentiated loyalty programs. Aeroplan will no longer have Air Canada as an exclusive partner nor will it receive preferential pricing. However, Aimia can still purchase airline seats as an independent third party, as has been done by its competitor, Air Miles. By establishing that Aeroplan points are still redeemable on flights after the contract expiration in 2020, the risk of a run on redemption is significantly reduced.

Aimia should facilitate the selection of lower-cost, non-air travel rewards and work to develop more diverse brand associations. Currently, a customer wishing to redeem rewards by calling the Aeroplan Contact Centre can only redeem points for airline seats, with all other rewards requiring online redemption. Going forward, Aimia should provide an integrated travel offering, ranging from different forms of transportation to tangential services like travel management, entirely through the Aeroplan Contact Centre. As a result, the end-consumer experience would be enhanced, and the risk of overexposure would be minimized.

Rather than viewing the obligation to offer travel-related services as a burden, Aimia should take advantage of its extensive experience in travel bookings and its relationships with hotels and vehicle rental companies. In fact, the company's current service offering is not drastically different from that of a firm in the corporate travel management industry. This industry, in which a firm evaluates potential travel itineraries and books travel and accommodations on behalf of corporate clients, has been growing at a rapid pace. Providing an ancillary travel management service would increase the degree of partner interaction and streamline the purchasing and redemption processes, thus improving the chances of customer retention. It would also give Aimia more control over the reward redemption process, and would reduce the company's overall redemption cost. This is because non-air rewards such as hotels and vehicle rentals, cost the company significantly less to redeem than their counterparts. This would also help reposition Aeroplan's brand as an integrated travel rewards provider, given its existing relationships with many travel partners, including more than 30,000 hotels worldwide.

AEROPLAN'S HISTORICAL RELIANCE ON AIR CANADA PARTNERSHIP

Source: Company Filings

Adjusting Course

Historically, Aimia focused on targeting individuals as end consumers of its Aeroplan points program. To achieve long-term growth, Aimia must translate this expertise into strengthening its business-to-business (B2B) offering. Although Aeroplan currently partners with Amex Bank of Canada to offer a corporate credit card, this product has failed to gain widespread use and does not significantly contribute to revenues. Furthermore, the lack of commentary on this product's past performance and future direction in Aimia's latest annual report signals the company's lack of focus on its B2B partners. The introduction of a parallel brand, carefully curated partners, and additional value-added services, including corporate travel management, would assist the company in capturing the B2B market.

The proposed *Aeroplan Global Business Rewards* program would target businesses as the end consumer of Aeroplan's points system. Aimia can accomplish this by creating a new category of loyalty points, Aeroplan Business, with an expanded range of corporate partners. These new partners would be solicited based on their appeal to business customers and could include professional service firms, food and parcel delivery services, and travel-related services, such as existing hotel and vehicle rental partners. The opportunity allows Aimia to benefit from the C$5 billion business-related travel market and take advantage of high growth in industries such as the food delivery market, growing at 20.5 per cent annually.

Aimia's base of corporate partners for its traditional Aeroplan program gives the company another key advantage when pursuing this opportunity: all partners become potential participants in the Aeroplan Business program. Introducing Aeroplan Business to these companies would see the development of a complete points ecosystem, where businesses purchase Aeroplan points for their consumers while simultaneously earning and redeeming Aeroplan Business points. This new business program would increase Aeroplan's revenue on two fronts: B2B customer purchases through the American Express corporate card and purchases made toward B2B partner products would effectively double Aimia's revenues on a given transaction.

Increasing Thrust Through Dynamic Points

In addition to revamping the Aeroplan program, Aimia should further invest in its data analytics capabilities. The company holds a wealth of data on the purchasing habits of its five million end users who shop at accumulation partners such as Costco and Uniprix. This data is owned exclusively by Aimia and, as one of the company's most important assets, should become a critical component of the company's value proposition. Therefore, it is recommended that Aimia develop and integrate into its service offering, a proprietary dynamic pricing scheme using its Aeroplan points as currency.

While traditional dynamic pricing has successfully boosted many companies' profits, it does not come without its downfalls. Its potential to frustrate customers has been well-documented, with Uber's surge pricing being a notable example. The ideal form of dynamic pricing would shift consumer demand without increasing the price of a product and consequently angering customers.

This presents a business opportunity for Aimia. Aeroplan points are a form of currency to which consumers attach value: more purchases would be made if a product purchase came with 1,000 loyalty points as compared to 100. However, consumers pay for the transaction in cash, not points, and the point inflow is perceived as a bonus. Like changing the price of a good, altering the number of points associated with a purchase would have an impact on aggregate consumer demand, but consumers would be significantly less upset than if prices were to be raised.

Aimia is particularly well-positioned to venture into dynamic pricing of points: it has access to reams of data on consumer purchasing habits from Aeroplan. From a strategic perspective, doing so is crucial, as it increases the value Aimia offers to its partners and decreases the likelihood that firms will abandon Aimia as Air Canada did.

Full Speed Ahead

Aeroplan's renewed strategy will provide a much-needed boost to the firm's revenues going forward. Assuming Aimia captures four per cent of the serviceable market in the first year, business customers would earn Aeroplan points on C$234-million-worth of purchases made through Aeroplan's corporate business cards, including travel-related services, food delivery products, and educational programs. Approximately C$15 million will be generated through the sale of Aeroplan points on additional product and service purchases. Another C$9 million would be generated on travel management fees earned through the Aeroplan Travel Management program, using a three-per-cent capture rate in the first year. As both B2B customers and partners increase, the gross billings and travel management fees collected by Aimia will increase annually on a per-client basis. Assuming Aeroplan's B2B business can achieve a similar level of success as its business-to-consumer (B2C) offering, Aeroplan can expect to generate C$242 million in gross billings 10 years after its departure from Air Canada purely from these new business lines.

Aimia's historical overdependence on Air Canada was a significant strategic misstep. Moving forward, Aeroplan must leverage its strong brand and rebuild its network. A short-term focus on B2C consumer retention combined with a long-term expansion of the program's B2B business will ensure the company mitigates any immediate damage and positions itself well for future growth. Offering dynamic pricing of Aeroplan points as a complement to its business will provide additional value to Aeroplan partners, distinguishing the company from its competitors and increasing the likelihood that partners will choose to remain with the company. While this contract cancellation has obviously dealt a significant blow to the company, there may be a silver lining: it might finally be the impetus Aimia needs to step out of Air Canada's shadow and become a major company in its own right.

SHOPIFY: SEDUCING SERVICE ENTREPRENEURS

Shopify has an opportunity to improve its customer mix and to develop a new revenue stream by targeting service businesses

Cooper Jefferson and Jake MacDonnell

Illustration by: Selina Li

Shopify, the leading multi-channel e-commerce platform for entrepreneurs, has rocketed to success since its founding in 2004. With humble beginnings as a platform for the founders' snowboards, Shopify now has more than 500,000 customers (merchants) using its software to develop their own e-commerce businesses. However, Shopify's success masks a major long-term concern for the business regarding the quality of its customer base. The company can address this issue and create a new opportunity for itself simultaneously by increasing its focus on growing merchant solutions and targeting service-based businesses. If Shopify fails to act, it may lead to deterioration in its core business down the line.

How Shopify Satisfies Their Partners

By servicing previously neglected merchants with enterprise-grade infrastructure, Shopify has developed a substantial customer base of primarily small business clients. Merchants use Shopify's fully-hosted e-commerce solutions, which handle the backend technology setup associated with online product sales. Services provided include payment processing, inventory management, shipping logistics, and customer support, among others. Moreover, Shopify's partner ecosystem of third-party agencies and freelancers offers additional services surrounding technology integration, solutions development, and creative services for Shopify merchants. The company's competitive advantage is ultimately derived from the simplicity and robustness of its platform and extensive partner ecosystem, which allow anyone in the world, regardless of technical expertise, to use Shopify to sell products online.

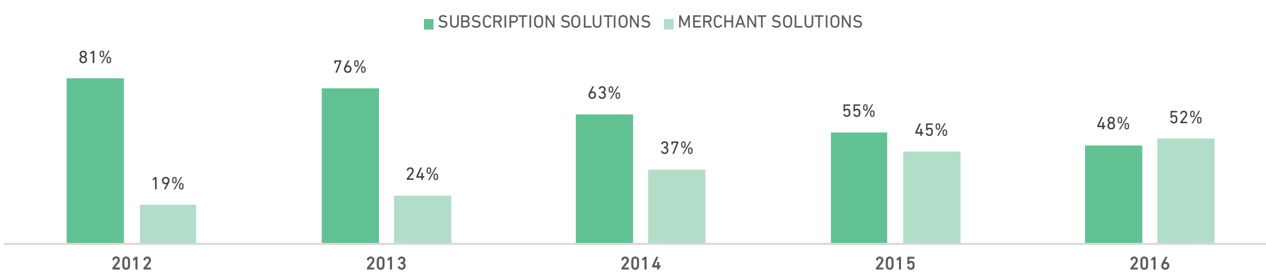
The e-commerce industry is a fast-growing business with increasing economic dynamism, set to grow to 15.5 per cent, or a total of $4.5 trillion, by 2021. In addition, it accounted for 8.7 per cent of global retail sales in 2016. Shopify's rapid customer acquisition strategy took advantage of this market trend to generate average quarterly revenue growth of 17.9 per cent over the last two years. Moreover, gross merchandise value (GMV) for the third quarter of fiscal year 2017, a metric commonly used to measure the growth of an e-commerce business, was reported at $6.4 billion. The results show an increase of 69 per cent over the same period in the year prior. However, Shopify's earnings metrics deflect concerns regarding the drivers that have fueled growth to date.

A Long-Term Problem

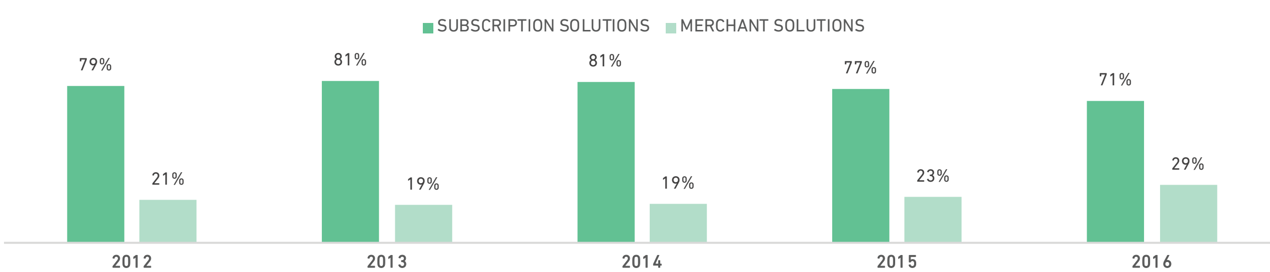
Shopify's core product leveraged a customer acquisition strategy focused on accessibility. Ease of adoption has persisted as one of the most prominent factors driving new customer growth. However, while it works in the short term as demonstrated by Shopify's rapid revenue growth, the same acquisition strategies will face diminishing returns if recent trends continue to exert downward pressure on customer lifetime value. These trends are primarily as follows: low barriers for vendors to exit and merchants' over-reliance on increasingly restrictive channel partners to generate sales.

Operational innovations like drop shipping reduce barriers to entry for prospective vendors. The practice allows retailers to transfer order and customer details directly to the manufacturer or wholesaler, who then ships the goods

REVENUE BREAKDOWN OVER TIME



GROSS PROFIT BREAKDOWN OVER TIME



Source: Company Filings

directly to the customer. By effectively eliminating inventory holding costs, retailers can better manage liquidity since they have less cash held in inventory. It is important to note that the concept is promising for traditional brick-and-mortar retailers who provide additional value beyond the sale of the product through customer service, sales and marketing. Their value proposition adds to the sustainability of their business model.

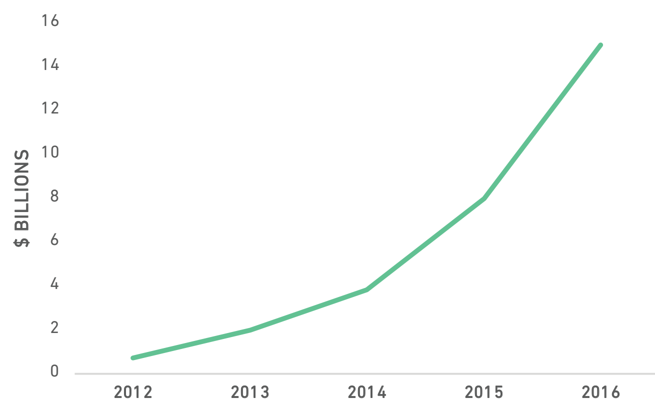
However, drop shipping has also been adopted by certain digital merchants with less sustainable business models. These merchants use drop shipping to sell products that are often low-quality imitations purchased from foreign manufacturers at low cost. The products are then marked up for sale through advertising on high-traffic websites like Facebook and Google. Facebook has received a large number of complaints from dissatisfied buyers who feel like they have been misled by certain advertisements, and has in turn updated its *Low Quality & Disruptive Content* advertising policy to screen out deceptive sellers. The change in tone is concerning for Shopify businesses that rely on channels like Facebook to sell their products. If digital advertising partners continue to clamp down on their policies, it could reduce the economic viability of many Shopify storefronts, escalating the customer churn issue for Shopify. While these merchants have played a significant role in Shopify's rapid customer growth, the company cannot exclusively depend on them to generate reliable, long-term revenue.

Volume vs. Value

Shopify currently segments its revenue into two different streams: subscription solutions and merchant solutions, which includes all revenue from value-added services on top of the base platform subscription fee. Monthly subscriptions are tied to the total number of merchants on the Shopify platform, while merchant solutions revenue is earned as a percentage of GMV processed through these merchants. The company traditionally focused on maximizing subscription revenue by attracting as many small merchants as possible. This represents a stable stream of income relative to payment fees which fluctuate with the volume of retail purchases made through Shopify. Subscription fees also contain a gross margin of 81 per cent, compared to 37 per cent for payment fees. However, although subscription fees from new customers represent a more profitable and stable revenue stream, they also consume the majority of research and development and sales expenses, which are fixed costs that are not included in the gross margin.

In 2014, subscription fees represented 63 per cent of Shopify's revenue, but that number has declined to 48 per cent this past fiscal year, highlighting the increasing importance of growing merchant solutions revenue by increasing GMV instead of simply acquiring more customers. The majority of Shopify's GMV is processed through its high-end clients that subscribe to Advanced and Shopify Plus plans. Specifically, Shopify Plus customers, such as Tesla, Nestlé, and GE, represent 2,500, or 0.5 per cent, of the total 500,000 customers on Shopify as of fiscal year 2016. In addition, retention rates are often higher in these higher-end segments. Customer acquisition costs are substantially higher than costs associated with renewals. Considering that higher churn is often typical in the core part of Shopify's customer base, Shopify is spending more and gaining lower customer lifetime value from the majority of its customers. As such, it is in Shopify's best interest to attract customers with more sustainable business models. In addition to its existing base of high-end clients in Advanced and Shopify Plus plans, there is a portion of the market that Shopify has overlooked that fits this customer profile.

ANNUAL GROSS MERCHANDISE VALUE



Source: Company Filings

"If digital advertising partners continue to clamp down on their policies, it could reduce the economic viability of many Shopify storefronts, escalating the customer churn issue for Shopify."

Servicing Services

In Canada, 78 per cent of small businesses are service-based. While Shopify has succeeded in developing its app store solutions for product-based businesses, there is a significant opportunity to expand its offerings to address the rest of the market. Specifically, service businesses can provide a reliable, long-term revenue stream to complement Shopify's small product-based merchants, reducing the company's overall risk. Unlike the product-based model that allows virtually any individual to enter and engage in retail arbitrage, service-based businesses inherently require an investment in human capital to perform the service at a level at which it can be sold. This acts as a barrier to entry that encourages partnerships with longer-term businesses, thereby providing more revenue stability. Furthermore, the business models of many service companies rely on recurring revenue from repeat business. Small accounting firms, country clubs, and software-as-a-service (SaaS) providers are examples of companies that would create long-term relationships with their own customers and generate ongoing GMV for Shopify. By selling to businesses with recurring revenue models and stickier end customers, the company would deliver sustainable value that aligns with management's long-term goals.

"Service businesses can provide a reliable, long-term revenue stream to complement Shopify's small product-based merchants."

The current platform contains payments processing at its core, but is optimized for the sale of physical products. Shopify's competitive advantage stems from the simplicity and robustness of its platform coupled with its extensive partner ecosystem for product-based businesses. However, Shopify's current solutions are not optimized to transition a service-based business online because the company's current ethos is inherently biased toward selling physical products. Shopify's service business offering has yet to offer the proper features to support this customer segment. Features that strengthen Shopify's value proposition, such as inventory tracking and transfers, are core to physical products. However, Shopify loses this advantage in the context of service-based businesses, which are more differentiated in their business model and would require more customization. Ultimately, the friction caused by these difficulties on the current platform would prevent potential businesses from joining Shopify.

The pursuit of the service business opportunity will require a shift in existing management preferences. Broadly targeting service-based businesses would require resources to not only develop a platform designed specifically for services, but also to support businesses that require additional customization. By encouraging third-party development for service businesses in its partner ecosystem and having a support team to aid those that require customization, Shopify can enter this market more effectively without sacrificing its existing competitive advantage.

By targeting service-based small-medium businesses (SMB) in Canada, amounting to more than 900,000, Shopify can pilot a new *Shopify Services* product before expanding worldwide. Shopify has the expertise and scale to capture at least five per cent of the service-based SMB market in year one, which translates into an additional $22 million in subscription and $14 million in merchant solutions revenues, assuming a monthly subscription fee of $40. Expanding market share to nine per cent and 13 per cent in years two and three respectively yields $63 million and $92 million in total additional revenue. Applying current gross margins yields a combined $121 million in additional gross profit over the first three years.

With the changing trends, Shopify must broaden its definition of "entrepreneur" to include service businesses. Shopify also needs to focus on its most profitable customers instead of feverishly working to acquire more small business clients. Launching and marketing a refined *Shopify for Services* product will help the firm achieve this sustainable long-term growth.

Conclusion

Shopify's simple yet differentiated website design, robust payments processing system, and extensive developer network give it an advantage when targeting customers. However, there are limitations and risks when focusing solely on product-based SMBs. Shopify has the opportunity to address concerns around customer churn and to develop a new revenue stream that leverages its core competitive advantage. It is within Shopify's ability to provide the functionality needed, and it is in the merchant's interest to opt for the solution with e-commerce built into its foundation. The company could very likely follow through on investor expectations by broadening its current strategic vision. However, if Shopify fails to deviate from the current status quo, it risks becoming the next cautionary tale in a Canadian technology ecosystem littered with companies that also once had a shot at global tech stardom.

HSBC: **BANKING ON BREXIT**

HSBC has a unique opportunity to take advantage of the uncertainty Brexit is causing other UK and EU banks

Joseph Scarfone

Illustration by: Rosie Fan

Following a shocking June 2016 referendum result, the United Kingdom announced its intent to withdraw from the European Union (EU). This process, termed Brexit, created mass uncertainty in the largely interconnected European financial system. Immediately following the unexpected referendum result, the British Pound hit a 31-year low and British banks lost £40 billion in market capitalization.

The British government triggered Article 50 of the Treaty of Lisbon in March 2017, beginning the Brexit process. The treaty gives the U.K. only two years to negotiate an exit deal with the EU, which would settle issues like the adoption of EU laws, establishment of a U.K.-EU trade agreement, and flow of capital and people across the reinstated borders. In March 2019, the U.K. will be forced to leave the EU with or without a deal. Soon after triggering Article 50, Theresa May's administration called a snap election with the objective of consolidating power to prepare for Brexit. While her Conservative party did win re-election, it was on a thin margin, resulting in a minority government that could lead to a period of further instability. With this unstable environment leading into Brexit negotiations, British and other European companies will face an uncertain political and regulatory landscape when considering the implications of Brexit for their business operations.

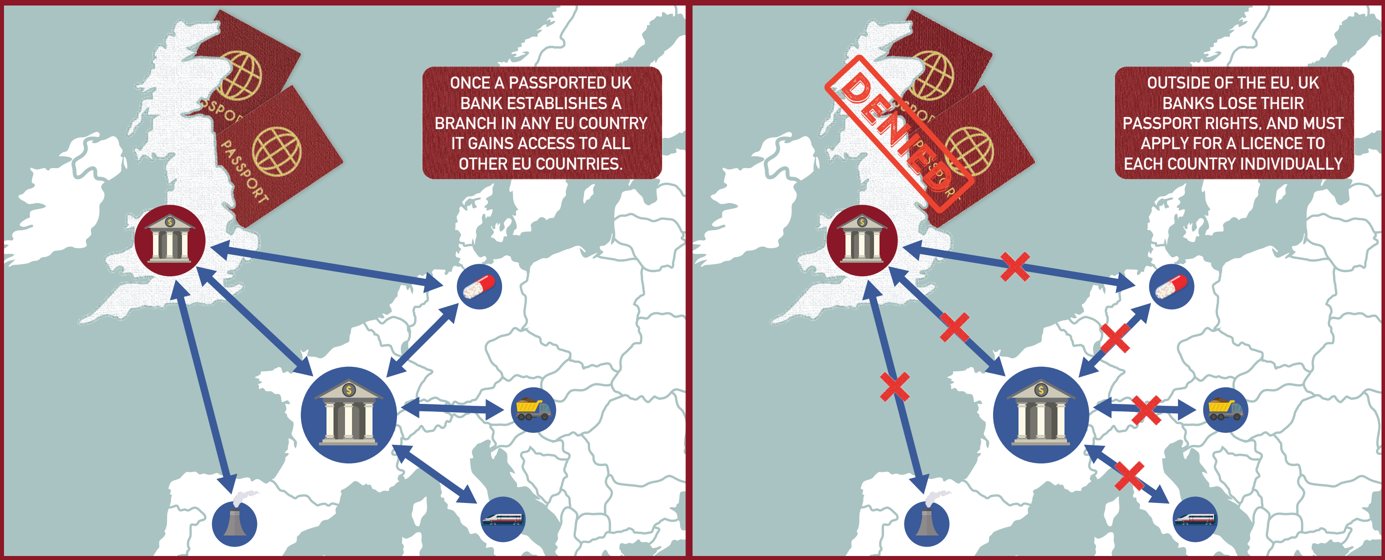
Expired Passports

Brexit has significant ramifications on the British banking system, primarily due to the loss of the UK's passporting rights. These regulations allow banks registered in a country of the EU to operate in any other EU-member state, without needing further authorization. Banks can use these rights to provide traditional lending services, cash management, financing, and trade solutions without added fees, levies, or regulatory complications. British banks are estimated to generate £25 to 38 billion in gross profit per year through passporting, and incumbents are scrambling to restructure their businesses to be able to serve the post-Brexit European market.

To continue operations in the EU without access to passporting rights, U.K. banks will need to re-establish their European presences through creating legally distinct subsidiaries. This includes constructing new balance sheets, integrating new management teams, developing new risk management and compliance processes, and transferring existing business operations and accounts into these new financially separate subsidiaries. In addition to these heavy operational requirements, U.K. banks will need to go through rigid licensing processes with E.U. governments. As a result, they face significant administrative costs and time delays, exacerbated by the fact that many financial institutions will be applying for these licences simultaneously. It is estimated that most U.K. banks will take more than six to 12 months to obtain all of the required licensing, and more than 18 months to build the foundations of their new European subsidiaries.

While Brexit has created business obstacles, it also represents a potential opportunity for companies with the ability to capitalize on post-Brexit complications. Businesses across the U.K. and E.U. are looking for stability in this time of uncertainty, and HSBC is a bank that is particularly well-positioned to provide this. Investor confidence in the Big Four British banks following the referendum reflects the view that the market has the most faith in HSBC to navigate the twists and turns of Brexit.

PASSPORTING - EXPLAINED



Source: British Banking Association

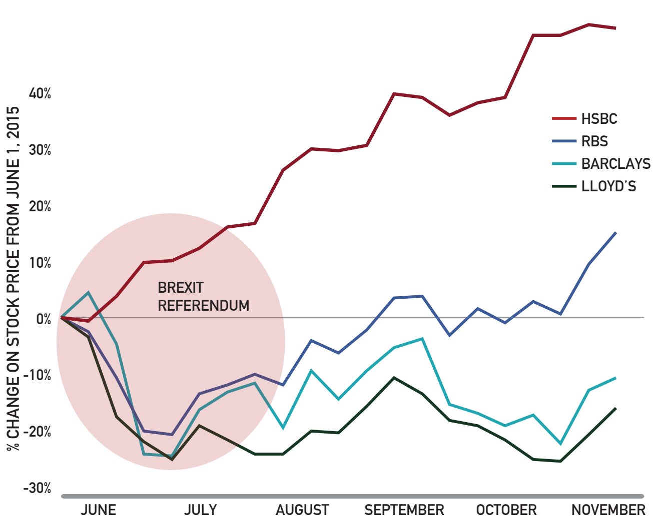
The World's Local Bank

HSBC is one of the largest banks in the world, with access to 90 per cent of global trade flows and operations that span across 67 countries and territories. In 2017, HSBC was recognized as the World's Best Bank by *Euromoney* for "sticking to its mission of financing cross-border capital flows and trade in a more protectionist world, even as other banks retreat to their own borders." This award showcases HSBC's core competency of facilitating international financing through its corporate banking network, even in complex markets.

HSBC was originally headquartered in Hong Kong during the formation of the European Union and subsequent creation of bank passporting. This caused HSBC to establish legally distinct subsidiaries within the EU for regulatory and tax purposes, which include HSBC Trinkaus & Burkhardt AG (Germany), HSBC France, and HSBC Bank Malta. When HSBC moved its group headquarters to the U.K. in 1993, it kept its subsidiary network in place. After Brexit occurs in 2019, these subsidiaries will keep their passporting rights as fully incorporated banks in their respective countries, while still retaining the backing of the HSBC global group. This unique structural difference gives HSBC a significant advantage over its British competition in adapting to a post-Brexit world.

Barclays is the only other major British bank with a European subsidiary network. It is currently revitalizing its Irish subsidiary, which holds passporting rights, to manage its EU business. However, it still faces significant capital and managerial constraints in the short term and will require a moderate amount of time before it becomes operationally autonomous of its U.K. parent. On the other hand, HSBC already has established subsidiaries in numerous countries, many of which have had centuries of independent operating experience.

BREXIT'S IMPACT ON BRITISH BANKS



Source: London Stock Exchange

HSBC will also be competing against European banks, like Deutsche Bank, whose EU operations will not be affected by Brexit. However, similar to how British banks will lose passporting access to the EU, European banks will also lose access to the U.K. This further solidifies HSBC's structural advantage, as European banks will face a similar predicament in the U.K. as British banks will in the EU.

Corporate Banking in Europe

Small, mid-market, and multinational businesses in the EU and U.K. will all be affected by Brexit in different ways; increased complexity in doing business due to new trade tariffs and bank levies will threaten existing business practices. If the U.K. and EU cannot agree to a new trade deal by 2019, trade will revert to standard WTO regulations and disrupt cross-border operations. For instance, cars would face tariffs of 10 per cent and agricultural products would have tariffs between 20 and 40 per cent. To continue operating across the border, businesses may have to relocate staff and set up bank accounts in both jurisdictions.

The expected volatility in the market will allow HSBC to proactively pursue new clients before Brexit takes effect, thereby leveraging its short-term advantage. Customers will value stability in their financing, and increased ease of using other bank services. Greenwich Associates estimates that 40 per cent of large companies in the EU express a strong willingness to switch banks in the year ahead due to the geopolitical risks presented by uncertain banking regulations.

Mid-market enterprises are likely to be most adversely impacted by the burdens of a post-Brexit EU. They are not large enough to have extensive in-house expertise in global regulations or significant enough to lobby for preferential treatment like their multinational counterparts. Additionally, they are too large to benefit from government incentives and support provided to small businesses. This would be HSBC's ideal target market, as these firms will require specific cross-border services in the short term and can be converted to long-term clients through product-based incentives and careful relationship management.

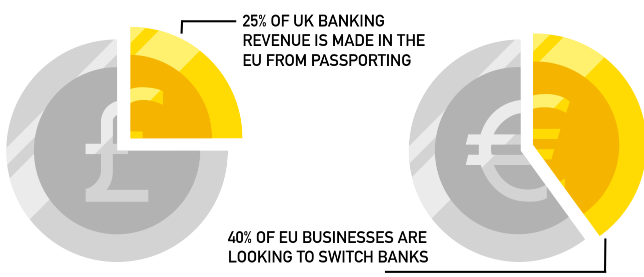
An Investment into the Future

HSBC must strategically adjust its operations in Europe to reflect its core competencies, which include its international framework, expertise in managing complexity, and stability as a well-financed and established bank. HSBC should focus on offering products that will be newly required for post-Brexit European firms, and that it has a structural advantage in providing. For instance, it can use its already-established subsidiary network to facilitate new cross-border cash management and trading solutions that U.K.-EU companies would not have previously needed to use. HSBC can use Brexit as a catalyst for change, with the goal of acquiring customers in need of these specialized products. HSBC will then have the opportunity to cross-sell other products and services to clients, aiming to increase its customer switching costs and lock them in as long-term customers.

Although the bank is already unique in its ability to provide specialized cross-border services in the short term, it can drive more conversion by offering potential clients further financial incentive to switch through a loss-leader pricing strategy. HSBC can acquire clients through select low-priced products, but achieve profitability by cross-selling and upselling customers to different services and products to suit the rest of their banking needs. As dealing with multiple financial institutions increases administrative costs for businesses, HSBC would be able to drive mid-market enterprises to eventually move over all of their business. Financial services typically have high switching costs due to sticky relationships and administrative hassles, but HSBC can use the Brexit opportunity to trigger short-term conversion, eventually making it difficult for customers to switch back for the same reasons.

HSBC is able to offer lower prices for two reasons. First, it is one of the best-capitalized banks in Europe, with access to cheap global deposits to fund potential client acquisition. Second, it does not have to incur the cost of building new subsidiaries, like its British competitors. These savings can be passed on to new clients in the form of price discounts, enabling HSBC to deliver on its loss-leader strategy and ensure that customers switch banks within this short window of opportunity.

UK BANKS RELATIONSHIP WITH EUROPEAN CUSTOMERS



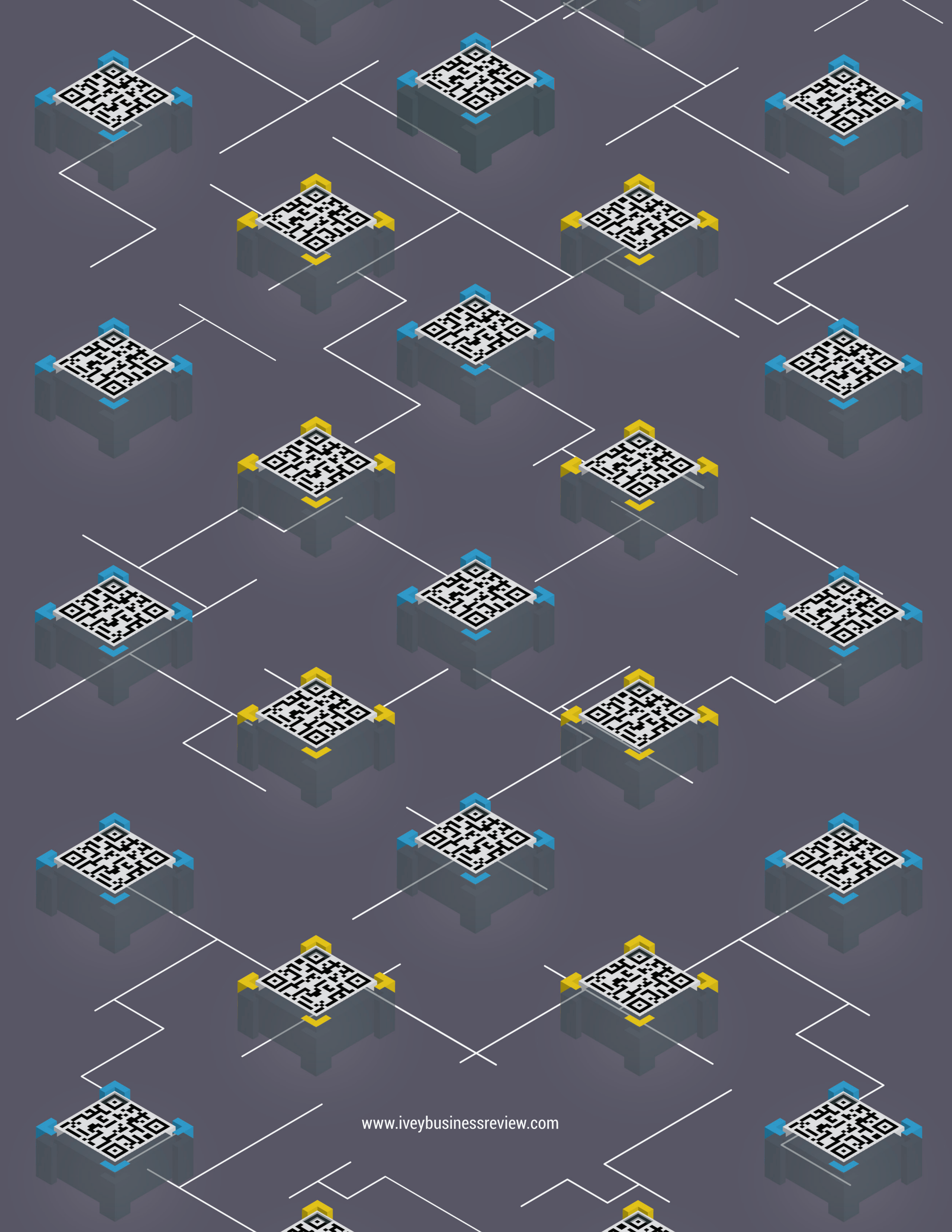
Source: Oxford University, Greenwich Associates

HSBC's corporate banking services are currently segmented into *global banking and markets* and *commercial banking* business lines. Most large multinational corporations with complex global trade and financing needs are serviced by the global banking and markets segment, while small and mid-market companies are typically covered through commercial banking. To maximize the success of its conversion strategy, HSBC should align these business lines and facilitate increased resource-sharing to better serve new clients in commercial banking, providing cross-border expertise and services that have been traditionally available only to large multinationals. This strategic shift in operations will cater to new cross-border needs upon the loss of passporting rights, and will enable HSBC to provide close and knowledgeable service to prospective clients in line with its core competencies.

Banking on the Change

U.K. banks that have lost their EU passporting access will attempt to take back lost business after establishing their own subsidiary banks. Significant investments in time and resources could deter a full-scale relaunch into Europe, but British banks will eventually return in the long run. Likewise, European banks will make significant efforts to establish subsidiaries in the U.K. Consequently, HSBC's discounted pricing strategy may need to remain in place until relationship managers are confident in the bank's relationship with its new clientele in Europe.

HSBC is poised to significantly increase its presence in the EU in the wake of Brexit if it can execute a bold and aggressive strategy rather than a reactive one. By revitalizing its European operations to reflect its core competencies as an international bank, it can capitalize on a rare opportunity to drive customer conversion and emerge as the undisputed leader of corporate banking in post-Brexit Europe.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