

AUTUMN
2020.09
www.BM.UST.HK

HKUST
BUSINESS SCHOOL
香港科大商學院
WORLD CLASS IN ASIA

Biz @ HKUST

THE NEW NORMAL

Challenges

&

Opportunities

THE NEW NORMAL

Challenges & Opportunities

// Cover //

4

Charles LI, Chief Executive of Hong Kong Exchanges and Clearing
IN **LIFE AFTER THE PANDEMIC**

8

KOIKE Yuriko, Governor of Tokyo
IN **CITY OF THE FUTURE**

12

Dominic LAI, Deputy Managing Director of CK Hutchison and A.S. Watson's Group Managing Director
IN **A BIG OPEN HEART**

16

Louis SO, Co-Chairman of Value Partners Group
IN **LOOKING INTO THE FUTURE**

20

Betty YUEN, Group Director and Vice Chairman of CLP Power Hong Kong
IN **STAYING POWER**

// Insight //

- 28 By Prof Albert PARK and Prof Alicia GARCIA-HERRERO,
Department of Economics
AN EMERGING CRISIS
- 32 By Synergis-Geoffrey Yeh Prof of Business Jaideep SENGUPTA,
Department of Marketing
CHANGE OF HABIT
- 36 By Prof Gordon LAM and Prof ZHANG Hongtao,
Department of Information Systems, Business Statistics and
Operations Management
CHAIN REACTION
- 41 By Prof LI Yingying,
Department of Finance
**RISK MANAGEMENT IN THE VOLATILE
FINANCIAL MARKET**
- 44 By Fung Term Prof of Management GONG Yaping,
Department of Management
THE UPSIDE OF THE COVID-19 CRISIS
- 48 By Prof KOH Tat Koon,
Department of Information Systems, Business Statistics and
Operations Management
DIGITAL TO THE RESCUE

// Feature //

- 25 **HKUST'S ALL-ROUND EFFORT**
In fight against COVID-19
- 50 **HONORING REMARKABLE ACHIEVEMENTS**
A testament to excellence in research and teaching
- 52 **ADDRESSING THE FINTECH TALENT GAP**
Setting out optimal strategies to nurture talent
- 56 **GAINING REAL WORLD RELEVANCE**
Partnerships drive technology and innovation
- 58 **M2M: GOING GLOBAL**
A rewarding HKUST-to-Yale learning journey
- 60 **EYE IN THE SKY**
The power of alternative macroeconomic data



The magazine is available for download or
can be delivered via email on request.



Online
Edition

Published by
External & Alumni Relations
HKUST Business School
The Hong Kong University of Science and
Technology

Address /
Clear Water Bay, Kowloon, Hong Kong

Tel /
(852) 2358 8934

Fax /
(852) 2719 8231

Email /
bmpr@ust.hk



www.bm.ust.hk



Stay Connected

No one could have predicted the dire
impact that COVID-19 would have on
the world. Indeed, with its wide and
lasting impacts, the outcome is still
unclear.



So far, air travel has almost ground to a halt, global markets are experiencing
upheavals, public facilities have become stretched, and to top it all off, the ongoing
geopolitical tension is creating a new dimension of uncertainty.

The situation is so bad that it would be easy to throw in the towel and call it quits. But
it is not the nature of human beings to simply give up. Throughout history, humans
have risen against adversity and overcome wars, pandemics, and other disasters,
because we know we have the power to determine the outcome of a crisis by our
responses.

There is no doubt that COVID-19 is a global game-changer which will be a part of our
lives for a long time to come. It will establish a "new normal" and change the world.

In our latest series, "*The New Normal — Challenges & Opportunities*", we embrace
our role as a responsible business school to shape and reinforce the understanding of
what the new business landscape and the new world will look like. We also discuss the
best ways to approach this new world.

In this edition, we are honored to talk to five distinguished business and political
leaders who share their thoughts on what they think the new normal will look like, and
how they have coped with the changes so far.

Charles LI, Chief Executive of Hong Kong Exchanges and Clearing (HKEX) or the
symbol of the city's prosperity, talks about the importance of resilience and explains
how HKEX kept going through a tumultuous financial market. Then we hear from the
distinguished KOIKE Yuriko, the first woman to become the Governor of Tokyo. She
talks about how Tokyo, one of the world's most densely populated cities, is tackling
the challenges of COVID-19, and the city's preparations for the Olympics.

We also hear from industry giants who have bucked the downward trend and led their
companies to success. Dominic LAI, Deputy Managing Director of CK Hutchison and
Group Managing Director of A.S. Watson, talks about how the company has responded
to the crisis with resilience, flexibility and adaptability, and Louis SO, Co-chairman
of Value Partners, shares his market outlook. And brimming with some degree of
optimism is our School Advisory Council Member Betty YUEN. She is Group Director
and Vice Chairman of CLP Power Hong Kong, and discusses the importance of being
prepared for a crisis.

Of course, the series wouldn't be complete without hearing from our own faculty
members. They share their expertise in a series of unique articles which cover topics
ranging from the impact of COVID-19 on financial markets and emerging economies,
the upside of the COVID-19 crisis, and how a strong digitalization strategy can help
companies survive and become stronger.

This issue promises to be more than just good read. It's a toolbox of key insights into
what the "new normal" might look like, and how businesses can weather the storm.

Professor TAM Kar Yan
Dean



THE NEW NORMAL

Leading Through Changes

COVID-19 has brought about changes that were once unimaginable. The changes have led to new perspectives on business and the world. The impact of the virus is so widespread that no part of the value chain and our living has gone unscathed. The virus has touched everyone from suppliers to consumers, business to political leaders. How they react to this crisis will determine whether or not they survive and grow stronger.

One of the few certainties of this evolving situation is that COVID-19 has created a “new normal”. This means businesses will have to redesign their strategies for moving forward. For this series of interviews, we met with political and business leaders to define what this new normal is, and hear how they have handled the challenges they have faced so far. They share their insights on what preparations businesses and society should make, as we all wait to see how this new world develops.



Global Market Leader Asian Time Zone

Life after the Pandemic

Hong Kong will play a significant role in the global economy when the pandemic subsides, says Charles Li, the longest-serving chief executive of HKEX, one of the world's largest exchange operators by market capitalization.

No one can accurately predict what a post-COVID-19 world will look like. But Charles Li, Chief Executive of Hong Kong Exchanges and Clearing (HKEX), believes that Hong Kong will continue to be the trusted connector between China and the rest of the world.

"We have and will continue to do well because investors and companies are convinced that, no matter what happens, we remain the go-to global marketplace in Asia," Li says.

Li notes that Hong Kong has weathered previous challenges such as SARS and the financial crisis, and these events have demonstrated the city's remarkable resilience.

"Hong Kong's legacy is one of constant re-invention, adaptability, and resilience, and it has proved it possesses these strengths many times in the past," he says.

Li says that HKEX will continue to act as a bridge between China and the world, and will ensure that Hong Kong remains the leading global market in the Asian time zone.

"As Asia's most international market, I don't think that our role has ever been more relevant or more important in the recovery of both the world and Hong Kong," he says.

Li says that HKEX is committed to maintaining operations with resilience, providing access to liquidity, and ensuring that trading, clearing and risk management systems remain fully functional at times when issuers, market participants and investors need it the most.

Though the journey ahead will be tough and unpredictable, Li believes the city will come out of this crisis stronger and more resilient if everyone works together.

Resilience is an important quality, Li says. He strongly believes that an investment in resilience, whether it's in the city, HKEX, or his staff, is always worthwhile. What's more, he has got the proof.

Despite the turmoil in the world markets, HKEX recently soared to become the world's largest exchange operator by market capitalization. Valued at US\$62 billion in mid-July, it is now worth more than the London Stock Exchange.

Li, who took the helm of HKEX in 2010, is often applauded for his leadership. He is known for orchestrating some of the most significant strategic initiatives in HKEX's history, including

the acquisition of the London Metal Exchange and the launch of OTC Clear, as well as the launch of Stock Connect and Bond Connect programs.

Li is also credited with leading the biggest reforms to the Hong Kong Listing Rules, by opening the door to pre-revenue biotech companies and new economy companies with non-standard share structures.

Digital Transformation

Li credits much of his success to the fact that he works with team members who are resilient and possess sound judgement. "I've once again realized how great our staff is," Li says. "They have been resolute, innovative, and willing to find solutions to any problems, and they worked hard when it was needed the most."

Li also highlights the company's commitment to its long-term goals and vision, noting that it has never wavered or become distracted while dealing with short-term issues.

Li says that that when COVID-19 broke out and markets began to reel, HKEX reacted very quickly and made it easier for listed companies to meet their compliance requirements, and also issued guidance, together with the Securities and Futures Commission (SFC), on the publication of annual reports and the hosting of AGMs and EGMs.

HKEX has also capitalized on technology and introduced new Virtual Listing Ceremonies as a digital alternative to the traditional celebration of newly listed companies. This way, companies were still able to strike the gong and share the moment with investors. Communications also went online with a host of newsletters and videos to follow suit.

"Our market safety mechanisms did a great job of maintaining orderly market operations," Li says. "Various trading halt mechanisms were triggered and operated exactly as they were designed to. We have enhanced our Volatility Control Mechanism, made additional intra-day margin calls, and continued to actively monitor margining requirements. That has all gone exactly as planned."

Li says that it is HKEX's job to rise to the challenge and provide stable and transparent access to liquidity for issuers, market participants, and investors. This has always been his primary focus, he says.

A big year for IPOs

Li remains optimistic about 2020, and describes it as another big year for IPO fundraising, noting the growing appetite to capitalize on the company's connectivity. There are companies from the US and China seeking both primary and secondary listings, as well as big homegrown companies planning to go public.

HKEX has also become a popular listing among healthcare and biotech issuers, providing fundraising opportunities to support the fight against COVID-19 and other pandemics.

"With China continuing to open up its domestic markets, we are confident that Stock Connect and Bond Connect will continue to capture the increasing cross-border capital flow," he says.

Li also says that the new license agreement with MSCI to introduce Asia and Emerging Markets futures and options contracts represent another key milestone to continue to build out the breadth, depth and attractiveness of Hong Kong's vibrant financial markets. It will reinforce Hong Kong's continued role as the leading global market in Asia, he adds.

The full impact of the global pandemic remains to be seen. However, Li says that all eyes will be focused on where globalization is heading, as well as the disruptive potential of technological advancements. He believes that these developments will depend very much on whether China and the US can work together.

He also believes that China's further rise and the continued dominance of the US could set the two nations on a collision course.

"The increasing polarization means that our world needs more and better connections, not fewer," he says. "As such, Hong Kong's role as the connector between East and West will only become more vital."

Noting the upcoming US presidential elections, Li says that Hong Kong will continue to be used as a 'political football'. "This is something we have to live with," he says. 🇭🇰

NEW NORMAL

On the Lookout

While the full impact of COVID-19 remains to be seen, it needs to be carefully monitored. Things to look out for include technological advancements and their disruptive power, the relationship between China and the US, and major powers vying for technological dominance. Li points out that it is a wake-up call for businesses, investors and policymakers around the world to change the way they look at the environment, governance, and sustainability. Capital markets will also come to realize more the critical role they play in financing companies' transition towards sustainability. This is a trend that will continue.



// The increasing polarization means that our world needs more and better connections, not fewer, and as such Hong Kong's role as the connector between East and West will only become more vital //

Charles Li



City of the Future

When KOIKE Yuriko was elected as the first female Governor of Tokyo in 2016, no one imagined that her re-election four years later would take place during a global pandemic. As a leader of Japan's capital city, Governor Koike is committed to not only making the city safe from COVID-19, but also preparing to host the long-awaited Olympic Games next year.

Koike's handling of the COVID-19 outbreak has been cited as the main reason for her re-election. A former TV anchor, the guidance she gave brought hope to the city's 14 million residents who watched with concern as the daily confirmed cases almost doubled in the days before her re-election.

Koike promised to make dealing with COVID-19 her priority, and this secured her the second largest number of voters in Tokyo's gubernatorial history. There is now speculation that she will run for a prime minister.

Koike still has much work to do, as the city is facing yet another wave of the pandemic. She must also deal with an economic recession and the postponement of the Tokyo 2020 Olympic and Paralympic Games.

She says it is important that the world starts to think about a post COVID-19 world as a new era. We should learn to live with the virus, she says.

"We need to realize a society where the 'new normal' is firmly established, and seek a balance between containing infection and maintaining socioeconomic activities," she says.

Koike says that the situation in Tokyo is now critical, and there is an increased risk of infection. But she says it is not realistic for businesses to completely cease their operations at the sign of another wave. Governments should take a multi-pronged approach if they want to rebuild their societies in a post-COVID world.

A new way of life

"If this virus, which spreads through human contact, is to be contained, it is essential that a 'new normal' is firmly established in terms of patterns of behavior in daily life and the workplace," Koike says.

For example, encouraging regular careful handwashing and mask usage, maintaining social distancing, reducing human contact by staggering office hours and tele-working, and complying with guidelines to prevent the spread of infection, should be established.

It is necessary to utilize a range of tools with a strategic approach towards disseminating information promptly and accurately to achieve this. All members of society must work together to achieve sustainable growth, she says.

"We need to look beyond conventional norms, and view new lifestyles, shifts in work practices and changes in people's values and priorities as new opportunities for growth," she says.

Creating more startups and cultivating a more wholesome environment where the 'unicorns' companies of the future can be born is important, she says. Koike also talks about dramatically accelerating digital transformation to generate innovation.

Koike places great emphasis on Tokyo's SMEs, noting that they are the backbone of the city's economic growth. SME businesses account for 99 percent of the corporate entities in Tokyo, she says.

"They are the indispensable industrial core, stimulating economic activity in the city," she says. Supporting SMEs directly correlates to economic growth, she notes.

SMEs have suffered badly from the pandemic, and the government has been working hard on a range of initiatives to help keep them on their feet.

Initiatives include financial assistance, and support through innovation and creative efforts in new areas of demand, such as contactless technology.

"Through these efforts, SMEs gain support which enables them to maintain their business activities while coexisting with coronavirus," she says.

It is still not easy navigating this extraordinary environment, and Koike admits that it needs all its citizens to get on board with the new measures as they are put in place. But Koike is confident that the city will overcome the challenges.

Tokyo has always rebounded from a crisis, she says, noting Typhoon Hagibis in 2019, the Great East Japan Earthquake in 2011, and the Great Kanto Earthquake in 1923.

"What distinguishes the pandemic from previous crises is that the coronavirus is invisible," she says. "The fight against this 'invisible enemy' is expected to be long and protracted, but the city shall prevail, and we shall pave the way for a future."

The challenge of the Olympics

The city will also rise to the challenge of staging the Olympic and Paralympic Games, which are now set to take place in a scaled-back form next summer.

"The Tokyo 2020 Games can become a symbol of how the world has united to overcome hardship, and how humanity has strengthened its bonds," Koike said in an interview with CNBC earlier.



To achieve this, she must make sure that the city is safe enough to host athletes from around the world. But she must also shore-up local support for the event.

In a recent poll released by the Kyodo news agency, less than a quarter of respondents wanted the games to take place in 2021, and 34 percent think the event should be canceled.

Koike maintains that fighting the virus while sustaining the economy is her number one priority.

She announced in early August that two medical facilities dedicated to treating coronavirus

patients will be established in Tokyo utilizing existing institutions. One is in Fuchu City and another is in Shibuya Ward with about 100 beds each. Renovations will be completed in October and September respectively.

To prevent the spread of the virus and introduce guidelines that encourage consumption, one such initiative, under the “Tokyo Novel Coronavirus Disease Control Measures Ordinance”, is the introduction of safety stickers displayed in stores and restaurants which have demonstrated strict hygiene standards, etc. Citizens are encouraged to choose places with such stickers.

Koike wants foreign companies to establish their businesses in Tokyo as part of her plan to rejuvenate the city. “We are committed to the continued improvement of the business and social environment of the city, in order to attract skilled financial personnel working in sectors such as asset management or fintech. They will be the driving force for Tokyo’s future growth as an international financial hub,” she says.

While it is yet to be seen what the new Tokyo might look like, for now, the city seems to be in good hands. 🍵

NEW NORMAL

Plans to Rebuild Tokyo

- ③ Measures to prevent the spread of Coronavirus
 - Strengthen information provision systems
 - Ensure a supply of goods to prevent infection, establish support centers for foreigners in Tokyo and consolidate health care provision systems, etc.
- ③ Strengthening safety net to support economic activities and protect residents’ lives
 - Support SMEs by introducing interest-free financing, etc.
 - Take necessary actions to respond to school closures, support taxi use by pregnant women, and provide temporary accommodation to those who have lost their homes, etc.
- ③ Commitment to structural societal reform
 - Promote online education by providing emergency loans of PCs and routers to homes without terminals or connectivity
 - Introduce learning support initiatives, such as cloud services for online classes and educational videos
 - Promote teleworking



// The Tokyo 2020 Games can become a symbol of how the world has united to overcome hardship, and how humanity has strengthened its bonds //

Koike Yuriko



A Big Open Heart

The COVID-19 pandemic has hit many global retailers, but A.S. Watson Group against all odds is doing even better. Dominic LAI, Deputy Managing Director of CK Hutchison and A.S. Watson's Group Managing Director, explains why.

When the bells rang in the New Year at the start of 2020, few retailers knew that COVID-19 would soon sweep across the globe and bring the world to a halt.

Though the situation has calmed down in many regions, it looks like the virus may be here to stay. As retailers anywhere battle to survive in a battered economy, many have started to think out of the box to find ways to cope with the new normal.

Companies are also developing strategies to re-emerge in a post-COVID-19 environment, should humanity defeat the virus. This is especially true for retailers, who have taken the brunt of the economic downfall. Not only will retailers have to rethink their brand positioning, they will have to think about how to meet changing consumer behavior in a post-pandemic world.

Focus on Customers

Crisis does not occur frequently, but when it happens at the current scale a paradigm shift is inevitable; somehow, from the history you will learn that not many companies could survive after big crisis and emerge stronger than before. A.S. Watson Group, celebrating its 180th anniversary next year, is one of the very few companies that weathered many storms in its ongoing journey – from the World Wars to the 2003 SARS epidemic, and has a track record of managing mega crisis like this.

According to Group Managing Director Dominic Lai, A.S. Watson's success is down to the fact that the business is agile and customer-focused. This enables it to respond quickly to changing demands, and transform its business structure and process.

"We asked all our operations to re-imagine the business, using data analytics and insights. We tried to understand the new demand, our relevance to customers, and customer expectations and shopping behaviour," Lai explains. "This is a crisis situation like no other. So we had to work out how to turn a bad situation into opportunities," Lai says.

Earlier this year, Watsons Hong Kong developed within a week an online reservation platform for customers to register for face masks, instead of queuing or snapping up in stores. This platform can handle up to 30,000 registrations in ten minutes, with one in every five Hong Kong residents in its virtual queue at its peak.

With an aim to integrating its online and offline services and using cloud technology to offer

a seamless shopping experience, the group's efforts in digital transformation since 2012 pay off. The company is able to handle up to three times more online traffic on its website and mobile app during COVID-19, and up to three times more transactions in some of its markets.

As one of the world's largest international health and beauty retailers, with over 15,700 stores in 25 markets, the company had a slight advantage. It was in a strong position to draw on its global network and source products internationally.

Even so, the company was not immune to problems. It was affected by lockdowns and social distancing measures, which meant that sales in physical stores were going to take a hit. So it had to rethink its strategy quickly to find a new way to meet customers' needs.

A.S. Watson Group's customer-centric approach enabled it to understand changes in consumer sentiment, new purchasing trends, and product needs, and it responded quickly to the new situation.

Strategies for Success

Strategies included an online registration system for face masks, and the introduction of Watsons WeChat Work platform, enabling beauty advisors to provide one-to-one consultation and order service to its customers. Equity in the brand soared. From the start of 2020 to mid-February, according to a recent report by YouGov, Watsons Hong Kong's Recommend Score has risen from 9.9 to 16.9 and its Buzz Score has tripled the original score (8.6 to 25.4). A.S. Watson Group's success highlights some key lessons for businesses struggling to navigate the COVID-19 business environment.

Firstly, it is absolutely key to put customers first, says Lai. "Customers' demands, their views, and the way they communicate with the brands have changed," says Lai. What is the change in their purchasing behavior? What apps are they using at lockdown? How are they shopping online now? And what kind of products are they looking for? These are the questions that companies should be asking, he says.

Secondly, a thorough investment in digital technology is needed. This doesn't just mean implementing an app and being active on social media. "Digital transformation is not just about investing in hardware and software. It is about changing your mindset," Lai says.

If you look at the profits statement of a retail company during the pandemic, you will probably see that, while physical store sales have dropped, online purchasing has increased dramatically. Is your brand prepared for the change? And has there been a proper investment in digital transformation?

"The process has accelerated, so if your brand has not adjusted, and you can't adjust at the C-suite level, you will certainly drown," Lai says, referring to some big retailers who used to be a market leader.

An investment in digital transformation means investing in human resources, changing the company culture, and learning from the young, he says.

"Customers are looking at apps, and using technology as a way to connect with the brand. So it's important for brands to invest in technology to connect with the customers," Lai says.

Digital transformation needs to happen at all levels. "I have a mentor who is 20-something, and she teaches me social media and social marketing," Lai says. "I also ensure that the management team knows all about it, and knows what's going on."

Success in a crisis is equally down to good leadership. "Have passion and a big open heart," Lai says. "A good leader must be passionate about his or her organization, job and people. A good leader also needs to have a big and open heart to invite and accommodate a diversity of talent, irrespective of their nationality, personality, academic discipline and background. I am still learning how to be one," he says.

"COVID-19 has brought our people, customers and communities much closer together as we fight against the pandemic," Lai says. "It reminds us all of the importance of compassion. With love and care, we believe we will get through this together." 🙏

NEW NORMAL

Online + Offline

A.S Watson conducted a survey in over 20 markets in Asia and Europe in May 2020. Of the 22,000 customers who responded, 98% said they would go back to physical stores, while over 80% said they would also continue to shop online (delivery speed is their top priority). The findings reaffirm a core strategy of the group - Online and Offline (O+O). Although online purchase continues after COVID-19, an in-store shopping experience remains irreplaceable, the group believes.



// With love and care, we believe we will get through this together //

Dominic Lai



Looking into the Future

COVID-19 may lead to social instability in some countries, but the prospects for the China market remain strong for many reasons, says Louis SO, Co-Chairman of Value Partners Group. As a leader of the first and only asset management firm listed on the Main Board of the Hong Kong Stock Exchange, So is about to harness the new opportunities in a post-COVID-19 environment.

It wouldn't be a stretch to say that the onset of the COVID-19 pandemic has led to the worst global economic crisis since the Great Depression of the 1930s. The combination of a demand shock, a supply-side shock, a financial shock, and political upheavals, has sent the world's markets reeling.

While no one can predict how the world's economies will emerge from the crisis, some experts are making educated guesses based on current economic data. Louis So, Co-Chairman and Co-Chief Investment Officer of asset manager Value Partners Group, believes that whatever happens, a post-COVID-19 environment is going to be very different to anything in the past. "China will certainly be outperforming other markets, though it may not drive the growth of the global economy," he says.

So believes that there will be a higher degree of government intervention, a greater deal of money printing, very low interest rates, and a much bigger asset bubble. This asset bubble is set to widen the rich-poor gap, and this will lead to social instability, he thinks.

"At some point, this system will collapse. Going forward, politically speaking, left-wing politicians will gain popularity and they win support. We then think that a redistribution of wealth will happen," he says.

So points out that although the last 50 to 70 years have seen a period of global wealth accumulation, there were also periods when wealth was distributed. Such events occurred because of wars, or because governments allocated resources differently. So believes that this is something we can expect to happen in the world during the next five to ten years.

On the consumer side, So believes that there will be a contactless economy consisting of a boom in e-commerce and online entertainment. Value Partners Group has positioned its portfolios in a way to benefit from this trend.

Rethinking business models

So believes that businesses will have to rethink their business models. In the past, just-in-time inventory management was the norm. But now businesses will have to think about whether they need to build up cash reserves for inventory and supply chain management. "That will also change the mindset of business leaders," So says.

So thinks COVID-19 could escalate a potential crisis of capitalism and the free market. The challenges may make capitalism falter, he says.

"Providing a much better social welfare system might be a potential solution. Although it may affect the economic growth of countries, it will create a much happier environment for society," he says.

So says that COVID-19 has not changed Value Partners Group's strategy very much. The company is still tapping into what eventually could be the world's largest market – China. So notes that savings are high in China. "We need to enter this market in order for us to grow," he says.

So believes the Sino-US relationship will get worse before it gets better. China is not dependent on exports and does not rely on other countries to grow its economy as it used to. This will drive China into isolation for a while. But China and the US will have no choice but to become friends, partners, and allies again in the end, he says.

China will come out ahead

So firmly believes that China will come out of the pandemic ahead of other markets. His predictions are based on recent economic data coming out of China which shows a V-shaped recovery trend on both the macro and the consumer level.

According to data for March, April, and May 2020, year-on-year figures show that fixed asset investment was down by 9.4 percent in March, yet rose to 3.9 percent positive gains by May. Retail sales were down by 15.8 per cent in March, but were only down by 2.8 per cent by May.

Even a business like electricity production showed a year-on-year 4.6 per cent decline for the month of March, but returned to 4.3 percent growth in May.

The same pattern can be seen on the consumer side. Goods like cosmetics, furniture, cars, tobacco and alcohol all experienced a similar V-shaped recovery.

The data shows an economy that is steadily bouncing back from the pandemic. So believes there are many reasons for this. "China is in a much better position to cope with this crisis [than the West]," noting it is a case of first in, first out. China is benefiting from a huge middle class which has one of highest savings rates in the world. The country had a savings rate of 47 per cent in 2017, and ranked third among the 170 countries monitored by the World Bank.

So points out that China is now a fairly self-reliant economy, and this has helped it cope with the pandemic. "China has innovation, production,

distribution, and also the end-consumer, within its borders,” he says. “Therefore the country is experiencing less of a supply-side shock than other countries.”

China also has a much more modest stimulus program than other countries. While the US is pumping out a huge stimulus program consisting of around 18 per cent of its GDP, China’s stimulus package is less than 5 per cent of its GDP.

Bullish on China

“We are quite bullish on China,” So says, citing research from a major bank which shows that China is still on track to become the world’s biggest economy by 2030. So adds that several investment themes will be the key drivers of growth, including consumer upgrades, a

growing number of high-net worth individuals, technology, and the explosion of 5G. There will also be more individuals pursuing higher education, along with the development of online service platforms and a growing healthcare sector.

“China is just too big to ignore right now. It accounts for 16 per cent of global GDP, which means we can look at it as a single asset class,” he says.

So doesn’t expect China to slow down anytime soon. “There are a lot of factors to consider, like how the China-US relationship pans out, and a possible resurgence of the virus,” he says. “Only time will tell. But for now things are looking a lot better for the second half of the year,” he says.

NEW NORMAL

Market Outlook

As one of Asia’s largest independent asset management firms, Value Partners has identified five investment themes on China’s market which the company believes will be less affected by the current market risk factors.

- ① Consumption Upgrade – Mega Trend and Towards Pricier Brands
- ② Technology and 5G – Leader in R&D and Innovation and 5G Opportunities
- ③ Higher Education – Strong Demand and Potential for Tuition Hike
- ④ Online Service Platforms – Current Low Spending and Low Penetration Rate
- ⑤ Healthcare – Aging Population and Current Low Medical Expenditure



// China is not dependent on exports and does not rely on other countries to grow its economy as it used to //

Louis So

Staying Power

Providing electricity supply to 80 percent of Hong Kong's population, CLP Power's experience with SARS and many other incidents in the past century has helped it cope with the recent pandemic. Betty YUEN, Group Director and Vice Chairman of CLP Power Hong Kong, calls on people to care for others and share knowledge during these challenging times.

Some might call it a cliché, but the saying that “the one constant in life is change” often rings true.

The world has certainly seen its fair share of changes this year, having been thrown into a whirlwind of uncertainty against the backdrop of the COVID-19 pandemic, rising geopolitical tensions, and global market worries. Especially at times like these, business leaders need to stay calm, devise a strategy, and forge ahead, says Betty Yuen, Group Director and Vice Chairman of CLP Power Hong Kong.

The 119-year-old public utilities company has grown stronger and wiser when it comes to riding out storms, past and present.

“We are luckier than other industries because even if there's a shutdown, people still have to consume electricity,” Yuen says. But the company has not been immune to challenges caused by disruptions in the global supply chain and people movement.

“We source a lot of materials, equipment and services from all over the world, and the disruption has affected some of our projects. Experts could not come to our locations to help with certain projects and some of our employees were stranded in undesirable locations,” she says.

The company had to address some of the more immediate challenges very quickly, but problems were mitigated by a resilient management, a diligent workforce, strong partnerships and the strategic inventory of spares and equipment. “You always have to be prepared,” Yuen says.

The company has learnt from its past experience with the SARS outbreak in 2003, Yuen says. Since then, CLP Power has been prepared to deal with similar outbreaks. The company had prepared inventories and protective gears, examined how to protect its employees including working remotely and splitting teams to minimize cross-infection, and how to scale down customer interaction services.

“We are somewhat experienced. So when we had to mobilize, we were quite quick,” she says of the recent pandemic.

Now the bigger question is how will CLP Power prepare for what comes next? Yuen sees a post-coronavirus environment as one where it is not just about the virus receding and resuming business as usual, but rather an environment that is filled with uncertainty, she says.

“This pandemic has affected the whole world. The dynamics have changed, geopolitics has

changed, and countries are realizing that they may be relying too much on each other's supply chains,” she says.

“There are also geopolitical considerations of how the Western world relates to China and to some extent Hong Kong,” she adds. “We must factor all this into our strategy and investments.”

Uncertain environment

Moving forward, businesses will have to operate in an increasingly uncertain environment, and to accept that this may be the new norm. Change may be a constant factor, Yuen believes.

“Even with a vaccine, we will expect uncertainties to persist for a certain period,” she points out. “There's no point waiting for things to get back to normal. We must treat this situation as a new operating environment and charge ahead.”

As a public utilities company, CLP Power was not hit as hard as other businesses which experienced a loss of usage. Although the company's performance in sectors such as hotels and retail sales dropped, it was compensated by the rise in demand in the residential sector.

With its strong commitment to corporate responsibility, CLP assisted those in less fortunate sectors by offering concessionary payment schemes and donating sanitizers and masks to those who needed them.

Yuen says that business leaders must respect and nurture their business relationships through tough times. “You must build on the strengths that you have and understand that certain stakeholders are going through rough patches. You need to value those relationships,” she says. These include those with customers, suppliers and employees.

Yuen says businesses must make it a top priority to look after their employees and stakeholders during a global crisis. “We have to be very mindful of the well-being of employees. If your employees are mentally stressed or emotionally challenged, it will definitely have an impact on your business and we are conscious of that,” she says.

CLP Power has launched programs to look after the well-being of its employees during the pandemic. Yuen notes that some of CLP Power's employees in Hong Kong used to cross the border each day to work in the neighboring Guangdong Province.

The closure of borders has resulted in some colleagues being separated from their families for a prolonged period so there are concerns about their mental health.

Employee well-being

It is not surprising that CLP Power puts a strong emphasis on the well-being of its employees. In 2019, it was recognized as one of the world's 12 most attractive employers, and was inducted into the Hall of Fame for 2020-21 by international HR firm Randstad. It is the first company in Hong Kong to receive such an honor.

Yuen believes that COVID-19 is a reminder to humanity of how vulnerable we can be, and she believes that the environment and

climate change play a role in disease outbreaks. Therefore, it is important that the power industry continues to work hard to lower carbon emissions, she adds.

Yuen says a positive mindset is extremely important. "Someone once said that when things go bad, if you sit back and look at them again, it's usually not as bad as it seemed at that moment," she says.

"Humanity has overcome such challenges many times without the benefit of the knowledge we have today. With our ability to share that knowledge today, I am sure we will overcome this. We just need to be diligent and have a bit of faith," Yuen says. 🙏

NEW NORMAL

Flexible Work Arrangements

Outside Hong Kong, CLP Group invests in the energy sector across Asia Pacific with projects situated in Mainland China, India, Southeast Asia, Taiwan and Australia. With different travel restrictions to and within these countries, its management and over 7,900 employees largely rely on technology to stay connected whilst working remotely. Yuen finds more people accepting the idea of working from home. She says that every challenge comes with new opportunities and sees innovation and technology as sectors which will accelerate once people see the merits of things such as flexible work arrangements.



// There's no point waiting for things to get back to normal. We must treat this situation as a short-term operating environment and charge ahead //

Betty Yuen

HKUST's All-Round Effort in Fight Against COVID-19

COVID-19 has brought about unprecedented changes. As a global citizen, the entire HKUST community has played an active role in addressing this significant public health threat.

To learn more, visit our website or watch a video that summarizes our all-round effort.

Website



YouTube



Prevention



AI-based fever detection stations installed on campus and at HK borders that track human faces to detect body temperature

By a team led by Prof Richard SO



Multiperson body temperature screening system with a parallel measurement approach being used in mainland China

By a startup incubated at an incubating arm formed by HKUST R and D Corporation (Shenzhen) Ltd



Automated geo-fencing technology that applies machine learning and data analytics to analyze multifarious environmental signals for quarantine monitoring

By Prof Gary CHAN

Mitigation



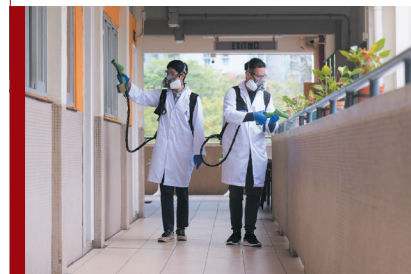
Robots developed to serve patients in 100+ hospitals in mainland China and HK

By a company founded by alumnus Felix ZHANG



Driverless cars for grocery delivery to minimize human contacts in mainland China

By Prof LIU Ming and his team



PECD-based antimicrobial coating that can kill a wide spectrum of viruses and bacteria including the coronavirus, which has been used in schools, elderly homes, and community facilities in HK

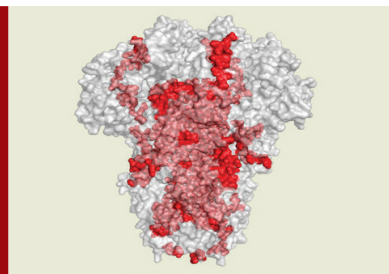
By Prof YEUNG King Lun and his team

Treatment



Portable device to detect coronavirus in 40 minutes

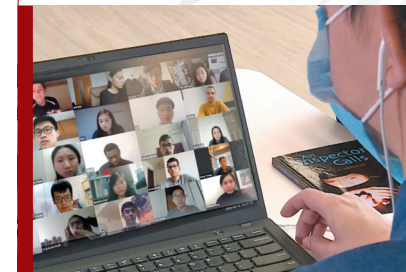
By Prof WEN Weijia and his team



Identified a set of potential vaccine targets which could be helpful for COVID-19 vaccine development

By Prof Matthew MCKAY and Dr Ahmed Abdul QUADEER

Education



Timely migration to interactive and immersive online classes



Experience-sharing with universities worldwide

Policy & Outreach



Research on policy advocacy



Campaigns to support the communities

THE NEW NORMAL

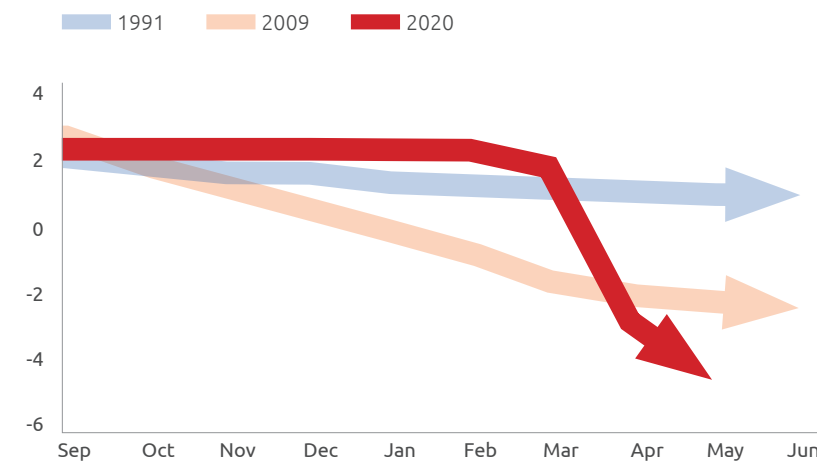
Navigating the New Normal

In another series of articles, our Business School faculty from a wide range of disciplines share their ideas and new perspectives on what this new world of business will look like. Join us as we explore ways to develop new knowledge and strategies to face this rapidly evolving situation.



Global Economic Outlook

Global GDP (Consensus Forecasts %)



Source: Consensus Economics, World Bank

*Sep to Dec shows forecast made in the previous year, while Jan to Jun shows data for the current year. Data for 1991 are for advanced economies only due to data availability.

The COVID-19 recession has seen the **faster, steepest** downgrades in consensus growth projects among all global recession since 1990*





By Professor Albert PARK,
Head and Chair Professor,
Department of Economics,
HKUST Business School



Professor Alicia GARCIA-HERRERO,
Adjunct Professor,
Department of Economics,
HKUST Business School

An Emerging Crisis

The COVID-19 pandemic is having a powerful effect on emerging markets.

“A unique feature of the pandemic’s massive economic cost, in comparison to other global crises, is that it creates large shocks to demand and supply at the same time



The center of the COVID-19 pandemic has shifted to the emerging markets. As of August 5, the countries with the most cases of COVID-19 after the US were Brazil, India, Russia, and South Africa, which along with China, where the pandemic started, form the BRICS, an acronym coined in the early 2000s to signify the world’s leading emerging markets.

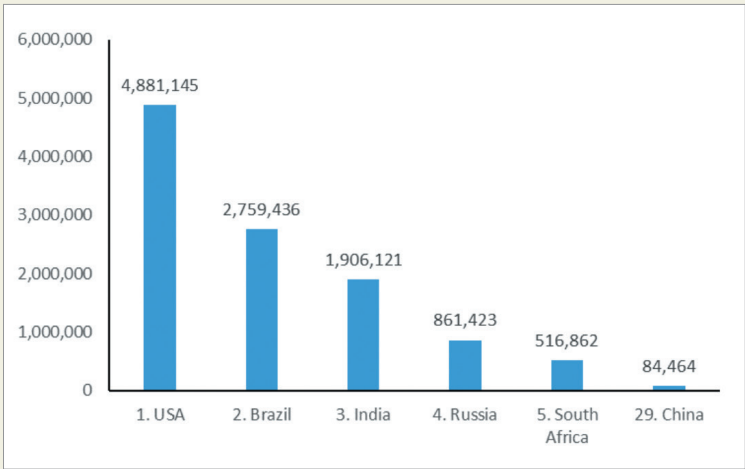


Figure 1. Countries with Most COVID-19 Cases plus China (August 5, 2020)
Source: Worldometer (<https://www.worldometers.info/coronavirus/>)

These countries have made important contributions to global growth, especially China. Their struggles with COVID-19 therefore threaten to undermine the global economic recovery. It is not just the BRICS. Highly populous countries with more than 100,000 COVID-19 cases now include Indonesia, Pakistan, Bangladesh, Mexico, Iran, and Egypt. Every country in the world continues to battle the virus and guard against new outbreaks.

A unique feature of the pandemic’s massive economic cost, in comparison to other global crises, is that it has created large shocks to demand and supply

at the same time. Demand shocks are both external, as other countries hit by the pandemic reduce their demand for exports and reduce travel to and investment in other countries. Domestic demand is also diminished, as people reduce spending due to greater unemployment and fear of leaving their homes.

Supply shocks refer to the disruption to work caused by stay-at-home orders, shuttering of businesses, and mobility controls, which wreak havoc on supply chains. This double whammy of demand and supply shocks is especially devastating for emerging markets and developing countries whose economies rely on exports (especially commodities) and tourism. These countries are often less equipped to deal with the pandemic due to weaker institutional capacity and a limited ability to mobilize fiscal and financial resources.

According to the International Monetary Fund’s (IMF) June Economic Outlook projections, global growth is expected to be -4.9% in 2020 compared to 2.9% in 2019. Growth in emerging markets and developing countries is expected to be -3.0% in 2020 compared to 3.7% in 2019, which is less of a decline than in advanced countries, which are expected to decline by -8.0% in 2020 compared to 1.7% in 2019. The larger impact on rich countries likely reflects the fact that they were hit harder by the pandemic in the first half of 2020, and their economies rely more on services, which are more adversely affected by social distancing requirements.

However, these projections may already be out of date given the recent surge in cases in BRICS and other developing countries. They also obscure the diverse impact of COVID-19 across countries, and overlook the heightened vulnerability of some emerging markets and developing countries to dependence on external financing. The stakes are particularly high in less developed countries, given their large vulnerable populations at risk of falling into poverty.

	2019	2020	2021
Brazil	1.1	-9.1	3.6
Russia	1.3	-6.6	4.1
India	4.2	-4.5	6.0
China	6.1	1.0	8.2
South Africa	0.2	-8.0	3.5

Table 1. IMF Growth Projections for BRICS Countries
Source: IMF, World Economic Outlook Update, June 2020.

Table 1 presents the projected growth impacts of the pandemic on the five BRICS economies, exemplifying the large cross-country variations that exist in pandemic experiences. China is one of the only countries in the world projected to post positive growth (of 1.0%) in 2020, reflecting the fact that it quickly got the virus under control, was the first country to reopen its economy, and had a strong capacity to finance aggressive policy responses to the crisis.

Like many countries, China saw a steep reduction in consumption when the country was in lockdown, followed by a quick recovery after it reopened. But the economy did not fully return to pre-crisis levels due to persistent cautious behavior, and negative external demand shocks that persisted after lockdowns ended. Many countries are also discovering that recovery will be more gradual than originally predicted, for the same reasons.

Among the BRICS, Brazil is projected to be most negatively affected, with GDP in 2020 estimated to decline by 9.1%. As in the US, despite its strong healthcare system, Brazil’s president played down the dangers of the virus and failed to implement a national strategy to combat COVID-19, leading to more than 2.75 million COVID-19 cases by early August, which resulted in large domestic demand and supply shocks. Brazil is also an oil exporter, and was therefore hurt by the collapse in oil prices, which reduced from more than US\$60/barrel at the beginning of 2020 to less than US\$20/barrel in April (recovering since then to just over US\$40/barrel in early August).

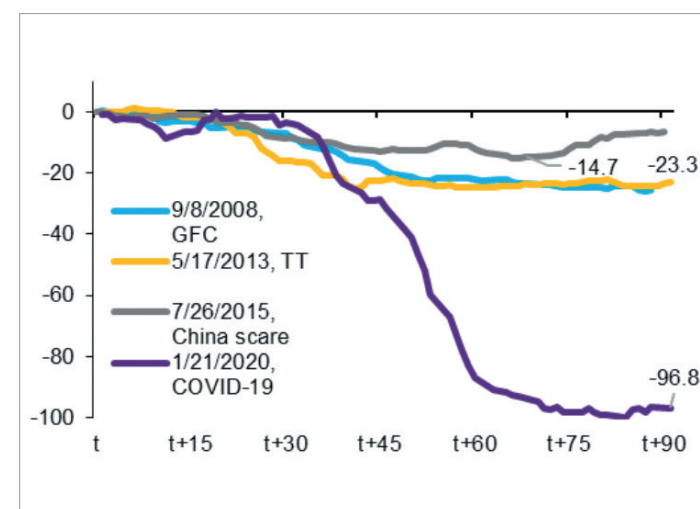
Russia is the world's second largest oil exporter after Saudi Arabia and its leading exporter of natural gas, so suffered greatly from reduced global energy demand caused by the pandemic, reducing projected growth to -6.6% in 2020. By contrast, China, India, and South Africa are oil importers, and so benefited from lower oil prices, although demand for oil also fell in nearly every country. South Africa, however, is an exporter of many minerals, and saw external demand fall (except for gold). The country's weak economic position before the crisis (anemic growth, high indebtedness, huge social disparities) limited its ability to respond effectively to the crisis.

India has faced challenges due to its limited health infrastructure, its crowded urban slums which make social distancing difficult, and its huge number of informal workers, who account for 90% of the labor force, and are highly vulnerable to losing jobs when the economy declines.

A new debt crisis?

The spread of COVID-19 to emerging economies has also revealed a vulnerability not fully appreciated before the pandemic hit, namely the excessive dependence of many emerging market countries on external financing. Such dependence historically has left countries vulnerable to financial crises when international capital decides to leave suddenly (e.g., the Latin American debt crisis of the 1980s, the Asian financial crisis in 1997-1998, and the Great Financial Crisis of 2007-2008).

The COVID-19 pandemic saw foreign investors exit emerging markets at the fastest speed ever, in search of safer dollar assets. In a co-authored study, Alicia Garcia-Herrero and Elina Ribakova (2020) analyze the factors that made emerging economies vulnerable to a sudden reduction in dollar liquidity due to the pandemic, and assess the potential of different tools available to address the problem, including the role of the IMF.



Emerging markets are highly reliant on dollar liquidity through both capital and income channels. The capital channel refers to net borrowing in the form of capital inflows. The more that emerging markets rely on short-term portfolio inflows, or 'hot money', the more they are potentially exposed to global dollar liquidity shortages. The income channel refers to USD income generation mostly via net exports of goods (including commodities) and services (notably tourism), or payments for the cross-border use of a country's endowments such as remittances, both of which were adversely affected by the pandemic. Thus, the COVID-19 shock sharply reduced emerging markets' access to dollars through both channels.

The sudden stop in portfolio flows into emerging economies has been unprecedented. In fact, the size of portfolio outflows is several times bigger than during the Global Financial Crisis in 2007-2008, the 2013 Federal Reserve taper tantrum when the Fed signaled future quantitative easing, leading to lower prices and higher yields on US treasury bonds, or the China scare caused by its stock market crash in 2015 (Figure 2). Flights to the dollar cause dollar appreciation which makes it even more costly for emerging markets to service external debt. After the pandemic the dollar surged, but later depreciated after the Fed slashed interest rates to zero. In light of the huge outflows, the IMF estimates that the total gross financing need of emerging markets could reach as high as 2.5 trillion dollars. The IMF has already received requests for financial assistance from as many as 100 members. Many of the countries in greatest need of assistance are emerging markets, especially those with large external debts which are most common in Latin America (Figure 3).

How can emerging markets respond to this financing challenge? Four possible responses are domestic monetary policy, capital controls, drawing down foreign reserves, and international borrowing from the IMF.¹ Unfortunately,

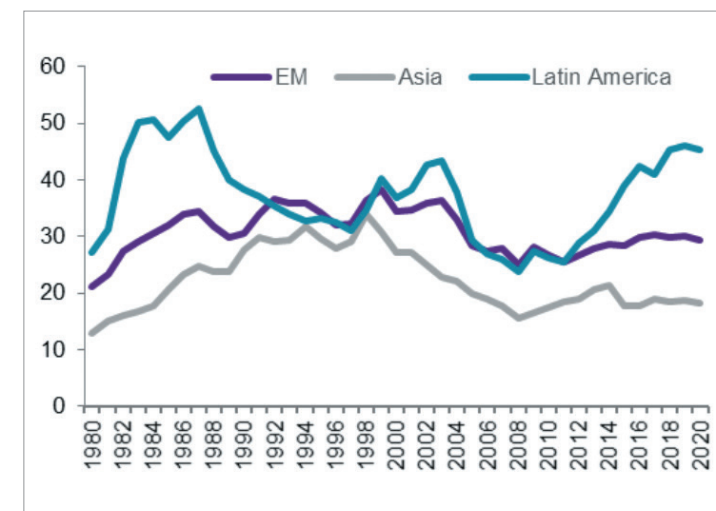


Figure 3. External Debt (% of GDP)
Source: IIF, Natixis

the potential of the first three methods is limited for most emerging markets. The IMF's current resources also are insufficient to meet the massive demand for assistance, which means that there is a great need for international efforts to mobilize additional resources to assist poorer countries in their time of greatest need.

Many central banks in emerging markets have used monetary policy to stimulate their economies in response to economic downturns. However, lowering interest rates or printing more money leads to currency depreciation which increases the burden of dollar-denominated debt, and the benefits from increased exports are limited due to plummeting external demand. The fear of continued depreciation also can accelerate capital outflows. Thus, monetary policy cannot solve the external financing problem.

An obvious shortcut to avoid raising interest rates to stem capital outflows is to impose capital controls. However, for countries that have liberalized their capital accounts, this is a drastic response that can shut off immediate market financing options and lose the trust of investors who may never return once the crisis has passed. Nonetheless, as for previous financial crises, external debt problems may lead countries to take a more positive view toward restrictions on capital movement, a stance which may eventually be reflected in the IMF's integrated policy framework. China has never liberalized its capital account partly to reduce vulnerability to sudden capital outflows.

Of course, large foreign reserves can be a first line of defense in addressing challenges posed by dollar flight and repayment of dollar-denominated debt. Unfortunately, many countries lack significant reserves, and the countries with such reserves are concentrated in Asia and the Middle East. The economic impacts of the pandemic are reducing available reserves because Middle East oil producers are cutting back production in response to the low oil price, and trade surpluses of Asian economies are falling with the sharp decline in external demand.

The IMF is obviously the most appropriate institution to deal with the liquidity problems that emerging countries are encountering due to the pandemic, since helping countries deal with such crises is a core mission of the institution. However, the IMF's available resources are currently estimated at just under US\$800 billion, far less than the more than US\$2 trillion demanded. An overall quota increase for the IMF is therefore greatly needed, but this is unlikely to be agreed upon quickly by IMF members. It will also be important to fast-track disbursements and provide loans with less conditionality.

More generally, given the global scope of the pandemic, international cooperation and coordination to help countries in greatest need, not just with debt problems but also in curtailing the spread of the virus and providing treatments and vaccines, is desperately needed. But this is a challenge to achieve given geopolitical tensions between the US, Europe, and China and the preoccupation of many leaders in dealing with the pandemic in their own countries. With millions of poor left vulnerable by the pandemic, the stakes couldn't be higher. 🙏

Reference

Garcia-Herrero, Alicia, and Elina Ribakova. COVID-19's Reality Shock for External-Funding Dependent Emerging Economies, Bruegel Policy Contribution Issue No. 10, May 2020.

¹ Garcia-Herrero and Ribakova (2020) also consider the roles of regional insurance arrangements and provision of cross-border liquidity by the US Federal Reserve, and find that neither is likely to significantly alleviate the liquidity crises facing emerging market countries.



By Professor Jaideep SENGUPTA,
Synergis-Geoffrey Yeh Professor
of Business,
Chair Professor of Marketing,
HKUST Business School

Change of Habit

New research at HKUST shows that fear of infection increases consumers' preference for atypical options.

As you're walking along the street on a hot summer afternoon, you receive a call from a friend who has just fallen sick from an infectious disease. Shortly afterwards, you spot an ice-cream stand with two of its flavors on sale: one is a ubiquitous chocolate flavor, the other is an unusual cherry dark chocolate. Which one will you choose?



Questions such as these have become particularly relevant in recent times as COVID-19 rages across the world, making it ever-more important for marketers to understand how infection-related cues shape consumer behavior. Indeed, such cues, albeit less starkly threatening than the pandemic, have always been present, whether they arise from a family member coming down with the common cold, or being exposed to a coughing stranger, or even a fleeting glimpse of a hospital ward on a TV show.

Despite their ubiquity, very little research has examined how such disease cues affect consumers' product preferences, a gap that my student HUANG Yunhui (now an assistant professor at Ohio State University) addressed in her PhD dissertation carried out under my guidance. Our research, which has been accepted for publication in the Journal of Consumer Research, shows that even relatively innocuous reminders of infection exert a systematic effect on product preference by increasing consumers' relative preference for atypical versus typical product options. In the example above, therefore, we predict that you will become more likely to choose the cherry dark chocolate after hearing about your sick friend.

Evolutionary theory and customer preferences

We based our predictions on an evolutionary theory which argues that because of the millennia-old threat to survival posed by infectious diseases, a "psychological immune system" has evolved in human beings. This system helps to protect us against diseases by inducing us to seek out objects and individuals that seem linked to good health, while alerting us to avoid those that seem linked to bad health.

For instance, being reminded of infectious diseases increases a preference for individuals with symmetric faces – the evolutionary basis being that symmetric faces are associated with good health. On the flip side, and even at the risk of over-reaction, disease cues cause people to avoid individuals with superficial markers of ill-health, such as obesity or facial scars, despite these markers not connoting any actual disease (see Murray and Schaller 2016 for a review of these and related findings).

How does this translate to consumer preferences? We argued that typical products, like the chocolate ice-cream mentioned in the opening example, are associated in consumers' minds with "more people" than atypical products like the cherry dark chocolate flavor. This is because of the greater market share generally claimed by typical products.

The reason this "more people" association matters is that the defense mechanism that is such a vital part of the psychological immune system causes humans to avoid other people in general, since other humans are a prime source of infectious diseases (Mortensen et al. 2010). Combining these insights therefore, we predicted that simply being made aware of the threat of infectious diseases will cause consumers to enhance their preference for atypical as compared to typical products, because of the former's association with fewer people compared to the latter.

Note that this is not a "rational" tendency. It is not the case that a typical product, such as the chocolate ice-cream, actually represents a source of infection (it's not like anyone else has tasted it, for example). However, as with many behaviors based on evolutionary adaptation, our predicted consumer behavior is not necessarily rational. It simply arises from an instinctive aversion to other people when the environment triggers reminders of disease threat.

We obtained support for this prediction across a series of experimental studies which were conducted with diverse sets of participants, including Hong Kong undergraduate students, American adults, and adults in mainland China. In a typical experiment, participants were randomly assigned to a condition which involved reminders of disease threat, (e.g., by providing slideshows depicting individuals with disease symptoms, or via a news report on a recent infectious disease), or a condition that involved other types of physical threat (e.g., slideshows depicting traffic accidents and other such hazards), or a control no-threat condition (e.g., an article describing how best to organize one's workspace).

Participants then filled out a series of measures, the most critical of which involved them choosing between a product that was either typical or atypical of its category. Different products were examined across studies, including juices (orange juice vs. pomegranate juice), stuffed toys (a bunny vs. a dragon), a computer mouse (a typically shaped mouse vs. an atypically shaped mouse), and sets of plates (again, typically shaped vs. atypically shaped). Across studies, we found strong support for our prediction that those exposed to a disease threat display

greater preference for an atypical product over a typical product, as compared to those exposed to other types of threat, and also to those exposed to no threat at all.

Diluting the bias

Can this bias towards atypicality be diluted? The theoretical reasoning that underlies the effect suggests some answers to this question. If it is indeed the case, as we argue, that it is the instinctive wish to avoid infectious diseases that causes consumers to prefer atypical products, then the effect should no longer be observed if the threat of infection can be reduced in some way.

We identified three different ways of doing exactly this: varying the nature of the disease; varying the nature of an intervention between disease threat and product choice; and varying the nature of the product. First, the threat should be reduced if the disease is explicitly described as being non-infectious, as a non-infectious disease should not induce avoidance of other people, and therefore not cause an aversion to typical products.

Second, if people are allowed to take some action to minimize the threat, even if they simply imagine having access to an antiseptic handwipe after being exposed to the disease threat, they should be less afraid of infection, and therefore no longer stay away from typical products.

Third, if the nature of the product is such that there is very little possibility of getting infected by using it, for example, a set of plates that is intended as a wall decoration rather than as dinnerware, the fear of infection should no longer apply when considering the purchase of the product. Indeed, a series of studies that tested these arguments found strong support for each of them.

The boundaries of our effect provide useful information as to why the effect occurs in the first place. Namely, it is the fear of infectious diseases that drives the aversion to products mentally associated with more people. At the same time, the findings across studies provide extensive support for the effect itself: disease threat in general increases preference for atypical as compared to typical products.

Not only do these findings illustrate a novel aspect of consumer behavior, they offer straightforward implications for practitioners. They suggest, for instance, that managers should consider marketing novel, atypical product offerings, rather than typical offerings, in disease-prone environments. Advertisements for relatively atypical products might also be more effective if shown in the context of programming that carry reminders of disease, for instance, hospital dramas.

Finally, given that sales of typical products are reduced by disease cues, managers might want to include natural fluctuations of pathogen load across time and geographic locations in their forecasting models for typical/mass product offerings. These applied implications are of particular importance at the present moment, given the ongoing pandemic threat.

Preference for unusual ingredients

At the same time, a caveat is in order. Our research was completed before the onset of the COVID-19 pandemic. We cannot therefore conclusively assert that these findings will hold in the current environment. Indeed, given the severity and the immediacy of the pandemic, especially compared to the kind of disease cues that were featured in our studies, other possibilities cannot be ruled out.

For instance, given the intensity of the current threat, it might be that consumers crave safe, “default” options, and this could actually translate to a greater preference for typical rather than atypical products. This is a possibility we are currently exploring.

Interestingly, however, market research carried out in supermarkets in the UK provides some indicative evidence that our results may hold in the COVID-19 context as well. A recent article in Bloomberg News reported that during the pandemic-triggered lockdown in the UK, consumers were found to have significantly increased purchases of relatively unusual ingredients for food (e.g., kimchi) and drinks (e.g., the use of tequila in home-made cocktails). This ties in with our prediction that a disease-active environment will increase relative preference for atypical products.



A disease-active environment will increase relative preference for atypical products, a prediction that is consistent with recent findings in a Bloomberg report: <https://www.bloomberg.com/news/articles/2020-05-06/britons-get-through-lockdown-with-sewing-tequila-and-kimchi>

Apart from further exploring these issues, my co-author and I are currently exploring other consumption consequences of disease threat. One interesting consequence derives from the well-established finding that social connections and monetary resources are often interchangeable. We argued therefore that disease threat, because it leads to people-avoidance, should conversely enhance the value of money, and thereby lower consumer spending.

Another interesting implication of the people-avoidance motive is that disease threat should lower a liking for anthropomorphized products, that is, products that contain humanlike features (precisely because of their resemblance to humans). Encouragingly, early results from our lab support both these ideas.

In closing, disease cues have the potential to affect consumer behavior in a variety of ways, including non-obvious ones. Despite the prevalence of disease cues in our environment, and their tremendous potential impact on all aspects of human life, their influence on consumption has not been adequately studied. Our research represents a step in this direction, one that we hope provides the platform for further insight into an area which has unfortunately been emphasized by recent events. 🍷



More about the study

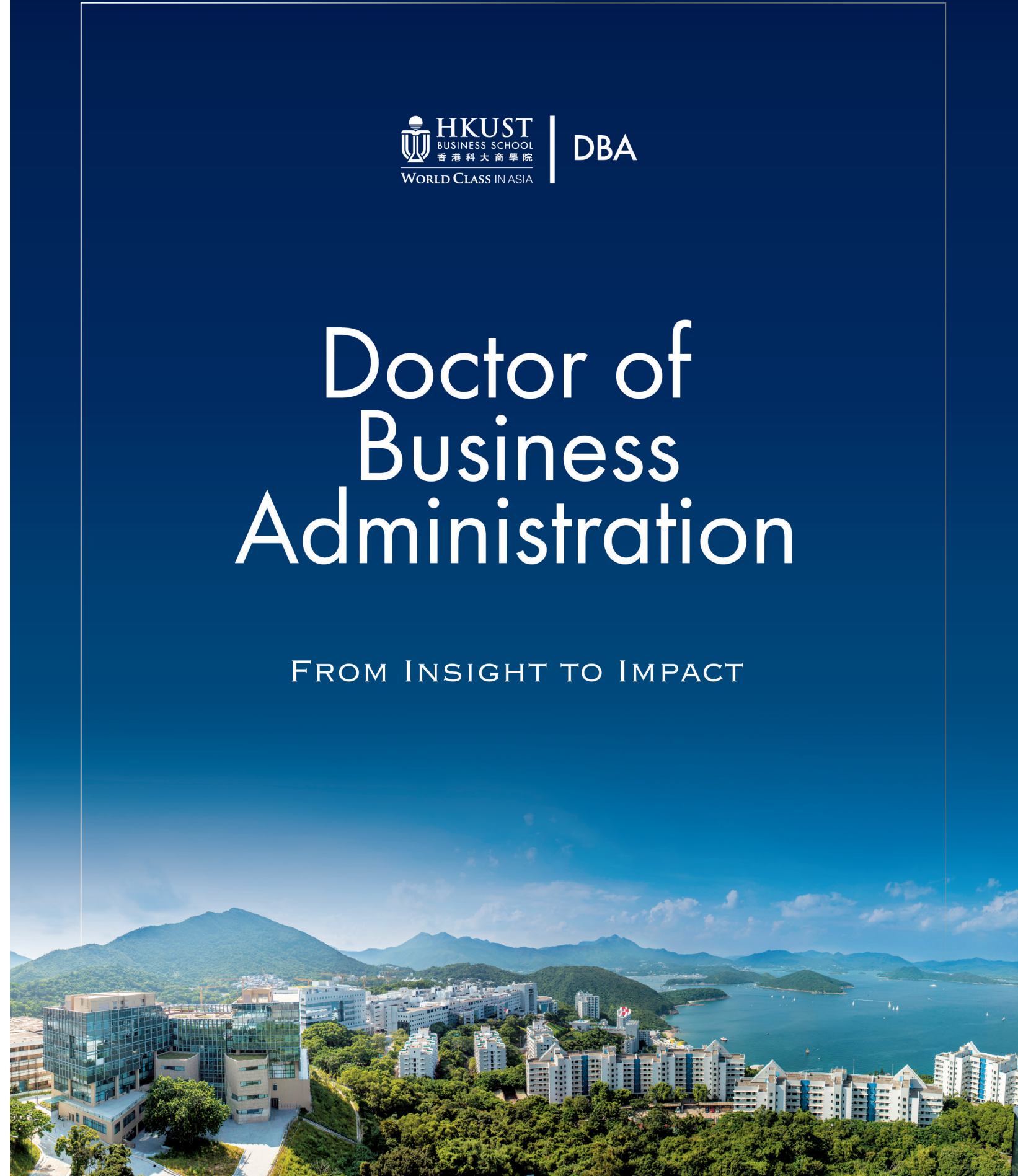
References

Mortensen, Chad R., D. Vaughn Becker, Joshua M. Ackerman, Steven L. Neuberg, and Douglas T. Kenrick (2010), “Infection Breeds Reticence: The Effects of Disease Salience on Self-Perceptions of Personality and Behavioral Avoidance Tendencies.” *Psychological Science*, 21 (3), 440-47.

Murray, Damian R., and Mark Schaller (2016), “The Behavioral Immune System: Implications for Social cognition, Social interaction, and Social influence,” *Advances in Experimental Social Psychology*, 53, 75-129.

Doctor of Business Administration

FROM INSIGHT TO IMPACT



Program Commences
in September 2021

HKUST Business School
The Hong Kong University of Science and Technology
Clear Water Bay, Kowloon, Hong Kong

Tel: (852) 3469-2178
Email: dba@ust.hk
Website: To be launched in Sep 2020



By Adjunct Associate
Professor Gordon LAM
Department of Information Systems,
Business Statistics & Operations
Management, HKUST Business School

About China

“As it took decades for manufacturing to move into China, it will take a considerable amount of time for manufacturing to move out of it

Chain Reaction

In the light of the COVID-19 pandemic, companies need to re-examine their supply chains and devise contingency plans.

Before the pandemic, globalization had led to the world becoming flat, and value chains ran across many countries. This meant that supply chains were stretched and extended to include many more mutually dependent links. But the existence of more links in supply chains means that the chance of errors and risks goes up. Strong mutual dependency also made the stability of each link (or each cluster of links) a prerequisite for business viability. Yet absolute stability is nothing but a dream, so when all one's eggs are put in one regional or national basket, no matter how safe that basket may appear to be, it is a only matter of time before something will rock it. So reorganizing the supply network to create multiple sourcing should be on the agenda of every multi-national company.

Nevertheless, it is painful and time consuming to move large parts of a value chain away from China. There are several reasons. First, that China became the “Factory of the World” is not the result of anyone's smart planning, or any one visionary leader's policy. It is by and large the result of organic growth over several decades. Second, parts of the value chain that are outside of China have been optimized to work with the China Factory in order to derive higher profits. The downside of a system optimized for maximum profits under a given condition—that the China Factory is used and kept working—is that the system is incapable of a quick adjustment when that condition is no more due to reasons of international politics.

As it took decades for manufacturing to move into China, it will take a considerable amount of time for manufacturing to move out of it. Apple Computer is a good example. Most iPhones are made in China, not because of its cheaper labor, but because clusters of supporting industries, and a vast multitude of highly qualified engineers, are readily available. It will be extremely hard to replicate this humongous organically grown structure in India, or elsewhere, in just a few years.

The garment and fashion industry is another example. For many fashion brands, shifting garment sourcing from China to alternative countries of production in Asia is not a viable solution for a number of reasons. These are mainly connected to matters of materials, capacity, and capability. First, the textile and apparel supply chain in Asia is highly reliant on China's supply of fabrics and garment accessories, and other inputs. Second, many neighboring countries are already facing capacity constraints (e.g., Vietnam's capacity is currently full). This is because US retailers have been moving some of their production to these countries in order to reduce exposure to sole-sourcing from China since the China-US trade war. Third, skill-sets, craftsmanship and product offerings of some other producer countries such as Bangladesh and India are still unable to match or substitute for those available in China.

National Security and Political Health

Profitability is not the only consideration. For the US and EU, one side of the coin is certainly financial gain and economic benefit, but the other side is national security and political health. The working of the global village is predicted on trust and security. Just as a normal person will choose his and his family's life over wealth, a normal country will choose its own security, and its citizens' security, over a living standard built on imports from an



By Professor ZHANG Hongtao
Department of Information Systems,
Business Statistics & Operations
Management, HKUST Business School

antagonistic country. The coronavirus pandemic has demonstrated to the Western world that key medical supplies are as critical to a country's well-being as advanced military weapons. One should expect to see bigger and more powerful governments in Western countries following the pandemic. These governments will direct, encourage, entice, or coerce manufacturing of products key to national security back to the home country, or to regions that they can trust, or control, and with whom they share moral values.

Certainly, some kind of delinking or weak-linking with China will happen, slowly for some industries and faster for others. This will also be accelerated by the aging of the population of China. As an abrupt migration from China will cause too much supply disruption, the US government may gradually increase the tariffs on imports from China, one year after another.

When security takes precedence over costs, and manufacturing moves out of China, where will the products be made? We believe it depends on the nature of products. Roughly, the manufacturing of low-end products will mostly move to India and other Asian countries like Vietnam and Indonesia. Mid-end products will be manufactured in South Korea, Taiwan and Mexico, and the manufacturing of high-end products will go back to Japan, Europe, and the US. How quickly the migration of manufacturing out of China occurs depends on how quickly these countries build up the required manufacturing capability and capacity, including infrastructure and clusters of support networks.

Supply Chains at Risk

At present, the knock-on effects of the pandemic have begun to multiply as more and more countries implement stringent containment and prevention measures (cancellation of international flights, border shutdown, traffic restrictions and special quarantine requirements at borders). An obvious one is that moving goods within and out of certain countries becomes difficult and costly. For many industries, supply chains could be at risk at both ends — the supplier and the consumer. Production suspension due to government-mandated lockdowns or quarantine requirements, shortage of components, logistics delays, a slump in consumer demand and the accompanying liquidity issue, could cause the sudden collapse of certain parts of a supply chain. This could further lead to a domino effect of disruptions along the same supply chain due to supplier-client dependencies and complexity of global production networks. For many companies, particularly SMEs, surviving this unprecedented crisis is real struggle.

While a temporary production shutdown may be tolerable, an economic recession and a slump in global demand are going to weigh more heavily on supply chain stakeholders. The fashion industry has borne the brunt of demand-side disruptions brought by the pandemic. Due to large-scale shop closures and low consumer spending on goods, except food and necessities, European and US fashion retailers, including small specialty retailers, fast fashion leaders and larger discounters, as well as popular e-commerce sites and even luxury brands, have been busy cutting their previously planned production orders, or postponing product shipments, in the past few months. Worse still, as the COVID-19 pandemic drags on, widespread business closures and layoffs could further stifle consumer spending.

About Hong Kong

“The role of a bridge between China and the Western world that Hong Kong has maintained since Deng Xiaoping's era, although not vanishing, will be diminished

While Western retailers are now facing an acute liquidity crunch and credit issues, the same problem could ripple through the whole supply chain, pushing thousands and millions of manufacturers, particularly small and medium-sized factories, toward the edge of bankruptcy. This could lead to a structural change in global supply chains. As a result of COVID-19, we would expect the digital transformation of the supply chain to speed up, and a rise in the number of e-Commerce-driven demand chains. Whether there will be a change of inventory management practice (contingency stocking, 30-day buffering) and an acceleration of reshoring is yet to be seen.

Consumption Habits May Have Changed

At the same time, some consumption habits may have permanently changed, in which case a number of categories/sectors will see faster growth in the new retail environment. For instance, health and hygiene related consumption, such as those pertaining to personal hygiene products, disinfectants, fitness training, and medical check-ups, will remain high, or even increase for an extended period after the outbreak. The boost to online entertainment and remote working/learning could also be a permanent shift, which would create additional demand for software and mobile apps for online reading, online working platforms, remote conferencing, etc.

The most urgent task facing the whole world now is to battle the COVID-19 pandemic together, before the global public health crisis causes any permanent disruption to the global economy and global supply chains. This requires that an open, efficient and multilateral global trading system be carefully maintained to facilitate the flow of goods and information, especially during a time when the flow of people is being restricted.

In addition, supply chain stakeholders, including raw material and component suppliers, manufacturers and retailers, should work together to keep workers paid and supply chain partners alive. Only in this way can we hope for a quick return to supply chain normalcy after what is perhaps the worst crisis in decades.



In the longer term, companies need to thoroughly re-examine their supply chains and devise contingency plans and risk management policies. Businesses should avoid an 'all-in', cost-focused sourcing strategy and maintain a base of multiple suppliers for each critical part of their supply chain that are ready to ramp up production in case a few of them are lost due to unexpected events. They therefore need to build a more diverse and agile supply chain, albeit at somewhat higher costs, with both a diversified sourcing portfolio and a broad supplier network. For this reason, companies with a strong global supplier network and deep relationships with suppliers will be in the best position to meet the new challenges in this era of disruptions and expected unpredictability.

Hong Kong's Role Diminished

In anticipation of incoming waves of change, the role of a bridge between China and the Western world that Hong Kong has maintained since Deng Xiaoping's era, although not vanishing, will be diminished. This will have severe implications for trading and supply chain management firms such as Li & Fung. They should not just move with the trend, but also jump ahead of it, so that they remain viable players in the new global environment.

For example, Li & Fung may still leverage its connections with producers and suppliers in Asia and Eastern Europe, but it may have to depart from its asset-light operating model of not owning factories or warehouses. As the brand name retailers will take the opportunity of value chain reshuffling to secure their own sources of supply, the role of a pure middle-man and supply chain agency traditionally played superbly by Li & Fung may not suffice anymore. The recent decision to privatization taken by Li & Fung seems to afford the company more freedom to make some long-term changes. It may consider closer cooperation with some key, capable factories which have long been partners, and incorporate them into a digitized supply chain. 🏠

世界在变·初心不变

在香港科大 读世界级EMBA



EMBA
中英雙語課程

香港科大EMBA

中英雙語課程



联系方式:

☎ (8610) 6592 2060, (852) 23585790
 ☎ (86)13910581720, (86)14714925104
 🌐 www.hkustemba.ust.hk



WORLD Bachelor in Business

Los Angeles | Hong Kong | Milan

Three world-class universities. Three continents. Three degrees.
One unparalleled experience.



www.wbb.ust.hk

(852) 3469 2086

wbb@ust.hk

Our goal is to foster truly international leaders who can thrive with the complex international problems and opportunities facing businesses today.

According to the Non-local Higher and Professional Education (Regulation) Ordinance, the World Bachelor Business is an exempted course. It is a matter of discretion for individual employers to recognize any qualification to which this course may lead.



By Professor LI Yingying,
Department of Finance &
Department of Information Systems,
Business Statistics and Operations
Management,
HKUST Business School

Risk Management in the Volatile Financial Market

Drawdowns due to COVID-19 happened very quickly compared to major events like the Great Depression. Advanced risk management and proper portfolio allocation are becoming more important.

The COVID-19 drawdown which triggers the decline appeared incredibly quickly, even compared to the devastating historical events such as the Great Depression and World War II

The COVID-19 pandemic is having a dramatic impact on the global stock market. Take the major stock indices, for example. Figure 1 below shows the cumulative returns in 2020 of seven major indices: SP500, FTSE100, DAX, CAC40 (left), HSI, SSE Composite Index, and Nikkei 225 (right). The drawdown periods are shown in bold. For all these markets, major drawdowns occurred in March. In terms of magnitude, European markets experienced the largest declines, which was almost 1.5 times as large as the Hong Kong market.

To get a bigger picture of the current COVID-19 shock, we must employ history and compare the 2020 drawdown with major historical drawdowns. Focusing on the SP500, we can calculate its annual maximum drawdowns since 1928, totally 93 years.

We see that, compared with the major drawdowns of the past, the drawdown this year occurred within the shortest period of time, which denotes the severity of the crisis.

Meanwhile, the volatility index VIX saw a rapid spike in March. Although the index dropped significantly afterwards, as of June 30, 2020, the VIX value still stands at a high level.

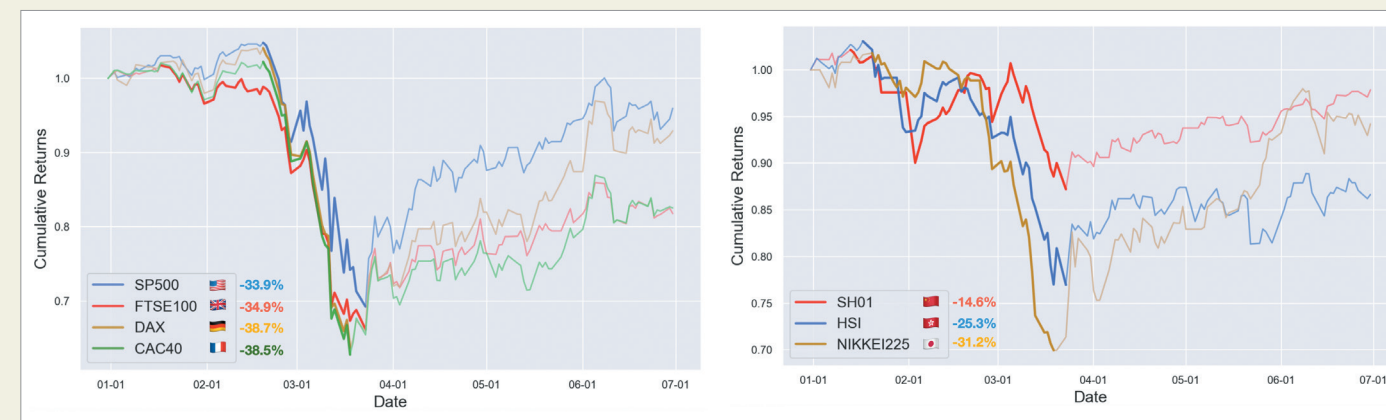


Figure 1: Maximum drawdowns for global stock indices in the first two quarters of 2020 (left for US & European markets and right for Asian markets)

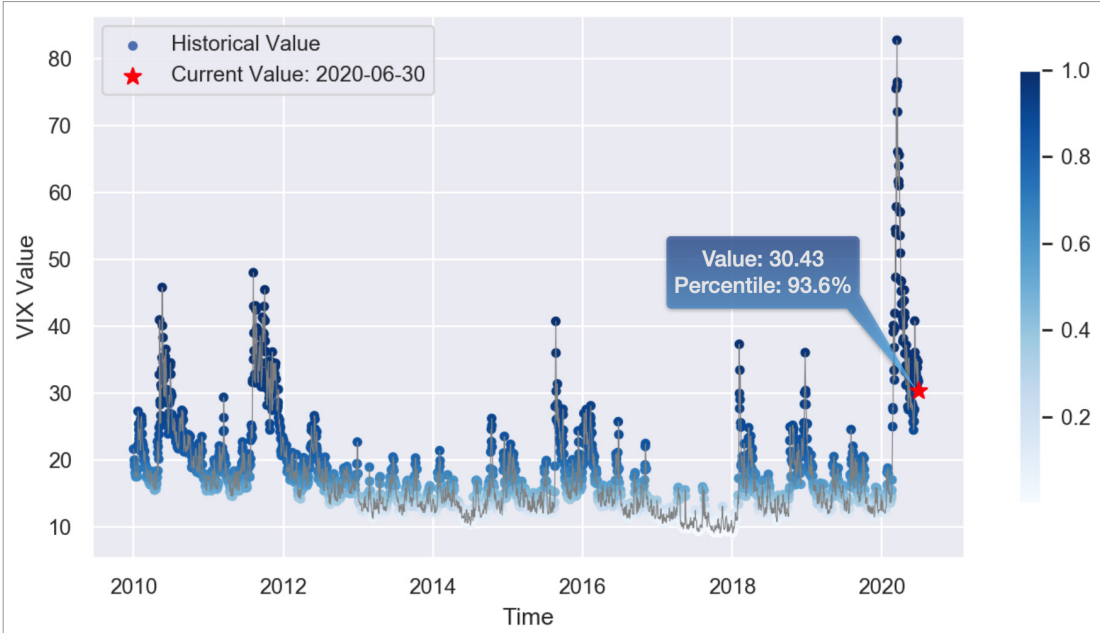


Figure 2: VIX since 2010

Besides the stock markets, COVID-19 also significantly impacted the commodity and cryptocurrency markets. Figure 3 shows the cumulative returns in the first two quarters of this year for WTI crude oil, gold, and bitcoin (BTC). All of them suffer huge declines.

COVID-19, along with many other major events, can disrupt the entire financial market. When such events happen, portfolios which lack proper risk management are very vulnerable.

Mean-variance optimization

In the following discussion, we re-visit one fundamental risk management and portfolio optimization framework, the mean-variance optimization framework, and introduce one of the latest developments.

The Markowitz Mean-Variance optimization intends to maximize portfolio return at a given risk constraint. The risk constraint level varies among different investors according to their risk preferences.

One unique feature of the modern mean-variance optimization is that it is convoluted with “big data” challenges, simply due to the fact that there are a large number of stocks/assets available for investing.



Figure 3: Maximum drawdowns for crude oil, gold, and Bitcoin in the first two quarters of 2020

Year	Drawdown		Start Date	End Date	Background
	Value	Period(day)			
1929	-44.6%	40	1929-09-16	1929-11-13	Great Depression
1930	-44.3%	171	1930-04-10	1930-12-16	
1931	-57.5%	207	1931-02-24	1931-12-17	
1932	-51%	59	1932-03-08	1932-06-01	
1937	-45.5%	178	1937-03-10	1937-11-24	World War II
1974	-37.6%	190	1974-01-03	1974-10-03	1974 Recession
1987	-33.5%	71	1987-08-25	1987-12-04	1987 Crash
2002	-33.8%	192	2002-01-04	2002-10-09	Internet Bubble
2008	-48.8%	226	2007-12-31	2008-11-20	Subprime Crisis
2020	-33.9%	23	2020-02-19	2020-03-23	COVID19

Table 1: Top 10 historical yearly maximum drawdowns of SP500 since 1928



Reference
Ao, Li, and Zheng. Approaching mean-variance efficiency for large portfolios. The Review of Financial Studies, 2019.

In the article “Approaching mean-variance efficiency for large portfolios” by Ao, Li, and Zheng (2019, The Review of Financial Studies), the authors discussed how to find the mean-variance efficient portfolios of a large number of assets. The traditional method would use the historical sample mean and sample covariance matrix for portfolio construction. The resulting portfolio had been found to perform poorly in practice. Ao, Li, and Zheng (2019) provided a theoretical explanation to such a “puzzle”. The fundamental reason is high-dimensionality, which means that the number of assets is not small compared with the sample size. To resolve the challenge, the authors provide an innovative method, MAXSER, that can approximately attain the maximum expected return and also keep risk below the desired level.

The key ideas include transforming the original Markowitz optimization into an equivalent unconstrained optimization problem and applying the LASSO regression. The method has been found to give a superior performance in extensive empirical studies. With the risk constraint set to the same level as the risk level of SP500, we build a portfolio with MAXSER based on the US stock market. Figure 4 shows the comparison between SP500 and MAXSER in the first two quarters of this year. We see that MAXSER performs much better than SP500. It achieved a substantially higher total return and incurred a much smaller drawdown. In terms of long-term performance, during the period 2000 – 2020, MAXSER and SP500 had a similar (annualized) risk of 18%. But MAXSER delivers a much higher Sharpe ratio (0.6 vs 0.2, after deducting transaction costs).

To summarize, we witnessed the historical COVID-19 drawdown. The decline appeared strikingly quickly, even compared to devastating historical events such as the Great Depression and World War II. Furthermore, as modern portfolios involve large numbers of assets, advanced risk management and proper portfolio allocation become ever more important. 🏠



Figure 4: Comparison of SP500 and the MAXSER portfolio based on SP500 constituents in the first two quarters of 2020



By Professor GONG Yaping,
Fung Term Professor of Management,
Head and Chair Professor,
Department of Management,
HKUST Business School

The Upside of the COVID-19 Crisis

The effects of the COVID-19 pandemic could force organizations to change for the better.

The COVID-19 outbreak was unexpected and highly disruptive. It continues to impact all walks of life, and the human and economic cost is colossal. Global travel came to a halt as countries imposed travel restrictions and lockdowns (e.g., in Wuhan in China, New York in the US, and Lombardy in Italy). According to World Health Organization, the COVID-19 virus had infected 18,614,177 and caused 702,642 deaths as of August 7, 2020.

According to an Asian Development Bank report released on May 16, the global economy could suffer from a US\$5.8 to \$8.8 trillion loss due to the outbreak. This loss could become even greater as the crisis drags on. Hong Kong's GDP in the first quarter contracted 8.9% from a year earlier. There is also an immeasurable mental health and psychological cost (e.g., due to the rising domestic violence caused by stay-home and lockdown orders). The Chinese character for "crisis" (wei-ji) implies both "danger" and "opportunity". So what opportunities are available during a time of crisis? Research provides some clues to this question.

Crisis and Employee Creativity

Crises pose a serious threat to the survival of individuals and organizations. In a crisis situation, individuals often experience anxiety, and organizations experience restrictions in information processing and the constriction of control. Individuals and organizations rigidify rather than act in a flexible manner. So when can a crisis stimulate creativity? Our ongoing research provides a glimmer of hope. We conducted field interviews and identified major crisis events in R&D teams.

For instance, a team suddenly discovered that a competitor matched or exceeded the product, technology, or design that it was specifically working on, or unexpectedly suffered a budget cut relative to the demand of the task(s). Does that sound familiar to you? How devastating!

What happens to creativity when individuals experience a crisis? An individual's mindset matters. Those with a fixed mindset regard competence and resources as fixed, and they tend to see a crisis as threat to their self-image. On the other hand, those with a growth mindset regard competence and resources as malleable and tend to see crisis as an opportunity for growth. For those with a fixed mindset, a team crisis invokes heightened anxiety and subsequently stifles creativity. For those with a growth mindset, a team crisis stimulates engagement with the creative process, and that leads to creativity.

Crisis management deals with reality, the management of a rapidly unfolding situation, whereas crisis communication deals with the message, the management of the perception of that reality. It is critical to be transparent in crisis communication, and it is equally important to shape the perception through such communication. To tap into the upside of crisis, employees must have a growth mindset and managers must shape the perception of crisis as an opportunity.

“Crisis creates a sense of urgency by seriously disrupting the taken-for-granted routine, and threatening the organization's survival

Crisis and Organizational Change

Organizational change refers to the alteration of a major component of the organization (e.g., culture, strategy, structure, and work method). Such change may or may not represent an innovation. Crisis is an important driver for organizational change. For the brick-and-mortar universities, online delivery of teaching is a major organizational change.

What was the initial reaction when COVID-19 hit and the decision was made to teach online? Concern and skepticism. Some students resisted online teaching due to the lack of face-to-face interaction and perceived it to be

of a lower quality. They requested face-to-face teaching despite the public health risk. These are understandable human reactions during a crisis situation. The university had no choice but to switch to online, and subsequent reactions were more positive than expected.

According to Mini-SFQ (Student Feedback Questionnaire) data for our Business School in March 2020, 62.58% respondents found Zoom teaching to be effective or highly effective, and only 7.95% found it to be ineffective or highly ineffective. Some students participated more online and felt that they were always in the front row. The COVID-19 outbreak, and the move to online teaching, illustrates the number one principle of organizational change, i.e., to create a sense of urgency. Crisis creates a sense of urgency by seriously disrupting the taken-for-granted routine, and threatening the organization's survival.

Other elements must be in place in order to make change happen. Organizations must clearly communicate to stakeholders the need for change (e.g., from face-to-face teaching to online teaching), and provide support for change through incentives and effective communication. Addressing the knowledge gap is critical. This involves knowledge about how to change (i.e., what to do during transition) and how to perform tasks in new ways.

In responding to the COVID-19 outbreak, our University quickly switched to online teaching. More importantly, it acquired a Zoom license for faculty, and conducted intensive training workshops in two weeks to prepare faculty for online teaching. To ensure the change will stick, and that individuals do not revert to their old ways, organizations provide positive feedback and rewards to reinforce the new ways. As the COVID-19 situation improved and full online teaching was no longer necessary, our University provided the opportunity to continue online teaching, subject to approval.

Crises and Educational Innovation

Christensen (1997) suggests there are two types of innovation: sustaining innovation and disruptive innovation. Sustaining innovation makes an existing product, service or process better, and provides them to customers at a better price in the mainstream market. Disruptive innovation departs from and replaces an existing product, service or process. Disruptive innovation provides cheaper and easier-to-use products, services or processes to customers outside the mainstream market. Here's an example, a mainframe computer costed US\$2 million and required a high skill level to operate it. Its customers were large corporations and government agencies and only professionals could use it.



A personal computer today costs only US\$2,000 and ordinary people can operate it. It targets customers like you and me. A PC has a lower profit margin, but it can generate a larger profit because it makes computing accessible and affordable to the greater population. Importantly, disruptive innovations like the PC stimulate economic growth, because the large demand creates many jobs to sell and service the product.

What does the theory of disruptive innovation tell us about online education? When seeing an online education program, one may conclude that it is not as good. Most likely, that is correct. But that is actually the correct answer to the wrong question. The correct question is: will online education become as good as, and better than, face-to-face education? The answer is “Yes”. Look at how much it has been improved. And more improvements are in sight. History shows that many disruptive innovations were initially not as performance competitive, but improved over time. When a disruptive innovation became performance competitive, customers in the mainstream market switched to the new product, because it was also cheaper and easier to use. Amazon disrupted Barnes & Noble. Online education will disrupt brick-and-mortar education too. It is unpredictable when it will happen. It is predictable that it will happen.

We have witnessed rising education costs in the last decade. There is a real chance for disruption if one can offer the same quality education, but at a much lower price. Online education technology is one potential candidate for such disruption. As the technology improves, we may be able to teach as effectively as in the face-to-face mode. Equally important, we can offer education at a lower price, because of lower physical assets investment (e.g., buildings and classrooms) and greater economies of scale (e.g., reaching more students from geographically distant areas). Hong Kong is in a dire need for such technology because of its expensive real estate and its shrinking student population. When such technology is good enough for education, it would be good enough for business as well. If people can work effectively from home as they do in Central, the reliance on office buildings decreases, potentially disrupting the commercial estate sector too.

The COVID-19 outbreak may well be a turning point. The pandemic makes it crystal clear that there is a market for distance education and technology. Investors are pouring resources into developing such technology and the advancement is accelerating. When more people use the technology due to the pandemic, the opportunity to improve and perfect it is vast. As a case in point, Zoom Video Communications, Inc. provides a platform for teleconferencing, telecommuting, and distance education. Its share price soared. The company improved the technology quickly, because many across the globe adopted it, and then complained about it.

The COVID-19 crisis and the switch to online teaching also call into question the business model of business schools. One much embraced model is to offer elite programs to elite customers at an elite price. It is unknown when business schools began to give up on the lower segment. It is known that business schools are continuously climbing up the price ladder. Schools strive to provide better programs to better customers at a higher price. The upper market movement makes total sense except for one problem.

Disruptors often attack from the bottom of the market, the segment that successful incumbents look down upon and are ready to give away. If this theory is correct, educational disruptors will come from underneath and attack successful incumbents by making education accessible and affordable to a larger population. If business schools do not disrupt themselves, others will.

We are not out of the woods yet. Nobody has a crystal ball. History will tell what positives will come out of the COVID-19 crisis. 🙏

Reference
Christensen, C. (1997). *The innovator's dilemma: when new technologies cause great firms to fail*. Boston, Massachusetts: Harvard Business School Press.



MASTER OF SCIENCE IN GLOBAL FINANCE






ONE
JOINT DEGREE

TWO
ALUMNI
NETWORKS

THREE
GLOBAL
CLASSROOMS

- One-year modular-format master program for global finance executives
- Classes in Hong Kong, New York and Shanghai
- FinTech and Behavioral Finance courses included
- Graduates become HKUST and NYU alumni

 www.msglobalfinance.org

 (852) 2358 5028  msgf@ust.hk 

Exempted Course at Non-local Courses Registry, Education Bureau (Reference number: 462029).
It is a matter of discretion for individual employers to recognise any qualification to which this course may lead.



By Associate Professor KOH Tat Koon,
Department of Information Systems,
Business Statistics and Operations
Management

Digital to the Rescue

A strong digitalization strategy may help companies survive the coronavirus pandemic

In recent years, many organizations have undertaken digital transformations such as creating online customer touchpoints, leveraging digital platforms, and applying the Internet of Things (IoT) and Artificial Intelligence (AI) in value chain activities. Digitalization can help SMEs, large corporations, and public agencies become more accessible, agile, and competitive in the increasingly dynamic environments that they operate in.

But we have noticed that, despite digitalizing, not all organizations have been able to respond effectively to the new situation that has resulted from the COVID-19 pandemic. Therefore, we need to ask what digital transformations can help organizations during this abnormal time. Insights garnered from this question can contribute to an organization's long-term competitiveness as well as its short-term, immediate performance and survival.

While it is difficult to meaningfully compare digital transformation initiatives across different organizations in the context of COVID-19, we can gain general takeaways by examining the three broad mindsets which underlie many digitalization efforts: *Digital Sub*, *Digital First*, and *Digital Only*.

Digital Sub

The Digital Sub mindset is adopted when organizations complement their workflow and business processes in physical settings with IT-based substitutes and alternatives. A common example is when retailers use online stores and mobile apps to provide additional channels for customers. A Digital Sub transformation typically does not involve much reengineering of current workflow and activities. Instead, IT implementations are largely based on existing workflow and processes.

Digital Sub is a low-hanging fruit in digital transformation, and it can create value in normal circumstances. But this mindset is unlikely to be useful when workflows, processes, and customer journeys are significantly disrupted, as they have been during the pandemic. One major reason is that moving digital substitutes from a peripheral role to a more central role in key value chain activities is particularly challenging during a crisis.

As a result, Digital Sub may not give organizations the buffer it needs to cope with sudden shocks. We have seen examples of this during COVID-19, where many retailers, including those with a well-established digital presence and accessibility, have experienced a severe impact, with some reporting store closures, and even facing liquidation.

Digital First

The Digital First mindset is similar to Digital Sub in that it involves a hybrid of online and offline options. What differentiates Digital First is that it places the digital alternatives as the priority, so workflow, processes, and customer touchpoints are reengineered with these alternatives in mind. Non-digital initiatives play supplementary roles, such as providing a human touch or improving customer convenience.

Compared to Digital Sub, Digital First can help organizations to cope with significant disruptions more effectively. This is because organizations with a Digital First mindset often have the digital quotient, capabilities, and experience to adapt existing digital solutions and/or improvise using available IT to respond to unexpected events on-demand.

Digital Only

The Digital Only mindset, where key value chain activities are solely IT-based, is a relatively radical form of digitalization. While Digital Only is the core strategy for many pure-play tech companies (e.g., virtual banks), it is not as prevalent among traditional organizations. For these organizations, Digital Only can be perceived to be a risky proposition as it is often not practical or feasible to fully digitalize all activities and processes. While this is true, such organizations can still push towards Digital Only by focusing on processes or activities, rather than on the enterprise as a whole.

For a start, organizations should be prepared to rethink their business model and identify core aspects in their value chain which can be fully digitalized (while allowing others to remain non-digital or partially digital). To illustrate, consider a typical F&B business. Due to high rental and operating costs, it is common for F&B operators to have long opening hours and offer a variety of menu items (breakfast, lunch, tea, and dinner) to meet different customer needs throughout the day.

However, instead of serving walk-in customers in physical outlets, F&B operators can consider a Digital Only model and cater only to online delivery orders by operating in ghost kitchens. This allows for shorter operating hours and greater specialization, such as targeting the weekday lunch crowd. This Digital Only model could be ideal for F&B operators in locations where rent is high and demand is concentrated within specific hours during the day (e.g., CBD).

A key concern about moving towards Digital Only is whether the market is ready for such a drastic approach. Customers might be used to non-digital, offline environments and are thus unwilling to be restricted to using digital-only channels. Customers could also be concerned about product and service quality in a fully

digitalized environment, especially when an in-person interaction is essential.

Interestingly, COVID-19 could have cleared the path towards Digital Only for organizations in such situations. Over the past few months, as we have gone fully online to carry out various daily activities—including shopping, working, and socializing—we may have become more open to Digital Only offerings than ever before. For example, mobile food delivery platforms have reported substantial increases in delivery orders since the outbreak of COVID-19, suggesting there is a potentially larger F&B market that is ready for Digital Only business models going forward.

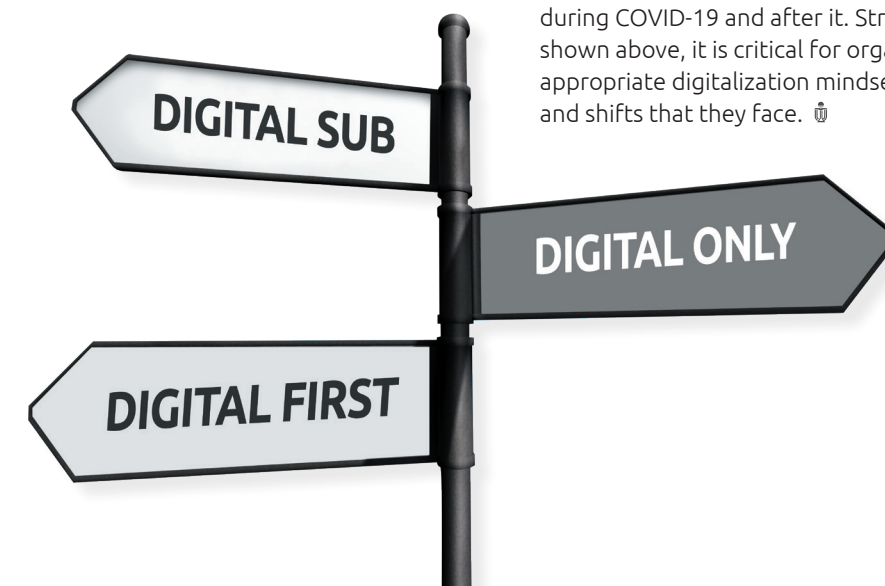
Shifts in Expectation

As another example, consider online courses. Due to reservations about the quality of learning and synchronous interactions in online classes, many people have not been keen to give online learning a try. But COVID-19 has forced educational institutions to bring classes online, and many students have realized that the online learning experience, while not perfect, is not as bad as they had thought. In fact, some students are more satisfied with online classes than traditional in-person classes.

With these shifts in attitudes and expectations, institutions could further explore and enhance their online offerings and their delivery of online programs. Institutions should also take this opportunity to reexamine their strategy and target markets for existing programs. For example, the market for in-person executive courses is often restricted to managers and leaders who live in, or willing to come to, a particular city (e.g., Hong Kong). By going Digital Only through offering synchronous online executive courses, institutions can redefine and widen their market by targeting executives in a particular time zone instead (e.g., UTC +8, which includes Hong Kong and other cities in East Asia, Southeast Asia, and Oceania).

Now or Never?

During COVID-19, organizations may be tempted to keep the status quo in term of digital transformation, until better days return. But with no end currently in sight, inaction could prove to be a riskier strategy whereas digitalizing could improve organizational survival during COVID-19 and after it. Strategically speaking, as shown above, it is critical for organizations to adopt the appropriate digitalization mindsets given the disruption and shifts that they face. 📌



Remarkable Faculty Achievements

Our faculty members have yet again demonstrated excellence in their respective areas of expertise through their outstanding research and teaching practices. Their contributions have rewarded them with the recognition they deserve. Congratulations to all the awardees for their unrelenting efforts!

Best Paper Award

By the Asia-Pacific Research Exchange of the CFA Institute and the CFA Society of Melbourne

Liwei Huang Associate Prof of Business Abhiroop MUKHERJEE uses an innovative approach with the use of satellite estimates to measure asset price impact of government announcements



Responsible Research in Management Award

By the International Association for Chinese Management Research and the Community for Responsible Research in Business and Management

Assistant Prof KIM Yong H showcases exemplary management research concentrating on notable business and society issues



Jerry S. Cohen Memorial Fund Writing Award

By the Board of Trustees of the Jerry S. Cohen Memorial Fund

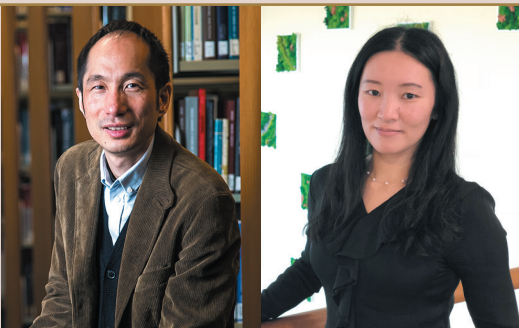
Assistant Prof Alminas ZALDOKAS wins an award given to the best antitrust writing each year that reflects a concern for principles of economic justice



Among Top 5 Contributors to AMJ Impact Factor

By the Journal Citation Reports

Fung Term Prof of Management Prof GONG Yaping and Assistant Prof WANG Danqing published papers in the Academy of Management Journal which are cited and contribute among the top (ranked No.2 and No.5 respectively based on their record impact factors and citations)



Weitz-Winer and O'Dell Award

By American Marketing Association

Assistant Prof LIN Song writes an article with long-term contributions to marketing theory, methodology and practice



Excellent Young Scholar

By the Natural Science Foundation of China

Prof LI Yingying receives one of the most prestigious awards for young scholars in China



Outstanding Reviewer Award

By the Journal of Marketing

Prof Ralf VAN DER LANS makes outstanding contributions to marketing research and to the Journal of Marketing



IPO Teaching Excellence Award

By HKUST Interdisciplinary Programs Office

Associate Prof of Business Education Paul FORSTER finds positive result by encouraging active participation through interactive small group discussions



H-Index for Management Information Systems

By the University of Arizona

Dean Prof TAM Kar Yan and Michael Jebesen Prof of Business Professor James THONG are included in the H-Index for Management Information Systems – an index that covers faculty with the highest research productivity in the field

Addressing the Fintech Talent Gap

Fintech provides unlimited opportunities for growth, and thus the demand for such talent across the world surges. To hear directly from industry players can promote discussion among policy makers, education institutions and industry stakeholders in setting out optimal strategies to retain, attract and nurture new talent.

There is broad consensus that fintech solutions will play an ever greater role in the movement and management of money. That is evident from the fast increasing use of e-wallets, cashless payment systems, and the spike in interest in new virtual banking licenses.

However, in the short term at least, one obstacle in particular may limit the natural growth of the sector. As things stand, there are simply not enough trained professionals in Hong Kong with the skills and proficiencies needed to meet burgeoning demand. And the lack of suitable talent may put a brake on developments just when employers should be gearing up for change and looking to capitalize on any first-mover advantages they can find.

With that in mind, HKUST Business School is undertaking a comprehensive research project, funded by the Research Grants Council's Theme-based Research Scheme, on what's happening and why, with a view to putting forward practical recommendations for the various stakeholders on how best to proceed.

"This project looks to facilitate the industry, educators and policymakers to support Hong Kong in transforming into a global fintech hub," said Professor Kar Yan Tam, the project leader

and dean of HKUST Business School.

Key findings from the first phase of the project, conducted in collaboration with professional services firm EY, were presented in an instructive webinar on June 8.

In essence, this "Fintech Talent Development, Competency, and Manpower Study" had three main objectives: to understand the current labor situation for fintech in Hong Kong; to identify the major "talent gaps"; and to outline a set of core competencies that companies will need within their workforce to support long-term development strategies.

Altogether, more than 80 organizations contributed to the research, which began last August, with insights also obtained from online surveys and interviews with 28 influential executives. The aim was to hear from traditional and digital banks and insurers, as well as start-ups, regulators and "enablers" to pinpoint the industry's driving forces and major areas of concern.

"We found that partnership building is one of the top business priorities," said Christy Yeung, HKUST Business School's senior manager for the Fintech Research Project. "That is between



The projected 1,600 fintech graduates in 2024 won't meet market demand



(From left) Prof Tam Kar Yan, Dean of HKUST Business School was joined by Nelson Chow, Chief Fintech Officer of the Hong Kong Monetary Authority; and Jeff Tang, Partner, Ernest & Young People Advisory Services, in a discussion session of a webinar, moderated by Peter Yan, CEO of Cyberport Hong Kong.

mature players and new entrants, also between fintech and lifestyle ecosystems, with the objective of building a seamless customer or user experience."

Other notable priorities include "co-opetition" [working with competitors to improve products], more constructive engagement with regulators, creating the trust needed for customer acquisition, and opening up to more cross-disciplinary collaboration.

What also emerged were worries about a significant talent shortage in most of the technical and data skills.

"This poses a challenge," Yeung said. "The largest gaps in 'people capability' are in the middle management and junior levels - and they make up the majority of the workforce. In technical readiness, many organizations perceive themselves as behind the curve."

To remedy this, employers need to upgrade existing staff, making finance professionals more tech-savvy and vice versa. Also, local universities have to offer more courses with a fintech stream and recognize that, based on intake, the projected 1,600 fintech graduates in 2024 will not meet market demand.

Competencies related to Talent

1. Entrepreneurial spirit
2. Learning agility
3. Navigating ambiguity
4. Innovation orientation
5. Cultivate a unified culture

1. Agile working
2. Data-driven insights
3. Execution excellence
4. Co-creation
5. Digital savviness

Competencies related to Business & Customer

1. Value creation collaboration
2. Customer experience journey
3. Understanding compliance & regulatory environments

Competencies related to Ways of Working

List of 13 Core Competencies for Fintech Professionals

// Feature

In explaining the competency model which resulted from the study, Jeff Tang, a partner at EY people advisory services, noted the need to capture the spirit of the industry and foster higher standards.

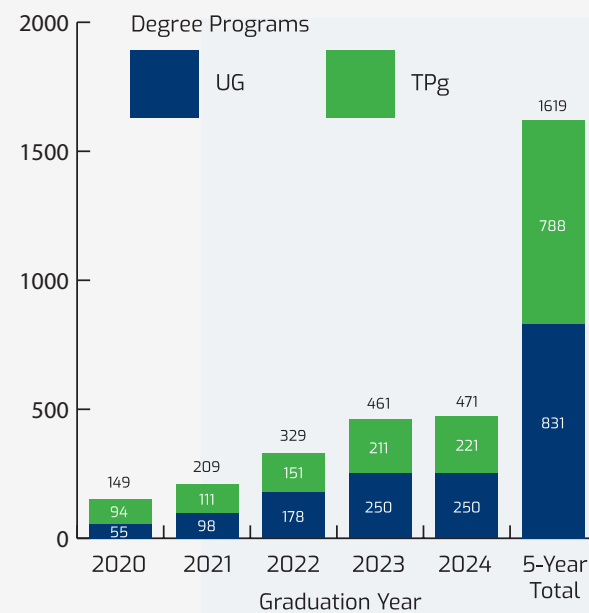
A total of 13 core competencies were identified and divided into three groups relating to personal attributes, interactions involving the business and customers, and ways of working. They include qualities like entrepreneurship, learning agility and innovation orientation; the ability to create value and collaborate; and due regard for data-driven insights and excellence in execution.

Reference to the competencies can now be used to guide hiring, training and planning. It can help banks and other institutions adapt to new ways of working and changing consumer needs.

"We wanted something scalable, to start with a foundation for the industry that allows things to move forward," Tang said. "We looked at behaviors that are coachable, visible and measurable and aimed to strike a balance. For example, competencies like learning and agility are about mindset too, and they reflect the way the world is evolving."

The subsequent panel discussion, overseen by Peter Yan, chief executive officer of Cyberport Hong Kong, brought out further ideas and perspectives.

For instance, Nelson Chow, chief fintech officer for the Hong Kong Monetary Authority (HKMA), confirmed that the talent gap within the industry



Projection of Undergraduates (UG) and Taught Postgraduates (TPg) fintech graduates in the coming 5 years

is very real for everything from data scientists to cybersecurity specialists, but there may be light at the end of the tunnel.

"More universities are offering [relevant] undergraduate and postgraduate courses," Chow said. "Also, Hong Kong has a huge talent pool on the 'fin' side. What if we can train 10 per cent of them to be more 'tech' capable?"

Professor Tam agreed that retraining practitioners was one way forward. The competency model could help develop programs teaching the necessary technical and soft skills.

"The study's findings will be useful for the fintech industry, educational institutions and government," Tam said. 🗣️



Kellogg HKUST

EXECUTIVE MBA GLOBAL NETWORK

the World's #1 EMBA

ranked **9** times*

“If it wasn't for this program, these courses, and my classmates who have joined the company, I wouldn't be here and Guardtime wouldn't be the company it is today.”

Mike Gault

Class of 2011

Founder and CEO

Guardtime

*Financial Times



The Kellogg-HKUST EMBA Program is an exempted course under the Non-local Higher and Professional Education (Regulation) Ordinance Cap 493 (the Ordinance) of Hong Kong. It is a matter of discretion for individual employers to recognize any qualification to which this course may lead.



Gaining Real World Relevance

Partnerships aim to drive technology and innovation to the next level

First in Asia to collaborate with EY Tax Lab

The HKUST Business School is honored to become the first Asia-Pacific university to be associated with the EY Advanced Technology Tax Lab. This collaboration brings together HKUST's expertise in fields such as data science, machine learning, and business education to resolve complex tax issues through innovative technologies.

The new partnership offers an exceptional platform for joint research and technology development opportunities in applying emerging technology to practical tax scenarios. EY partners and academic staff and students at HKUST will work together on practical tax technology case study projects, speaking opportunities, internship and employment opportunities for students.



First Chinese Online Open Programs with Emeritus

In response to the new normal brought by the COVID-19 pandemic, the Executive Education Office at the HKUST Business School has teamed up with Emeritus, one of the most reputable global digital learning platforms.

Emeritus has partnered with top-ranked business schools like MIT Sloan, Kellogg, Wharton, NYU and the University of Cambridge, in offering online executive education. Our School will work with Emeritus to offer Chinese online open enrollment courses in the areas of big data and fintech for Chinese-speaking executives around the world, as well as becoming a pioneer in offering Chinese online programs in China.



Recognize China's Best Managed Companies with Deloitte

Deloitte's Best Managed Companies (BMC) Program is a global initiative to recognize excellent management and business practices. As the first program of its kind in China, a list of best-managed companies in Mainland China, Hong Kong and Macau will be identified in its annual award.

In its second year of partnership with Deloitte China as the Program's sole strategic academic partner, our professors have contributed to the BMC Annual Whitepaper and a series of thought-leadership articles. They have also spoken in a number of BMC webinars on topics related to China's COVID-19 new normal, such as contemporary CSR, power of AI and family business developments. Stay tuned, the Program will announce this year's BMC winners in August in Hangzhou.



Research Agreement with Wisers

With an MOU signed between Wisers Information Limited and the HKUST Business School, the two parties are ready to work closely together in developing timely insights applicable to business and social problems.

With the newly established Center for Business and Social Analytics at the HKUST Business School, experts from the two parties will collaborate to generate new business and social insights from analyzing real-world and emerging big data on the Internet and beyond. The collaboration underscores the importance of interdisciplinary knowledge and the role of technology in producing novel business and social insights.



M2M: Going Global

The HKUST Business School has joined with some of the world’s top international institutions to offer a portfolio of dual-degree master’s programs. We talked to two graduates who completed their rewarding HKUST-to-Yale learning journey.

Students who want to become future global leaders now have the opportunity to enrol in a unique dual-degree master’s program, thanks to a collaboration between some of the world’s top business schools.

The Dual-Degree Master’s Program (M2M) is a collaboration between five schools. The network - including the HKUST Business School in Hong Kong, the Yale School of Management (SOM) in the US, HEC Paris in France, FGV EAESP in Brazil, and UBC’s Sauder School of Business in Canada - offers a portfolio of M2M programs. These programs are designed to develop the skills and outlook needed to take on a global role. At this stage, the HKUST Business School has partnered with three of these institutions, Yale, HEC Paris and FGV EAESP, to offer students five options for dual degrees.

At HKUST, the dual degrees options offered are the MSc in International Management program (HKUST-Yale/FGV and HEC-HKUST) and the MSc in Global Operations program (HKUST-Yale/FGV).

Study at two leading business schools

These programs are designed to give students the opportunity to study at two leading business schools in two countries, and to graduate with two master’s degrees. Graduates of these programs will be alumni of two globally prestigious business schools, and will benefit from the career services and networks offered by both institutions.

These advantages were a huge draw for Paul BASHIR, who participated in the International Management program. He started the program at HKUST and finished at Yale. Bashir is now working for Deloitte Consulting in the Government & Public Services practice in the US.

“I had been working for Deloitte in Austria for 18 months. I worked in the M&A practice after my

undergraduate studies,” Bashir said. “During my time at Deloitte, I realized that I wanted to move from finance work into strategy consulting. I also decided to move from profit-centric work to mission-driven work.”

The program seemed like the perfect fit for Bashir to achieve his goals. As he was part of the first cohort of students applying to the program, he felt it would be a risk, as there were no alumni to share their experiences. But the program seemed like it would be a good fit for him to achieve his career goals, especially as it was the result of a marriage between two distinguished business schools.

Bashir decided to enrol and his gamble paid off. He praised the variety of the courses on offer. The program encouraged his personal development, and opened his eyes to a whole new world of experiences and learning, he said.

“I attended a Visual Storytelling class at the Yale School of Drama, which had nothing to do with my career, but provided me with valuable new perspectives. You could attend lunch talks every day. They were given by different people from different industries and areas who talked about a broad variety of topics,” he said.

The daily talks covered everything from a Yale professor talking about the latest research on black holes, to CEOs from Fortune 500 companies sharing their perspectives on the future of our society, and to a founder providing his experience about building infrastructure networks in poor countries.

The student body was another huge plus for Bashir. “You could get together with a core group of international students who had all done a year at a school, in different places around the world,” he said. As a result, Bashir says his personal global network is vast. He knows someone in every country that he can go and work in, he said.



Bashir’s sentiments are echoed by Sophie WU. She also started her first year at HKUST and continued her studies at Yale, but with a different field - MSc in Global Operations.

Global Exposure

“M2M has definitely helped me. In terms of location, I think having two top-ranking universities in two financial hubs is a great choice. One is in the APAC market, and the other one is in the US. Also, the alumni network is very strong, and that enables me to reach out to a broad community,” Wu said.

Wu had previously spent all her life in China, where she studied for her bachelor’s degree. She felt it was important to gain global exposure while studying for her master’s degree.

“I want a career in banking and finance, and I felt that Hong Kong was the ideal place for me to start my career. I realized that if I was to start my career there, I needed to go to that market,” she said.

Wu’s participation in M2M allowed her to take part in a summer internship in Hong Kong, and that eventually led to an offer of a full-time role at Citigroup Hong Kong.

Wu said the M2M program gave her an extraordinary learning path and noted that it doesn’t let students rest on their laurels. “It’s different from other universities, because it wants the students to think big,” Wu said.

The diverse learning experiences of both Sophie and Paul have not only equipped them with a global mindset, but also to land a job in a city that they like. Our growing number of M2M students will continue to provide the much-needed talent for a globalized economy. 🌐

PATHS OF STUDY

Year 1	INTERNSHIP (SUMMER OR GAP YEAR)	Year 2
HEC		HKUST
HEC		FGV
HEC		YALE SOM
HKUST		YALE SOM
FGV		YALE SOM
SAUDER		YALE SOM
HKUST		FGV



Paul BASHIR
MSc in International Management
HKUST Graduate in 2018
Yale Graduate in 2019

Consultant at
Deloitte US



Sophie WU
MSc in Global Operations
HKUST Graduate in 2019
Yale Graduate in 2020

Analyst at
Citigroup HK

Visit [M2M.global](https://m2m.global) for the most current list of offering:
<https://m2m.global/>

Eye in the Sky

An award-winning research paper shows how alternative macroeconomic data can guide investment decisions

(From left) Prof Abhiroop MUKHERJEE (Liwei Huang Associate Professor of Business) and George PANAYOTOV, and PhD student SHON Janghoon, Department of Finance, HKUST Business School



Economists and the broader investment community rely on government data to learn about key market indicators like oil inventories, agricultural production, and export volumes.

But access to new technology is changing that. Commercial satellites are loosening the authorities' hold over such information and making it possible for investors to anticipate official announcements to stay ahead of the curve.

Recent research by Professors Abhiroop MUKHERJEE and George PANAYOTOV, and PhD student Janghoon SHON of the HKUST Business School (Department of Finance) focuses on such developments. Their paper "Eye in the Sky: Private Satellites and Government Macro Data" examines how alternative, satellite-derived estimates can affect the perceived value of government announcements. It does so by relying on the asset price impact of such announcements, which measure the extent to which markets depend on officially sanctioned macro data.

This topic has direct relevance for the asset management industry and the Asia-Pacific region. That helps to explain why it won the CFAM-ARX Best Paper Award, which is jointly sponsored by the Asia-Pacific Research Exchange of the CFA Institute (ARX) and the CFA Society of Melbourne (CFAM).

The main findings are significant for several reasons. Firstly, they point to a future where it might be easier to resolve uncertainties about macro trends, and where government control over this type of data will diminish. Secondly, they show it is possible to focus on a few locations – such as manufacturing centers in China – that are particularly important for estimating specific macro variables. Thirdly, the findings take account of factors like cloud cover above crude oil storage facilities, which can have a marked bearing on the accuracy of satellite images and the quality of interpretation.

Issues with government data

Historically, macro data has played a central role in the decision-making of individual investors,

businesses and state entities. Markets have generally relied on governments to provide such data, because of the prohibitive costs a private company would have faced if trying to aggregate data from disparate sources.

This raises a couple of major issues. Macro information obtained in the usual way is also used to measure the government's economic performance, and this could result in a conflict of interest. Even in advanced economies like the US, trust in government data is "far from absolute", because it can vary significantly along partisan lines.

Government data is also released infrequently, and often comes with delays. That allows macro uncertainty to build around an issue before it is resolved on the day of an announcement. According to the authors, this "lumpiness" is often associated with significant price changes on those days.

But improvements in satellite imagery are changing the way markets obtain macro information. To show how this is occurring, the research team used a simple identification strategy. The aim was to assess the impact of independent satellite-based estimates on the value of a particular government announcement. This was achieved by comparing the asset price impact following cloudy weather, when commercial satellites cannot "see" key industrial hubs, with clear periods, when they can.

"We applied our approach in two different settings – US crude oil and Chinese manufacturing – where satellite-based macro estimates have drawn significant interest," Professor Mukherjee says. "Our evidence points to such estimates substantially changing the market's reliance on government macro data in both settings."

While this source of alternative data may lack accuracy, and might only showcase a few sectors of the economy, it is already playing an important role. That's because measuring economic activity at a few selected locations, such as production hubs or bottlenecks, is often sufficient to establish a clear idea of the general situation and make good overall estimates.

In the pipeline

In the US, crude oil is typically transported by pipelines. There are just a handful of places, such as the small towns of Cushing in Oklahoma and Patoka in Illinois, where several pipelines intersect, creating central hubs in the supply chain. Such hubs are home to a substantial proportion of the nation's oil storage facilities. This made it possible for the research team to focus test design, and "randomize" the availability of satellite data over these hubs.

Since oil is usually stored in tanks with floating roofs, observing differences in the shadows cast inside each tank (when it's sunny) is a way to estimate the amount of oil being stored.

The team found that in weeks with predominantly cloudy skies, when satellites were unable to get a good look, government announcements on inventory could move prices significantly. But in good weather, when some traders have been forewarned by the ability to monitor inventory levels from satellites, prices do not respond to these announcements in a similar way.

The same approach was used to assess macro data on manufacturing activity in China. The focus was on four key provinces – Guangdong, Jiangsu, Shandong and Zhejiang – which together account for 35 to 40 per cent of total production. It was found that when satellite-based data was available, news of the latest PMI (Purchasing Manager Index), a major monthly barometer, had much less effect on PMI-sensitive stocks and the broader market index.

Despite these findings, the authors caution against making hurried assumptions. "Even if such satellite-based information becomes very accurate, governments may still have a role in validating these measures, or perhaps more importantly in disseminating macro information more broadly and in a more equitable fashion," they conclude.



Commercial satellites make it possible for investors to anticipate official announcements and stay ahead of the curve

Ignite Your Future With Business Technology



WHERE BUSINESS MEETS TECHNOLOGY

Innovation and technology define how we do business.
Accelerate your career through mastering the language of the future
and lead by integrating technology with business.

**Personalize your MBA through 70+ electives
on the most in-demand career tracks:**

- Business Technology & Analytics
- Consulting & Strategic Management
- General Management
- Finance
- Marketing
- Entrepreneurship

Full-time | Part-time (Weekly) | Part-time (Bi-weekly)

“A Global Top 20 MBA”
Financial Times 2010-20