

DISCUSSION PAPER:

“**NO MERE TINKERING WITH INNOVATION**
TIME AFTER DESIGN THINKING, LEAN STARTUP
AND OTHER INNOVATION HACKS”

Written by:



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FOREWORD

Mercer is delighted to sponsor this paper on the boldness required for organisations to innovate. The issues raised ring true with what Mercer hears from clients – of the excitement and trepidation provoked by disruption. From our perspective, there are two clear implications for businesses to stay ahead.

Anchor to sustainable future value creation

There has been a sharp shift in recent years about the perception of disruption. Nearly three-quarters of executives surveyed in [Mercer's 2019 Global Talent Trends Study](#) predict significant industry disruption in the next three years, while only 26% said the same in 2018.¹ Aware of the relentless march of competitors (traditional and new) and the evolving opportunities offered by technology, companies are redoubling efforts to become nimble and future-ready – 30% of companies today are confident they can change at speed, twice the number from last year.

Still, there remains anxiety that these initiatives merely help the business to tread water, rather than swim in the fast lane. How to keep the lights on today, while at the same time invest heavily in tomorrow? In Mercer's view, transformation occurs when companies plot a path to what customers will value in the future. This means aligning change efforts to a few anchor points (be it new service lines or partners or new competencies) and corralling resources around these to enable focused execution.

Make innovation everybody's job

With clear stakes in the ground as to where future value will be generated, it is up to each individual in an organisation to put the

shoulder to the wheel of innovation, and HR has a key role in spurring creativity while setting the example.

In an era of continuous transformation, talent practices should infuse an enterprise-wide culture of experimentation – or a [lab mindset](#).² Using talent insights to inform teaming, performance management, and training and learning, for example, organisations can foster a culture of curiosity that drives new products and solutions. A lab mindset also drives evolution in HR; analysing datasets and creating new experiments provide an x-ray of how the organisation is working from a people perspective. Workforce analysis in hand, the company is better equipped to motivate, empower and retain the talent that allows companies to leap forward.

The innovation era will reward those who can take a people-first, data-driven approach to talent strategies and build workplaces that enable collaboration, autonomy and experimentation.³ When a collective sense of inspiration flows throughout the organisation, the shockwaves of disruption will be transformed into sparks of brilliance.

Puneet Swani, Partner, Mercer's International Career Business Leader

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1. Mercer, 2019, *Global Talent Trends Study: Connectivity in the Human Age*, available at <https://www.mercer.com/global-talent-trends>
 2. Mercer, 2018, *Cultivate a Lab Mindset: Building the Innovation-Ready Organization*, available at <https://www.mercer.com/our-thinking/career/cultivating-lab-mindset.html>
 3. Mercer, 2019, *Building an Innovation-driven Tech Workplace*, available at <https://www.mercer.com/our-thinking/career/innovation-driven-tech-workplaces.html>

ABOUT

AUTHORS



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ABOUT IMD

IMD is an independent business school with Swiss roots and global reach. Focused on developing leaders and transforming organizations, IMD designs and delivers interventions that challenge what is and inspire what could be. For the last 8 consecutive years, IMD has been ranked #1 in the world for Open executive programs and in the top three overall for executive education (*Financial Times* 2012-2019). For further information please visit <https://www.imd.org>.

ABOUT CRF

Our purpose is to increase the effectiveness of the HR function, in order to drive sustained organisational performance, through developing the capability of HR professionals. With a network of over 200 leading organisations, we continue to grow as the respected focal point and knowledge source for improving corporate and individual performance.

We inform, discuss and guide our members on how to enhance their personal capability, those of their colleagues and, in turn, the effectiveness of the function.

01

 **INNOVATION**
SETTING THE SCENE



INNOVATION

It's common knowledge among executives that while humans [now live longer](#), companies die faster. Today's large companies differ from those of yesteryear. In 1958, the average lifespan of companies listed in Standard & Poor's 500 was 61 years. It's now less than 18 years, [according](#) to a study by McKinsey. Others have suggested that [nearly 50%](#) of the companies currently in the S&P 500 will be replaced over the next ten years. They will be bought out, merged, or go bankrupt, like Enron and Lehman Brothers and Polaroid and Kodak. And those who escape may still struggle to restore their former fortune, such as General Electric, Panasonic, Sony, ABB, Citigroup, UBS, and the like.

Every CEO is presumed to understand that, and also every executive, whose c-suite office either is or isn't situated at a current S&P 500 company. It's therefore no surprise to these executives that in 2019, the impetus is to leverage connectivity and artificial intelligence as part of their corporate strategy. No carmaker, for instance, would ever speak to investors without mentioning 'future mobility.' BMW is a "supplier of individual premium mobility with innovative mobility services." General Motors aims to "deliver on its vision of an all-electric, emissions-free future." Toyota possesses the "passion to lead the way to the future of mobility and an enhanced, integrated lifestyle." And Daimler, the maker of Mercedes, sees the future as "connected, autonomous, and smart." In contrast to the personally owned, gasoline-powered, human-driven vehicles that dominated the last century, these carmakers realise they have to transition toward mobility services based on self-driving electric vehicles that will be paid for by the trip, by the mile, through a monthly subscription, or a combination of all three. Mobility in the past was created by the individual cars that manufacturers sold. Mobility in the future will be produced by service companies operating a variety of self-driving vehicles in fleets.

But a peculiar form of the knowing-doing gap persists, and it's not unique among automakers. A number of financial institutes and banks we have spoken with have all organised employee seminars that have invited motivational speakers to talk about innovation. They have established corporate venture funds to invest in innovative startups. They have practiced open innovation, posting challenges online and running tournaments with external inventors. They have organised 'design thinking' workshops for employees to rethink customer solutions outside the mainstream, afterward installing Lean startup methodologies that allow employees to fail fast in order to succeed early.

"Tell me one thing that I should do but haven't done," hissed an executive the moment I mentioned [Google Venture](#). The innovation process at her bank is already incredibly democratised, yet her team still fronts an unyielding organisation whose core business is encroached upon by Google and Amazon by the day, if not Tencent or Alibaba or some other digital upstart. It seems that no matter how hard these in-house innovation experts try, their big companies just won't budge. The ship is not just big; the ship cannot turn.

02



INNOVATION

SUCCESSFUL COMPANIES DON'T JUST ADAPT,
THEY PREPARE



INNOVATION

Andrew S. Grove, the long-time chief executive and chairman of Intel Corporation, told a Stanford researcher in 1991, “Don’t ask managers, ‘What is your strategy?’ Look at what they do! Because people will pretend.” What Grove saw as the actual strategy of a firm was the cumulative effect of day-to-day prioritisations or decisions made by middle managers (engineers, salespeople, and financial staff) – decisions made regardless of what the company says its strategy is.

And so, at IMD Business School, we track how likely a firm is to successfully leap toward a new knowledge discipline in its effort to prepare for the future. For automakers, as mentioned earlier, it’s the shift of know-how from mechanical engineering with combustion-engine experts to electric and programming experts – the same kind who build computers, mobile games, and handheld devices. For consumer banking, it’s the shift from operating a traditional retail branch with knowledgeable staff who provide investment advice to running data analytics and interacting with consumers the same way an e-commerce retailer would. The pace of change may differ between industries, but the directional shift is undeniable.

This IMD ranking measures companies within each industry sector using hard market data – data that is publicly available with objective rules – rather than relying on soft data such as polls or the subjective judgments of raters. Polls suffer from the tyranny of hype. Names that get early recognition get greater visibility in the press, which accentuates their popularity, leading to a positive cascade in their favor. Rankings based on polls also overlook fundamental drivers that fuel innovation, such as the health of a company’s current business, the diversity of its workforce, its governance structure, the investments it has made against competitors, the speed of its product launches, and so on. Using an objective composite index that accounts for these drivers, Table 1 shows the rankings of the top 55 automakers and component suppliers (methodology described in detail in the appendix).

Table 1

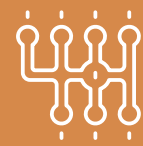
COMPANY	SCORE	RANK
TESLA INC.	100.00	1
GENERAL MOTORS COMPANY	90.60	2
VOLKSWAGEN AG	79.07	3
FORD MOTOR CO.	69.19	4
TOYOTA MOTOR CORPORATION	62.08	5
NISSAN MOTOR CO., LTD.	58.45	6
FERRARI NV	57.58	7
BAYERISCHE MOTOREN WERKE AG	56.53	8
DAIMLER AG	55.04	9
VISTEON CORPORATION	54.05	10
GEELY AUTOMOBILE HOLDINGS LTD.	51.94	11
AB VOLVO	51.94	12
FIAT CHRYSLER AUTOMOBILES N.V.	50.07	13
PEUGEOT S.A.	49.83	14
APTIV PLC	48.79	15
VALEO SA	48.78	16
FUYAO GLASS GROUP INDUSTRIES CO., LTD.	48.60	17
COOPER-STANDARD HOLDINGS INC.	45.36	18
HONDA MOTOR	44.93	19
BRILLIANCE CHINA AUTOMOTIVE HOLDINGS LTD.	44.32	20
CONTINENTAL AG	43.94	21
BAIC MOTOR CORPORATION LTD.	43.34	22
RENAULT	42.82	23
BYD COMPANY LTD.	41.69	24
SKODA AUTO, A.S.	37.04	25
MAGNA INTERNATIONAL INC.	36.41	26
DENSO CORPORATION	35.58	27
ROBERT BOSCH GMBH	35.08	28
AUDI AG	34.27	29
GUANGZHOU AUTOMOBILE GROUP CO., LTD.	33.16	30
PACCAR INC.	33.00	31
HARLEY-DAVIDSON, INC.	32.32	32
CHAOWEI POWER HOLDINGS LTD	32.09	33
CHINA FAW GROUP CO., LTD.	30.82	34
YAMAHA MOTOR CO., LTD	30.45	35
MITSUBISHI MOTORS CORPORATION	28.98	36
JAGUAR LAND ROVER LTD.	28.81	37
HYUNDAI MOTOR CO.,LTD.	25.47	38
SUZUKI MOTOR CORPORATION	25.38	39
SAIC MOTOR CORPORATION LTD.	21.17	40
SUBARU CORPORATION	20.29	41
ISUZU MOTORS LTD.	20.21	42
MAZDA MOTOR CORPORATION	19.66	43
JIANGLING MOTORS CORPORTION	19.43	44
ANHUI JIANGHUAI AUTOMOBILE GROUP CORPORATION., LTD.	17.74	45
MAHINDRA & MAHINDRA LTD.	16.73	46
HAIMA AUTOMOBILE GROUP CO., LTD.	16.57	47
AISIN SEIKI CO., LTD.	16.42	48
TS TECH CO., LTD.	12.54	49
GREAT WALL MOTOR CO., LTD.	12.49	50
TATA MOTORS LTD.	12.05	51
CHONGQING CHANGAN AUTOMOBILE CO., LTD.	11.21	52
KIA MOTORS CORPORATION	11.07	53
DONGFENG MOTOR GROUP CO., LTD.	7.57	54
BEIQI FOTON MOTOR CO., LTD.	0.00	55



INNOVATION

The index points out the general conservatism of large companies and also reveals how opportunities and market leadership are squandered. Most radical ideas fail, but large companies don't tolerate failure. Too many CEOs have been conveniently focusing innovation solely on the nuts and bolts of everyday implementation: gathering consumer insights, tweaking financial forecasts, iterating product designs in experiments and of different combinations, prototyping offerings, and experimenting with business model ranges. What these leaders sometimes forget is that the underlying technologies – from artificial intelligence to blockchain, from battery technology to augmented reality – never stay constant. Seizing a window of opportunity is not necessarily about being the absolute first but rather about being the first to get it right on a large scale. Doing so not only takes courage and determination but also resources so vast and talents so deep that they often exceed the company's current capital and governance structure. Unless an alternative strategy process is installed, the new strategy will never be fully realised. Merely tinkering with innovation on the fringes cannot overcome a limited capital agenda. Anyone can witness the gravity of this problem firsthand at the BMW Museum.

03



INNOVATION

RIDE TO MISADVENTURE AT BMW



INNOVATION

Walking up the spiral ramp of one of the rotundas inside the BMW Museum, one sees flashes of pictures from BMW history displayed in variable sequences, slipping in and out of view like mirages. At the very top of the museum is a [‘themed area’](#) of about 30 stations demonstrating an emissions-free, autonomously driven future. These are not only a vision but also a real project, begun in earnest in the autumn of 2007 by then-CEO Norbert Reithofer and his chief strategist Friedrich Eichiner. The two men tasked engineer Ulrich Kranz, who had [revived](#) the Mini brand in 2001, to ‘rethink mobility.’ The task force soon grew to 30 members and moved into a garage-like factory hall inside BMW’s main complex.

“I had the freedom to assemble a team the way I wanted. The project was not tied to one of the company’s brands, so it could tackle any problem,” Kranz said in an interview with [Automotive News Europe](#) in 2013. “The job was to position BMW for the future—and that was in all fields: from materials to production, from technologies to new vehicle architectures.”

And so Kranz and his team decided to explore uncharted territory that included “the development of sustainable mobility concepts, new sales channels, and marketing concepts, along with acquiring new customers.” The starting point for ‘Project i’ was, in other words, a blank sheet of paper.

“We traveled to a total of 20 mega-cities, including Los Angeles, Mexico City, London, Tokyo, and Shanghai. We met people who live in metropolises and who indicated that they had a sustainable lifestyle. We lived with them, traveled with them to work, and asked questions,” Kranz [recalled](#). “We wanted to know the products that they would like from a car manufacturer, how their commute to work could be improved,

and how they imagined their mobility in the future. As a second step, we asked the mayors and city planners in each metropolis about their infrastructure problems, the regulations for internal combustion engines, and the advantages of electric vehicles.”

Once they’d gathered all the findings, Kranz expanded his team by seeking out “the right employees both internally and externally.” The result was BMW’s gas-electric i8 sports coupe and all-electric i3 people mover, which shimmered under white lights at BMW World, where the company’s top automotive offerings are showcased. The i3 had almost no hood, and the front grille was framed by plastic slits that looked like a pair of Ray-Bans. It came in a fun-looking [burnt orange](#). The front seats were vertically poised, with the dashboard stretching out, such that they exuded a ‘loft on wheels’ vibe. Like the interior, made of recycled carbon fiber and faux-wood panelling, the electric motor of the i3 was geared toward urban dwellers in mega-cities who yearned for a calm, relaxing drive.

What made BMW all the more remarkable was its timing. Almost two years before Tesla’s Model S was introduced, BMW had presented its own battery-powered car as a revolutionary product and had committed to building it and delivering it to showrooms by 2013. By the time the BMW i3 went on sale, Tesla’s Model S had spent just over a year on the U.S. market. The 2014 i3 went on to win a [World Green Car award](#), as did the 2015 model, the i8. In short, BMW was fast and early.

Then something terrible happened – or, more specifically, nothing really happened.

The i3 soon turned five years old and the i8 four. The BMW i brand had included the services DriveNow and ReachNow (for car sharing), ParkNow



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(to find available parking), and ChargeNow (to find charging stations). But besides being featured in occasional press releases, Project i has given way to other BMW sports cars in prime-time TV advertising spots. And there hasn't been any news from Project i, except that project members are [reportedly leaving](#). Ulrich Kranz, the former manager, got together with former BMW CFO Stefan Krause at Faraday Future, and after a short stay, they started Evelozcity in California, where they recruited another i-model designer, Karl-Thomas Neuman. Kranz is not alone.

Carsten Breitfeld, the former i8 development manager, is now CEO of Byton, where he also enlisted a marketing expert and a designer from the BMW team.

How much Project i has cost BMW, we'll never know. But if, according to BMW figures, the carbon-fiber production and the autobody work for the i3 set the company back [some half a billion euros](#), the entire project could easily have cost two to three billion – a sum that would have covered the development of two to three series of a conventional VW Golf or Mercedes S-Class. Two to three billion euros is also more than fifteen times the \$150 million Apple spent to develop the first iPhone, which [launched in 2007](#). With this much bleeding, the new CEO Harald Krüger has now talked of [Project i 2.0](#), a plan to integrate the BMW i sub-brand back into the parent company and refocus distribution efforts on 'classic' products.

In 2018, BMW USA reported that just [7%](#) of its sales were cars with plugs, which included all its hybrid offerings. Meanwhile, Tesla reported booming sales of its Model 3, which became one of the [USA's top 20 most-sold vehicles](#) in the third quarter of 2018. Tesla was also ranked fourth in luxury car sales during the same quarter. Did Tesla and other

startup companies steal BMW's idea and run with it? No, it's what's called the *Zeitgeist*, a German word meaning 'spirit of the time.' When the time is ripe, the ideas are 'in the air.' Competition invariably emerges, and companies have to improve their ideas to stay ahead. They need to come up with demonstrations that excite potential customers, potential investors and, most importantly, potential distributors.

Still, BMW is by no means a laggard in innovation. According to the objective composite index in Table 1 above, BMW is not that bad. But it's not enough to be good: one also needs to be working toward becoming the very best to prepare for the future because the auto industry and virtually all other sectors, including banking, are moving into the 'platform economy.'

04



INNOVATION

FROM COEXISTENCE TO MONOPOLISTIC
COMPETITION



The reason why Uber, at the time of this writing, is valued at almost \$70 billion after its initial public offering (IPO) in May 2019, commanding a market capitalisation higher than that of GM, Ford, BMW, or Daimler, is in large part due to its being a 'platform' company. In explaining the dynamics of a 'platform economy,' as opposed to those of a traditional economy, economists and business researchers routinely use the 'network effect' to describe the value of a platform. This value largely depends on the number of users on either side of the exchange. The more riders a ride-sharing platform has, for instance, the more attractive it becomes to drivers, leading even more people to use it. And once a platform reaches a certain size, the thinking is that it becomes too dominant to unseat. In other words, a platform economy has no room for multiple players; the market equilibrium will forever move toward a monopoly. That's how Google dominates search engines, Facebook rules social networks, Twitter towers over microblogging, and Netflix, YouTube, and Spotify have cornered the movie-streaming, video-sharing, and music-streaming markets, respectively. It's the winner that takes it all.

Considering this structure, the world simply can't accommodate so many automakers by the time electric vehicles, autonomous driving, and ride sharing converge. Once mobility moves away from physical products (individual cars) that manufacturers sell to on-demand services where providers operate a variety of self-driving vehicles in fleets, the absolute volume of car sales will dissipate. And consequently, the industry will follow the inevitable consolidation, with almost everyone except for the very best descending, slowly but inexorably, into irrelevance.

But it's not just cars. The dilemma experienced by German or American or Japanese automakers is strikingly similar to the one facing executives in banking and a host of other industries these days. Just as Detroit

is being confronted by Silicon Valley, so too is Wall Street seeing the future of banking everywhere it turns. Turning to China, it sees Alibaba, whose Alipay system has become synonymous with mobile payment, and AntFinancial, Alibaba's finance subsidiary, which is now worth \$150 billion – [more than Goldman Sachs](#). Looking homeward, it sees that startups like *Wealthfront*, *Personal Capital*, and *Betterment* have all launched robo-advisors as industry disruptors. In retail checkout lanes, it sees *Square* or *Clover* or *PayPal Here* taking in credit card payments on behalf of millions of small-time merchants. It sees that the future of banking is not only about big data analytics but also about calling on and bundling groups of financial services that take place in real time with minimal human interaction. A smart infrastructure that automatically interacts with customers, continuing to improve its algorithm and adjust its response without human supervision as it handles data gushing in from all around the world at millions of bytes per minute, is tantamount to one giant leap forward for every banking incumbent.

In fact, this data intelligence is the only first-mover advantage that matters. Deep-learning-based programmes can already decipher human speech, translate documents, recognise images, predict consumer behaviour, identify fraud, and help robots "see." Most computer experts would agree that the most direct application of this sort of machine intelligence is in areas like insurance and consumer lending, where relevant data about borrowers – credit score, income, credit card history – is abundant, and goals, such as minimising default rates, can be narrowly defined. That explains why today, no human eyes are needed to process any credit requests below \$50,000. The question of where and how to deploy A.I. for these businesses is as obvious as simply finding out where a lot of routine decisions are made and substituting



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the humans with algorithms. AirBnB founder Brian Chesky summarises this strategy: *“Do everything by hand until it’s too painful, and then automate it.”*

But data intelligence also grows in a positive feedback loop. The more data that are used, the more valuable the business becomes, since retrieving large quantities of relevant data is always difficult and expensive. Google Maps becomes more accurate as more people use it. When the underlying algorithms gain more data to work with, the apps become even more accurate, and consumers like them even more. Google has made two decades’ worth of investments to digitise all aspects of its workflow, but not because it had a clear notion from day one of what it wanted to predict. It had digitised everything before a clear notion of A.I. had even fully emerged – a sort of groundwork that took place before a well-defined strategy for effective A.I. could be established.

It’s this sort of required thinking that becomes problematic for traditional banking incumbents. Inside many traditional banking incumbents, managers are often tasked with considering how many different types of data are needed. Data are understandably expensive to acquire, so investment conventionally involves a trade-off between the benefit of more data and the cost of acquiring them. How many different sensors are required to collect data for training? How frequently does data need to be collected? More types, more sensors, and more frequent collection processes mean higher costs along with the potentially higher benefits. In thinking through these decisions, managers have to carefully determine what they want to predict, guided by the belief that this particular prediction exercise will tell them what they need to know. This thinking process is similar to the ‘re-engineering’ movement of the 1990s, during which managers were told to step back from their processes and outline the objective they wanted to achieve before beginning the re-engineering. It’s a logical process, but the wrong one.

Any data scientist would confirm that datasets become geometrically more valuable when you combine them. Combined datasets often reveal insights and business opportunities that could not have been imagined previously. When Google introduced Gmail, it built a data set of identity in addition to its search engine data set. Combining the two datasets created a geometric increase in value, as future AdWords ads would provide more value to advertisers and, by extension, to Google. The same thing happened again with Google Maps, which enabled Google to tie identity and purchase intent to location. In each instance, it was only after Google had introduced a new service that the company could then find new scenarios for user data for which combining datasets would be even more valuable. This is the essence of ‘you don’t know what you don’t know.’

Facebook follows the same principle. Facebook’s photo tagging expanded the social graph. The ‘news feed’ enriched it further still. The *Like* button delivers data on emotional triggers. The ‘connect’ feature tracked users as they browsed around the web. The value is not in the photos and links posted by users: The real value resides in the metadata – the data about data – which describe where the user was when they made the post, what they were doing, with whom they were doing it, product offerings that they considered, and more.

Put differently, the application of A.I. renders the conventional budget allocation ineffective if banking incumbents seek to scale their footprints digitally. Great businesses often seem like bad ideas when they first appear because their business model can’t point to a proven example of why they’ll work. This is why banking incumbents have no choice but to follow a disruptive playbook, but with a twist.

05



INNOVATION

EMBRACE DISRUPTORS, DON'T SMOTHER THEM



INNOVATION

What Table 2 opposite illustrates is a similar composite index to the one used in the automotive sector, but this time, it measures the readiness of each financial institute to leap toward a new frontier of know-how and is specifically relevant to the financial sector: robo-advisors and chatbots, cryptocurrency and blockchain, artificial intelligence, and application programming interfaces (APIs).

To achieve a balanced and robust measurement, we take note of the 'health' of a company's ongoing business: the idea that it can invest in the future so long as it maintains a healthy, existing cash flow. Operating margins and rising revenues matter. But that healthy cash flow gets deployed to new areas because executives can see beyond their day-to-day operations and are capable of challenging the long-held assumptions of the industry. This process demands diversity of a company's workforce, which is represented by gender and nationality as well as the specific backgrounds of the top leadership.¹ Even if a current CEO is promoted from within the firm, the best-case scenario is what we like to call the 'inside-outsiders.' Legendary CEO Jack Welch of GE is the prototypical inside-outsider. He came from GE's then-peripheral plastics business, stuttered, had a Boston accent, and was a chemical engineer in a company of mechanical and electrical engineers. Such inside-outsiders develop inside the company and therefore know the organisation and its culture as well as the people and their capabilities – but they also retain a strong sense of objectivity. Far from just drinking the company Kool-Aid, they have an understanding of why and how the company has to change to deal with the new opportunities and challenges posed by changing markets and technology. From here, we then measure the company's growth prospects gauged by investors' expectations, which are reflected in the company's price-to-earnings ratio (P/E ratio), its intensity of investment in startups or new ventures,

Table 1

COMPANY	SCORE	RANK
MASTERCARD	100.00	1
VISA INC.	93.98	2
GOLDMAN SACHS GROUP, INC.	75.49	3
PAYPAL HOLDINGS, INC.	69.03	4
SQUARE	63.41	5
WELLS FARGO & CO.	61.87	6
BANK of AMERICA CORPORATION	61.48	7
CITIGROUP INC.	61.25	8
CREDIT SUISSE AG	56.06	9
JPMORGAN CHASE & CO.	52.28	10
HSBC HOLDINGS PLC	51.66	11
UBS AG	50.42	12
BNP PARIBAS	49.54	13
SWISS LIFE AG	49.33	14
PRUDENTIAL PLC	46.73	15
BARCLAYS BANK PLC	46.61	16
PING AN INSURANCE (GROUP) COMPANY OF CHINA LTD.	44.18	17
ALLIANZ SE	41.92	18
BBVA	40.58	19
AXA SA	39.22	20
PRUDENTIAL FINANCIAL INC.	37.93	21
CNP ASSURANCES	36.96	22
ZURICH INSURANCE GROUP AG	35.78	23
CHINA MERCHANTS BANK CO., LTD.	35.24	24
DBS BANK	34.30	25
CHINA LIFE INSURANCE CO., LTD.	33.40	26
MUNICH RE	28.86	27
BANCO SANTANDER SA	28.50	28
CREDIT AGRICOLE S.A.	28.32	29
METLIFE INC.	28.16	30
BANK of CHINA LTD.	27.74	31
DEUTSCHE BANK AG	25.05	32
OCBC BANK	24.88	33
AMERICAN EXPRESS COMPANY	24.34	34
STANDARD CHARTERED PLC	24.28	35
ING GROEP NV	23.09	36
CHINA PACIFIC INSURANCE (GROUP) CO., LTD.	22.02	37
ASSICURAZIONI GENERALI SPA	19.59	38
CHINA CONSTRUCTION BANK	19.36	39
INDUSTRIAL & COMMERCIAL BANK OF CHINA (THE) – ICBC	16.56	40
SOCIETE GENERALE SA	14.80	41
UNICREDIT SPA	13.23	42
AMERICAN INTERNATIONAL GROUP INC.	9.09	43
AGRICULTURAL BANK OF CHINA LTD.	0.00	44

1. The importance of diversity and inventiveness is reflected even in Nobel Prizes. Most winners in the U.S. are either first-generation immigrants or their offspring. That relationship between immigration and Nobel Prizes is not surprising when one reflects that the willingness to take risks and to try something drastically new is a prerequisite both for emigrating and for innovating at the highest level. Nobel Prize-winning research demands those same qualities of boldness, risk tolerance, hard work, ambition, and innovativeness. It turns out immigrants and their offspring also contribute disproportionately to American art, music, cuisine, and sports.



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and, perhaps most importantly, its new product announcements, its announcement frequency, and its press coverage in new areas related to robo-advisors and chatbots, cryptocurrency and blockchain, artificial intelligence, and APIs.

Unsurprisingly, the leap readiness index in Table 2 saw a few household names among the fintech developers. PayPal, a digital payments firm that turns 20 this year, and Square, which processes credit card payments from street stalls to coffee stands to fancy farmers' markets, are both sitting on top of the rankings. More surprising are the incumbents, who are managing to grow just as fast. None are retail banks, who supposedly enjoy the advantage of 'being close to consumers' and manage to 'amass mountains of user data.' The leading incumbents, it turns out, are the legacy infrastructure builders: Visa and Mastercard.

To understand Visa and Mastercard is to understand credit cards themselves. It is usually not very difficult to locate a point in time where a business, or a sector, pivots in one direction or another. One can look back at the calendar and compare events with performance. A new boss takes the helm, for instance, or a canny new strategy is imposed, and the results are clear to see. So, to understand the future of credit cards, one must look back over their past.

In 1958, Bank of America, the largest bank in the United States as well as in the world, mailed out some 60,000 unsolicited [BankAmericards](#), in Fresno, California, where it was headquartered at the time. California in the 1950s was one of the most populous and wealthiest states, and Bank of America had a banking relationship with 60% of the residents and held more than 30% of the state's deposits. Its size and power might have conferred certain advantages, but the outcome of BankAmericard

was far from guaranteed. Even in the 1950s, credit cards weren't a new idea, and Bank of America's wasn't the first. Diners Club had introduced its credit card in 1951 to 200 customers, allowing them to charge their meals at an initial 27 restaurants throughout New York City. American Express also had its own credit card, primarily designed for use in travel and entertainment, accepted by restaurants, hotels, and airlines.

Perhaps what was unique about BankAmericard, despite the limitations of only being used within the state of California, is that it could be used for any type of purchase at participating merchants, from general stores to gas pumps to restaurants. And unlike the early credit card programmes, where customers were required to pay the balance at the end of each month, BankAmericard was the first to offer revolving credit, allowing customers to pay off their balances over time.

This open approach to various types of merchants prompted numerous banks nationwide to license the card system from Bank of America over the following years. Its subsidiary, *BankAmericard Service Corporation*, provided other banks with cards and processing services – authorisation, clearing, and settlement, including the enforcement of customers' credit limits, usually by means of a [telephone call](#) between an authorisation center and the purchaser's banks prior to the arrival of the computer age. By 1968, BankAmericard was accepted in 42 states, with 41 issuing banks and 1,823 associated banks. The card was also affiliated with banks in Canada, the UK, Ireland, and Japan.

Bank of America maintained a virtual monopoly in credit card services for other banks for a few years, but its increasing influence worried the other banks, who now sought to shake free. It was a question of how to ensure *BankAmericard Service Corporation* wouldn't always prioritise



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processing its own credit card transactions at the expense of other banks. The obvious answer to this worry was to create a cooperative association that could then act as a [joint venture](#), enabling members to share a centralised payment system while also competing fairly for their own benefit. By 1970, Bank of America [ceded control](#) of BankAmericard to this newly created association, which was later renamed *Visa*, a term widely understood in many countries and across many languages to mean ‘universal acceptance.’

Around the same time, in [1966](#), another group of California banks formed another association, which would soon issue the nation’s second major bank card, Mastercard. It marketed itself to [ordinary](#) men and women, contrasting with Visa’s historical efforts to capture an upper-income clientele. In subsequent years, Visa and Mastercard poured resources into computerising their centralised networks to electronically link the merchants who sell things to cardholders and the banks that issue the credit cards and underwrite the credit line for the cardholders. Plastic is everything for Visa and Mastercard, for they oversaw the clearing and settlement systems for the banks that issued the cards and helped merchants accept cards. They have been platforms since their founding some six decades ago.

Like Google, Facebook, Uber, WeChat, and many other contemporary platforms, Visa and Mastercard didn’t make any profit for decades. They didn’t even look to make profit. They were only registered as [not-for-profit membership](#) associations, although they were allowed to charge their members just enough to cover costs and provide working capital. The value of U.S. credit card purchases, meanwhile, grew from \$426 billion in 1993 to [\\$2.17 trillion](#) in 2007. Americans increasingly flex plastic rather than cash to pay for just about everything.

The growth wasn’t without its controversies. In 2004, the fourth-biggest U.S. credit card company, Discover, [filed an anti-competitive lawsuit](#) against Mastercard and Visa, seeking \$6 billion in damages, as it contended that the card associations had restricted banks from issuing credit cards for Discover. The following month saw American Express file a similar lawsuit against Mastercard and Visa for antitrust practices. “The card associations functioned as a cartel,” [complained Kenneth Chenault](#), chairman and chief executive of American Express. “Banks who had expressed an interest in working with us were stopped before they could start,” and thus the card associations had “prevented American Express from competing to provide network services to banks in this country [the U.S.] for over eight years.”

Then, the inevitable happened. Following the lead of Mastercard, which went public in 2006, Visa carried out its own IPO in May 2008, which became the [largest U.S. IPO](#) at the time if measured by valuation. Still, Visa and Mastercard are similar to a toll road – they collect a fee on every swipe of their plastic cards – and any such established business that relies on a legacy infrastructure is always under threat of a new emergent player who could pull customers – cardholders, merchants, and banks, in this case – over to a new ecosystem. So, the longevity of the two existing networks and the enormous growth that they continue to enjoy can only be explained by the two opposing strategies that these two now publicly traded companies have embraced so completely.

One strategy to defend a company’s market share when a new offering is making inroads is to improve its existing technology, which can result in a prolonged period of coexistence. In this way, an incumbent can materially delay the dominance of a new player. Improvements in DSL (digital subscriber line) technology, for instance, have extended the life



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of copper telephone lines, which can now offer download speeds of 15 megabytes per second, positioning copper-wire services to compete with newer cable and fiber networks. The pace of substitution is therefore never predetermined.

Visa and Mastercard, on the one hand, have exploited all possible extension opportunities. When they saw Mobil, now part of Exxon, introduce *Speedpass*, a [little black tube](#) for customers to attach to a keychain and wave it in front of the pump at the gas station to charge their purchase, which is, in effect, a proprietary system that functions as a [store card](#), Visa and Mastercard started working with third-party merchants on a host of smart chip technologies for ‘contactless payment,’ ‘touch-and-go,’ and ‘pay-with-a-wave’ transactions. When they saw the proliferation of personal passwords, which made remembering the additional password of a new credit card impossible, Visa and Mastercard [unveiled](#) a card with an embedded fingerprint scanner, a small square sitting at the top right-hand corner that acts as a biometric reader. All these innovations are meant to improve the performance of their existing offerings in order to forestall substitution by new solutions.

On the other hand, since the dawn of the smartphone era, too many new entrants providing payment methods – Apple Pay, Google Wallet, Square, PayPal, Vimeo, and Revolut, just to name a few – have all proven themselves powerful innovators who could design offerings that consumers crave and have thus carved out segments of the market away from the credit cards that traditional retail banks issue. And in the face of these technologies, the only proven strategy Visa and Mastercard can rely on in order to maintain the relevance of their legacy infrastructure is to bypass their own plastic, de-emphasising and destroying the very physical embodiment of their offering so cherished

for decades, and to allow these disruptors to connect into their own toll road. *If you can't beat them off, let them join.*

It should therefore come as no surprise that at the Apple event in March this year with the announcement of the Apple card, one could [see](#) in that ‘subtle off-white coloring’ and ‘the tasteful thickness of it’ the Apple logo emblazoned in all its minimalist design, promising breakthrough features such as no fees of any kind and A.I. software that actively encourages users to avoid debt and provides recommendations to pay it off quickly. Sharing all that minimalist design on the back side of the card are the logos of Goldman Sachs – the underwriter – and Mastercard. Not even Apple can shake off the legacy network.

And it’s not just Apple. PayPal, Square, Samsung Pay, Google Pay, Facebook Credits, [Stripe](#), and even Coinbase, a [cryptocurrency upstart](#), all work with Visa and Mastercard. In other words, no fintech can disrupt anything unless they pay a toll fee to the old boys’ network. The reason is simple. An interface standard has emerged that has made Visa and Mastercard so simple and powerful to work with that their vast networks are irresistible for any fintech not to join – application programming interfaces.

In the simplest of terms, an application programming interface, or API, is an official set of rules and guidelines that facilitates the exchange of information between two pieces of software. These software routines, protocols, and tools can therefore allow third parties to tap into Visa and Mastercard’s infrastructure. “While many legacy bank players have been hesitant to see Visa as primarily a technology company,” [observed Gilles Ubaghs](#), senior analyst of financial services technology at Ovum, “the recent launch of Visa’s Developer platform, ... with a host of APIs offering



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a full mix of payment functionality, all built on Visa’s underlying core network, Visa is opening up its full capabilities directly to the broader digital ecosystem.”

The major breakthrough here, then, is the realisation that a product’s best feature will never be invented in-house. Visa and Mastercard realise that killer apps must be invented by third parties, who are closer to their own customers. The same can be said of Steve Jobs: no matter how perceptive he was about consumer desires, he couldn’t have possibly predicted that some of the most prominent functions of his iPhone would be used to hail a cab (Uber) or to take pictures to be automatically erased (Snapchat). No single company could have come up with both of these killer apps. Product design decisions are always enhanced with input from varied, independent sources. For someone who runs a legacy infrastructure, the best strategy is to allow others to discover new usages for the existing system. Whenever a third party application become significant enough, the system co-opts in order to remain flexible, all the while setting new standards for the industry.

In fact, setting new standards is exactly what Visa and Mastercard have in mind. Both networks are launching [‘tokenization services,’](#) which generate a unique token for each individual credit card rather than using conventional credit card numbers in order to prevent hackers from accessing important information. A typical example something like Apple Pay or Samsung Pay: these apps actually create a unique card number for each of your devices. So, if you have an iPhone, a Samsung Gear watch, and a debit card, each one has a unique card number tied back to your bank account, and if one of your accounts is compromised, new numbers can be created for the devices in the background without you ever even having to know about it. The goal is to build consumer trust to spur broad base adoption of mobile payment apps.

If anything, Visa and Mastercard are becoming the equivalent in the payments sector to what *standard setting organisations* (SSOs) are for telecom. SSOs have helped drive the major technological revolutions of the last several decades, including the internet and mobile phones. Mobile carriers, handset makers, and chip providers, for example, all have to agree on a common standard – like 5G – in order for what they do to work together. Every generation of mobile phones since the early 1990s has followed years of effort by an SSO to create standards. The SSO usually publishes a standard and disseminates it at a low cost or even for free. Industry observers tend to give a lot of credit to Apple and Google and Samsung for developing great mobile software platforms. But Android and the iOS wouldn’t have been possible and, in fact, probably wouldn’t have been created if SSOs hadn’t created the technology platforms to provide fast and capacious broadband. Inside the massive information technology industry, SSOs are the most successful platforms that consumers probably have never heard of.

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MANAGING BY COMMITMENTS



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What we see today in the financial industry are new entrants leveraging digital interfaces and A.I. decision-making processes that involve minimal manual work to target an underserved market segment. Their technologies cannot satisfy high-end banking customers yet. But like desktops, which displaced minicomputers, or angioplasty, which displaced open-heart surgery, A.I. and digital automation will inevitably improve, and one day, these new solutions will be able to meet a substantial part of the needs among big clients. The implication is that there will always be space for manually intensive, human-centric operations, but that space will shrink substantially in the future.

One logical solution is for banking incumbents to create a separate unit and launch 'speed boats' that adhere strictly to the playbook of digital disruptors. These speed-boat initiatives will target an underserved market and provide security services on a digital platform with minimal human intervention. Initiatives like this would be intended to develop a new set of capabilities – advanced analytics, dynamic product deployment, linking to third parties to fill a sudden surge in market demand – initially targeting a new segment that doesn't interfere with the main business stream of the current banking operation. Over time, such new businesses will develop crucial capabilities that will mature enough to be transplanted back into the main stream.

But there's one last twist. Scaling up a disruptive business will always be costly. But if startups don't scale up, their innovations won't matter. The late Andy Grove, Intel's legendary CEO, pointed this out in his 2010 op-ed for [Bloomberg](#):

Startups are a wonderful thing, but they cannot by themselves increase tech employment. Equally important is what comes after that

mythical moment of creation in the garage, as technology goes from prototype to mass production. This is the phase where companies scale up. They work out design details, figure out how to make things affordably, build factories, and hire people by the thousands. Scaling is hard work but necessary to make innovation matter.

And yet, scaling up disruption is where a company is likely to suffer financial loss for years, if not decades, and for the foreseeable future carry along a business that is unlikely to achieve the same level of profitability as its core business. BMW has been profitable for a very long time; Tesla is still operating at a loss today, as is Uber. It doesn't matter whether you call BMW's strategy 'throw everything at the wall and see what sticks' or a groundbreaking, iterative approach to mobility: if the only way to innovate is to "put a few bright people in a dark room, pour in some money, and hope that something wonderful will happen," as Gary Hamel [once wrote](#), "the value added by top management is low indeed."

That's why, from Amazon to Square to Ant Financial, profitability is not the most important metric for managers; the user base and market share are. That's also why banking incumbents need to consider an alternative investment structure, allowing third parties, venture capitalists, and even competitors to take an equity stake. Such a structure seems controversial but is not unprecedented. Alibaba doesn't own all of Ant Financial, and Uber now owns a minority share of its Chinese rival, Didi, after exiting China. (Today, Didi provides twenty million rides per day in China, over triple the volume of Uber worldwide.)

And it's not just capital – it's also structure and the reporting line. Treat the new initiative as a company within a company. A classic example is Steve Jobs's approach to managing the original Macintosh team, which




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had separate offices that were off-limits to regular Apple employees. Larry Page applied the same technique to Android by allowing Andy Rubin's team to work in separate offices – Google employee badges didn't grant access to the Android offices – and adopt different hiring practices from those of the parent company. The same was largely true for the PlayStation project at Sony, the Kindle project at Amazon, and the Watson team at IBM.

This combined strategy of external capital and structural autonomy was adopted by GM's CEO Mary Barra, and it paid off handsomely in May 2018, when SoftBank announced a \$2.25 billion investment in Cruise Automation, the self-driving unit of General Motors, headquartered in San Francisco. The investment pushed Cruise, originally purchased by GM for \$581 million, to \$11.5 billion. It takes more than a vision, belief, passion, and experimentation with A.I. to transform a company: it takes autonomy and a pocket so deep that it requires other people's money to act. It's an unconventional approach taken during an unconventional time.

07

 **INNOVATION**
ONE LAST FLASHBACK



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Adjacent to the Mercedes-Benz Museum in Stuttgart, Germany, is one of the largest Mercedes dealerships in the world, which I also visited during the autumn of 2018. Its cavernous main hall is fronted by a restaurant, a café, and a shop hawking Mercedes-Benz merchandise. I saw a vertical banner stretching from the ceiling to the floor along the glass panels on one wall. 'Ready to change,' the banner cheered. 'Electric intelligence by Mercedes-Benz.' It was referring to Concept EQ, a brand of electric plug-in models first unveiled in Stockholm on September 4, 2018. I found three EQs on display next to an exhibition kiosk that didn't work and instead displayed an error alert and tangled cables spilling from the back, which had come unglued.

Then, an escalator took me to the top floor, where I found visitors gawking at a Mercedes-AMG, known for its 'pure performance and sublime sportiness.' Here was a vision of a forward-looking sports car, with all its driving pleasure fully realised. The risers and the wrap-around LCD walls only accentuated the carbon-fiber composite of the chassis, gleaming in matte black. But I also noticed that the CO2 emissions rating of this Mercedes-AMG GT 63 S, with its 630 horsepower, was an F. That's the knowing-doing gap.

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APPENDIX

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Methodology and Data

This appendix presents a short description of the calculation behind the “Leap readiness index” for the automotive industry and financial sector in 2019.

Table 1 includes the top 55 automakers and component suppliers by revenue by the end of 2017. The ranking measures four factors: (1) financial performance, (2) employee diversity, (3) research and development, and (4) early results of innovation efforts. These four main factors are tracked by 17 separate indicators that carry the same weight in the overall consolidated result.

1. FINANCIAL PERFORMANCE	2. EMPLOYEE DIVERSITY	3. RESEARCH AND DEVELOPMENT	4. EARLY RESULTS OF INNOVATION
<ul style="list-style-type: none"> • % of international sales last year • 3Y CAGR turnover • 3Y CAGR market capital • 3Y average profit change • P/E ratio last year 	<ul style="list-style-type: none"> • % of women employees • % of women management board members • CEO demography • Headquarter competitiveness 	<ul style="list-style-type: none"> • 3Y CAGR R&D intensity • 3Y average R&D intensity • 3Y CAGR R&D expenses 	<ul style="list-style-type: none"> • Press count on “autonomous vehicles” • Press count on “EVs” • Press count on “connected cars” • Press count on “sharing mobility” • Press count on “corporate venturing”

To compile the 2019 Leap Readiness Index for the financial sector (Table 2), we have included 44 top retail banks, insurance services, and leading payment companies based on their revenue by the end of 2018. The ranking is based on six main factors: (1) financial fundamentals, (2) investor’s expectation on future growth, (3) employee diversity, (4) business productivity, (5) early results of innovation, and (6) openness to new ideas. These six main factors, which carry the same weight in the overall result, comprise 21 indicators.

1. FINANCIAL FUNDAMENTALS	2. INVESTOR’S EXPECTATION ON FUTURE GROWTH	3. EMPLOYEE DIVERSITY	4. BUSINESS PRODUCTIVITY
<ul style="list-style-type: none"> • 3Y CAGR turnover • 3Y average profit change • 3Y average EPS • AUM (asset under management) last year* • 3Y CAGR AUM* • Equity-to-asset ratio** 	<ul style="list-style-type: none"> • P/E ratio last year • Price-to-book value last year** • 3Y CAGR market capitalisation 	<ul style="list-style-type: none"> • % of women management board members • CEO demography • Headquarter competitiveness 	<ul style="list-style-type: none"> • AUM per employee last year* • Operating revenue per employee last year • Loan-to-deposit ratio**

5. EARLY RESULTS OF INNOVATION	6. OPENNESS TO NEW IDEAS
<ul style="list-style-type: none"> • Press count on “blockchain” • Press count on “mobile services” • Press count on “A.I.” 	<ul style="list-style-type: none"> • Press count of “APIs” • Press count on “ventures” • Number of investments in the last 3 years

Notes

* For payment companies, we use “the amount of transactions” as a proxy.

** We treat payment companies differently than other financial service companies.

All of our indicators are hard data; that is, they are publicly available in company websites, annual reports, press release, news, and special reports on topics such as corporate social responsibility. For press counts data, we consulted Factiva, a global news database that covers various premium sources, and counted the number of press releases on each trending topic that was identified previously in this sector for the past 3 years (2016–2018). The data was also supplemented by third-party data sources from Crunchbase, which specialises on the topic of corporate venturing.

To calculate the index, first, we collected historical data for each company. Then we performed calculations for each indicator (e.g., 3Y CAGR) before we standardised the criteria data. Next, we aggregated indicators to the main factors and then determined the overall ranking. For the purpose of comparison, we ranked each company from 1 (best) to 55/44 (worst) on a scale of 0 to 100.

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