Collaborating For A Smarter Hong Kong Today

Smarter Digital City 3.0

Google

Ipsos

Smarter Digital City 3.0 is a report commissioned by Google with all methodologies and results delivered by Ipsos.

Foreword

Welcome to our third and final edition of the Smarter Digital City whitepaper, our annual research report which aims to answer one simple question: How can Hong Kong become a Smarter Digital City?

In 2017, Google Hong Kong committed to a 3-year longitudinal study to better understand the adoption of digital technologies by consumers, small businesses, and corporations. Hong Kong appeared to have all of the prerequisites for a Smarter Digital City but there were unknown barriers to widespread adoption. We wanted to know ***why*** Hong Kong was trailing its near neighbours in the race to be more digital, and ***how*** Hong Kong might be able to speed up digitalisation to close the gap.

This final research report, commissioned by Google Hong Kong and conducted by Ipsos, documents both significant progress over the past three years towards realising a smarter digital vision for Hong Kong, as well as the opportunities and challenges that still lie ahead. Each year, the resulting whitepaper considers Hong Kong's approach to digitalisation and its credentials as a Smart City, integrating the experiences and views of the city's consumers, small and medium-sized businesses (SMBs), corporates, policymakers, and neighbours.

Three years on, Hong Kongers are more digitally engaged, which is reflected in the city's Consumer Digital Index (CDI) score rising from 2.35 to 2.72, but have mixed views on the city's progress. Corporates are accelerating their investments in digital technologies, with a significant jump in the number of corporates considering AI and machine learning in the next two years. And most promisingly, SMBs are taking steps to catch up, with the majority now seeing digital transformation as critical to business success (82 percent) and digital as a fundamental part of business (70 percent).

Hong Kong's transformation into a Smarter Digital City is well underway and progressing in the right direction. Later in this report we deep-dive on the status of Smarter Travel, Retail, Finance, and Living, which are key growth sectors for the economy and serve as a barometer for Hong Kong's progress. However, a major barrier to further digitalisation remains in place. Talent is in short supply and all sectors report continued difficulty in attracting and retaining digital talent. Without a Smarter Workforce there is a real possibility that progress will slow over the coming years. Our Recommendations section contains practical suggestions on talent attraction and development for all stakeholder groups.

Lastly, a huge ***thank you*** to our wonderful collaborators, clients, partners and Googlers who helped to bring this ambitious study to life. It really has been an enriching and enlightening journey for everyone involved.

Best of all, this collaborative effort involving key business and government stakeholders and opinion leaders is a tangible demonstration of how committed Hong Kongers are to creating a brighter future for their beloved city and its citizens.

Together we can build a smarter future for Hong Kong that brings benefit to all. The team at Google Hong Kong look forward to discussing both current and future Smarter Digital collaboration opportunities with you soon.

Sincerely,

Leonie Valentine

Managing Director, Sales & Operations, Google Hong Kong

Project Overview

Hong Kong has long been considered one of Asia's foremost cities and a nexus for the rest of the world. To ensure the city's competitiveness, sustain a strong economy, and ultimately improve people's quality of life, Hong Kong has been undergoing a digital transformation. By applying innovation and technology, this ongoing evolution into a Smarter Digital City will shape Hong Kong's healthy and prosperous future for generations to come.

In its third year, the Smarter Digital City Whitepaper 3.0 unearths and explores Hong Kong's collective Smarter Digital City journey since 2017. This whitepaper encompasses quantitative surveys and in-depth interviews across Hong Kong, spanning residents, corporates, small and medium-sized businesses (SMBs*), and policymakers, in order to understand how this transformation has been perceived and embraced by these stakeholders.

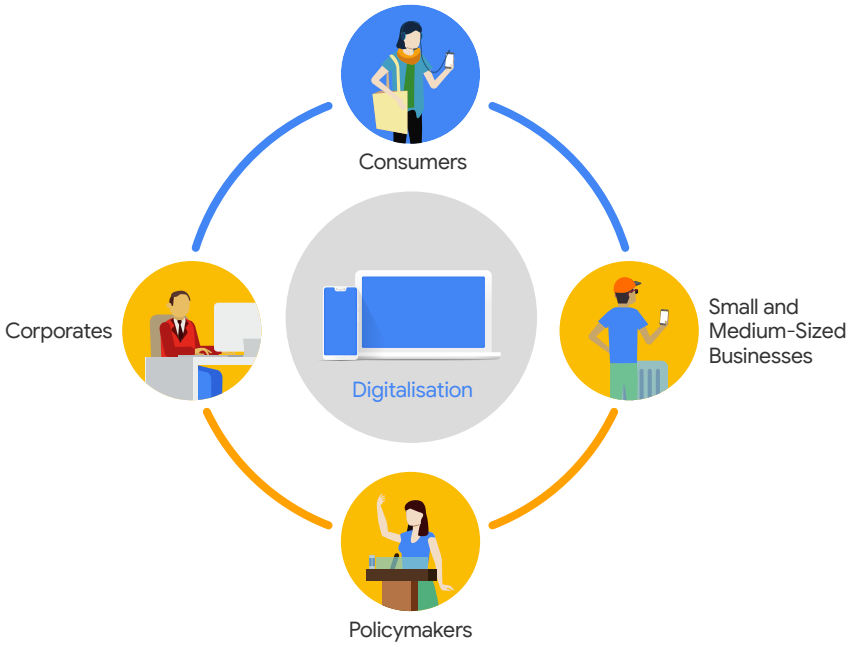
By examining the digital progress, barriers, and opportunity areas through the perspectives of key stakeholders across vital sectors to Hong Kong's economy - Travel, Retail, Finance, Living, and People - this whitepaper is written to offer strategic and tactical recommendations that help illuminate a path forward.

* For the purposes of this study, 'SMBs' refers to an enterprise with 1-49 employees, excluding special purpose entities, non-operating holding companies, and branches or regional offices of a multinational company. Certain industries were also excluded from this study: agriculture and forestry; mining; and utilities (electricity, gas, and water).

Newly added content vs 2.0

In 2019, we reflect on Hong Kong's Smarter Digital City progress by putting it in the context of a three year journey. By charting key milestones along the path, we explore how digitalisation has taken shape across Hong Kong since the inaugural Smarter Digital City Whitepaper in 2017.

In addition to our interviews with key business leaders, academics, and policymakers, this year we supplement our research with corporate case studies across the key sectors of Travel, Retail, Finance, and Living. By delving into corporates' respective real-world experiences with digitalisation, we gain a better understanding of the nuances of digital transformation for each sector and the unique challenges that must be overcome to fuel progress.



Key Findings

In 2019, Hong Kong is on the cusp of digitalisation and making steady progress towards realising its Smarter Digital City ambitions. Residents are increasingly tech-savvy and ready for technology to play a larger role in enhancing their quality of life; corporates and SMBs are responding in kind by implementing new tech to augment their offer. While widespread demand for digitalisation forms the basis of a Smarter Digital City, innovative customer-centric services still need to be further developed to successfully address residents' needs. This will help enact the next phase of digital transformation - the city has made progress, but there is still much room for growth.

Residents' View

Embracing digital, but yet to recognise Hong Kong as a Smart City

The city's growing Consumer Digital Index (CDI) score has registered larger improvements than in years past (+0.28 in 2019 vs. +0.09 in 2018). As digital engagement across Hong Kongers of all ages has increased year-on-year, most notably among the 35-44 age group, consumers are increasingly embracing digital and actively turning to technology for real-world solutions.

Despite positive developments and reasons for an optimistic outlook, there is still a way to go for Hong Kong to be recognised as a Smart City. The majority of residents do not currently consider Hong Kong to be a Smart City. Hong Kong's lagging Smart City status may indicate that some digital initiatives are still emerging - they have been rolled out and are slowly being adopted, but they are yet to be fully recognised by their intended audience.

Bridging the gap in perception is an area of opportunity to address if Hong Kong is to successfully evolve into a Smarter Digital City. As it stands, residents are quicker to applaud digital progress in neighbouring cities such as Singapore. Hong Kong risks being left behind if the public fails to recognise the value in the digitalisation efforts taking place. Promoting the awareness and tangible benefits of technology applications and initiatives in people's everyday life can help build a receptive community that is eager to adopt new technology.

Business' View

Corporates continue to lead while SMBs are starting to catch up

Hong Kong has long been an attractive business destination, and corporates and SMBs are pleased to see Hong Kong growing as an increasingly Smarter Digital City in line with its neighbours. While there is noticeable progress, both corporates and SMBs acknowledge that there is more work to do on both the city and business levels to ensure that Hong Kong remains competitive in the years to come. As more cities in the region ramp up their digitalisation, Hong Kong should keep pace to retain its status as an international business hub.

Corporates are well-positioned to lead the next wave of digitalisation. Proven to be the vanguards of digitalisation, corporates are venturing past the provision of fundamental digital services such as digital marketing and app development to push ahead with increasingly sophisticated initiatives. Sixty-seven percent of corporates are proactively searching for the latest technology, as corporates hone their digital investment to emphasise technologies such as artificial intelligence (AI) and machine learning to drive more dynamic and customised customer service. There has been a 14 percent jump in the number of corporates considering AI and machine learning in the next two years. These services exemplify corporates' greater shift from product-led innovation to service-led digitalisation, an emerging trend that will benefit customers. Firms that are able to design new value propositions that address customer needs have the potential to thrive in the Smarter Digital City environment.

While corporates look to set the tone for future transformation, SMBs are starting to catch up. More and more SMBs are taking action to better understand how digital tools can benefit their customers and their businesses. Whereas corporates have always been leaders in pushing digital boundaries, Hong Kong's SMBs have not historically been early adopters in the Smarter Digital City journey. This year marks a difference in mindset, as the majority of SMBs now see digital transformation as critical to business success (82 percent) and digital as a fundamental part of business (70 percent), both representing an increase of 20 percent year on year. To realise digitalisation ambitions, SMBs are labouring to catch up but will need greater support, especially in regards to seed funding, talent development, and collaboration. Hong Kong's stakeholders should not let SMBs fall behind, especially now that SMBs are actively working to digitally transform their firms to better meet customer needs.

To empower the city's businesses to digitalise and meet growing expectations, policymakers can continue to show that they can effectively facilitate behind the scenes. By consulting with key stakeholders in the business community and acting decisively to establish clear frameworks, the government can foster a business atmosphere conducive to collaboration and innovation. When businesses are supported with a digital roadmap that takes their needs and input into account, they assume the mantle to act - tangible examples like the Hong Kong Monetary Authority's Open API, Virtual Banking, and Faster Payment System (FPS) initiatives show that businesses are quick to buy-in once they have clear direction.




Progress across Travel, Retail, Finance, and Living to fuel the city's growth

As we examine the holistic progress of Hong Kong as a Smarter Digital City, we see increasing digital adoption across the four key sectors of the city's economy - Travel, Retail, Finance, and Living. While each sector is progressing at a different pace, this year marks the first time in the whitepaper series where we see noticeable improvements across all four sectors. As 2019 marks a step forward in every direction, Hong Kong has truly begun to realise a greater digital transformation.

Smarter Travel

Progressing quickly towards a seamless journey

Since the beginning of the whitepaper series, Travel has been the fast-growing category that sets the pace for other sectors. This year, Travel has registered an 11 percent jump in digital engagement, with growth spurred by increasing usage of smartphones for travel tasks across every step of the journey. There are digital tools aplenty for pre-trip research and planning, booking, online check-in, in-destination navigation, and activity booking; travellers are increasingly comfortable utilising all of these to enhance their experience.

While digital is well-established in the travel journey, some processes such as custom bookings, changing itineraries, and issue resolution remain complex. These issues need to be addressed as the demand for a hassle-free customer-centric experience becomes even more paramount. Technology such as big data and machine learning is positioned to help generate new insights that potentially alleviate issues and advance customer service. As traveller expectations continue to grow, the need to evolve services becomes even more pronounced in order to provide the unique experiences travellers seek. Customised recommendations will increasingly play a role in differentiating offers and tailoring packages to individual traveller needs. Moving forward, open collaboration between all travel industry stakeholders, such as travel agencies, airlines, travel terminals, and hotels can enable more seamless and unique value propositions to address traveller needs.

Smarter Retail

Delivering more convenient and immersive experiences

With a 9 percent increase in the Smarter Retail index since 2018, e-commerce is having a long-awaited moment as consumers are becoming more confident and experienced online shoppers, especially on smartphones. Online purchasing is up 10 points to 68 percent in 2019, and more consumers are taking advantage of the ability to research products online before and during instore purchases. The result is a burgeoning retail index that has grown substantially over the past year.

Both corporates and SMBs are responding to demand by allocating more resources to e-commerce capabilities that facilitate a smooth online shopping experience. Previously e-commerce had been slow to take off due to the relative convenience of Hong Kong's brick-and-mortar stores, but now there is growing recognition that the two can complement one another in a combined omnichannel approach. Brands are experimenting with interactive and immersive in-store experiences enabled by technology, utilising tools such as radio-frequency identification (RFID), QR code payments, and augmented reality (AR).

Delivery fulfilment remains a key challenge to e-commerce, as the delivery process remains manual, labour-intensive, and costly for businesses while also struggling to meet consumer expectations for convenience. To realise a more efficient fulfilment process, Open API and data sharing may help optimise better on-demand delivery itineraries based on observed traffic patterns, warehouse and retailer schedules, as well as addresses to be visited.

Smarter Finance

Multiple innovations spur new value propositions

Growth in the financial sector (+8 percent in Smarter Finance index year on year) has been led by increased acceptance of mobile banking, contactless payments, and peer-to-peer (P2P) payments. Sixty-one percent of customers think mobile banking is easier now than at any point in the past two years, while Faster Payment System (FPS) has helped facilitate P2P payments by effectively linking different banks and systems for more seamless payments.

While there has been significant progress, the finance industry still faces challenges due to traditional legacy infrastructures and the need to work across diverse systems. Sourcing qualified fintech talent also poses a barrier, as recruiting employees with the desired skill sets comes with great difficulty.

Newly implemented digital policies are transforming the sector. The implementation of Open API is in progress and poised to provide a vital framework for cooperation and innovation. The landscape itself is evolving, as virtual banks will also impact the sector. Backed by these new developments and activities, firms are shifting towards identifying customer value propositions and developing innovative services that meet specific customer needs.

Smarter Living

Signs of progress on the horizon

Looking at Smarter Living through the lens of transport, entertainment, and healthcare, we see that the impact of digital on everyday life is increasing bit by bit as it further integrates with daily activities such as commuting. Residents are using route planning and ride-hailing apps more and more for their transport needs (+6 percent and +5 percent respectively), while more people are purchasing or subscribing to digital entertainment services (+5 percent). Compared to the small uplift in transport and entertainment, healthcare has remained flat year on year and is a work in progress with greater things to come. Taking the cumulative progress of these three pillars into account, the Smarter Living index score has only slightly improved year on year (+3 percent), indicating plenty of potential for the public and private sectors to further enhance citizens' quality of life.

To drive progress in healthcare, the further implementation of the Electronic Health Record Sharing System (eHRSS) will promote the development of innovative services and public-private partnership in the provision of healthcare services. The Internet of Things (IoT) is also yet to take off in Hong Kong, although there has been incremental progress in usage of smart wearables and physical activity trackers.

As next steps, the new 5G network standard will enable innovative new possibilities across all sectors, as well as make higher quality streaming and downloading demonstrably faster for consumers. Open data and data analytics can help improve transport services with the 1-hour living circle surrounding Hong Kong as well as support healthcare efforts such as the eHRSS and relevant research and training.

Smarter People

Strengthening tech talent to drive transformation

Currently, 64 percent of Hong Kong's corporates find it difficult to hire science, technology, engineering, and mathematics (STEM) talent with the requisite skills to power the digital ecosystems of a Smarter Digital City. Not only are technical skills such as data analytics tough to find, corporates are finding it particularly difficult to recruit staff with creativity and other soft skills. The demand for well-rounded personnel with critical thinking skills fostered through STEM education is a key area for the city to address.

Building upon a strong STEM foundation and various soft skills, the new Smarter Workforce will need specialised industry knowledge to realise their full potential. To better the next generation of skilled labour, the business community and policymakers can also work together to train and upskill the city's existing workforce. Improving our capabilities today will enable the current workforce to become more productive moving forward, building them up to become more qualified mentors for the future generation.

Over the long term, education can play a bigger role in preparing young talent for careers in STEM fields. STEM subjects are currently perceived to be weaker academically than more traditional subjects (e.g. business and economics, medicine, and law). A shift in perception will go a long way in encouraging more capable students to pursue STEM subjects and help lift the profile of STEM professions.

In addition, Hong Kong can look to source talent from abroad to lend their expertise to the local market. Developing a collaborative ecosystem where homegrown tech talent exchange knowledge with talent from abroad can help drive the key sectors of the Smarter Digital City.

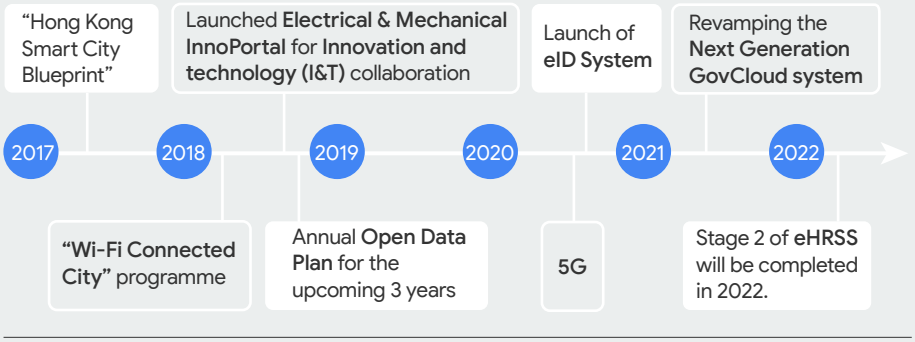
Hong Kong - Three Years On

Hong Kong's ongoing digital transformation

The Smarter Digital City vision is at the heart of Hong Kong's digital transformation. In December 2017, the government promulgated the Smart City Blueprint for Hong Kong to map out the city's digitalisation.

Forward-looking digital measures are being implemented to position the city for future success. To form the backbone for a tech-savvy society, 5G base stations are being installed to facilitate the adoption of the 5G network in 2020; this will have major implications on the city's future connectivity and ability to innovate. Initiatives such as the Electronic Health Record Sharing System (eHRSS) and Electronic Identity (eID) system will also come online and are designed to help people lead healthier, more efficient, and ultimately happier lives. With more Smarter Digital City measures slated to arrive in 2020 and beyond, there will be greater potential for the public and private sectors to bring Hong Kong's digital transformation to fruition together.

Key Digital Initiatives Road Map



In the following section we explore how the city's digitalisation is progressing, as well as examine the digital engagement of residents, corporates, and SMBs to see where they stand on their respective journeys.

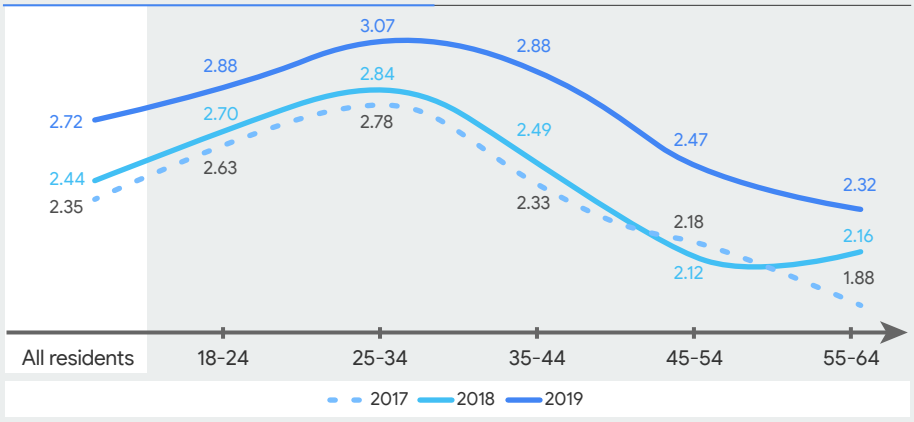
Hong Kongers are more digitally engaged than before

Overall, Hong Kongers have made great strides over the past year to integrate digital technology into their daily lives. Hong Kong's Consumer Digital Index (CDI) experienced a larger increase across the board than in years past - CDI is a single score representing the overall level of digital savviness of Hong Kongers' daily activities across the key sectors of Travel, Retail, Finance, and Living.

Hong Kongers across every demographic are embracing digital

In 2019, Hong Kongers are engaging with digital more and more, which is reflected in the city's CDI score rising from 2.44 to 2.72. This +0.28 increase represents a greater improvement over last year's result (+0.09 from 2017 to 2018).

Consumer Digital Index Score (CDI)



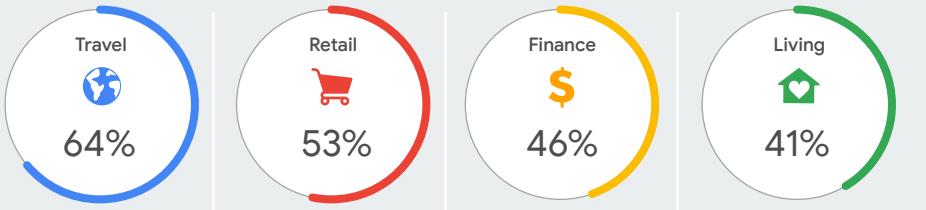
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Hong Kong is on the cusp of becoming a Smarter Digital City, driven by residents who are increasingly tech-savvy and embracing digital faster and faster. Taking advantage of the city's high internet penetration, digital adoption is increasing for both men and women of all ages, with the biggest improvement coming from the 35-44 age group (+0.39 increase). In fact, the 35-44 age group are now as digitally engaged as their much younger peers (18-24 age group).

Digital engagement is rising across all of Hong Kong's key sectors

Across the key sectors of Travel, Retail, Finance, and Living, there have been steady gains in digital adoption, indicating Hong Kong's residents' increasing willingness to use technology for different daily tasks. Of the four sectors, Travel again sets the pace, leading the way with the largest jump year on year (+11 percent). Retail has seen a strong rebound (+ 9 percent) after seeing a dip in digital adoption last year. Finance also rose by 8 percent, a much larger increase over the previous year. Living has also displayed slight positive movement, making incremental progress (+3 percent) after laying flat in 2018. While all of the sectors have room to improve, Living in particular is falling behind.

Level of Digital Adoption* by Hong Kong Residents



Travel	Retail	Finance	Living
2019 vs. 2018 +11%	2019 vs. 2018 +9%	2019 vs. 2018 +8%	2019 vs. 2018 +3%
2018 vs. 2017 +11%	2018 vs. 2017 -4%	2018 vs. 2017 +1%	2018 vs. 2017 No change

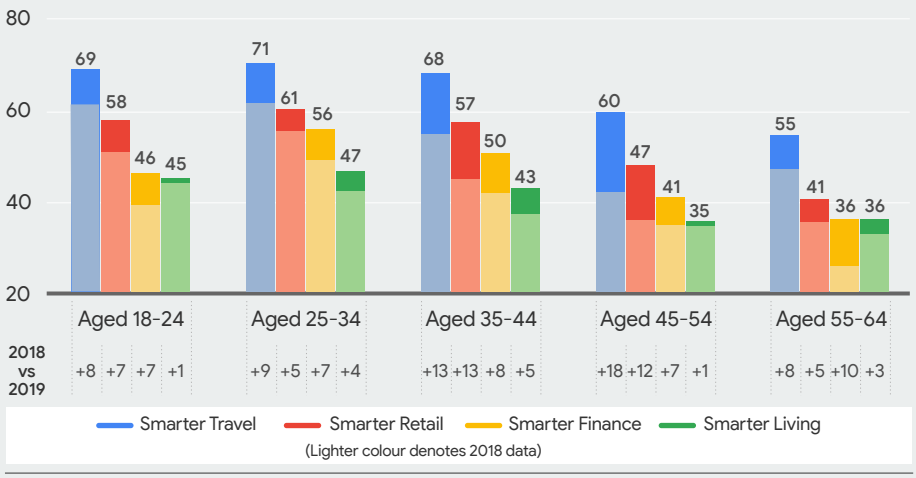
*Level of digital adoption is defined as the average usage percentage of digital activities under each vertical.
The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Hong Kongers are becoming increasingly tech-savvy as age groups adopt a variety of digital activities across the key sectors. In 2019, the 35-44 age group increasingly engages in Smarter Retail (mobile shopping) and Smarter Travel (mobile booking and managing loyalty programmes) as well as Smarter Finance (using contactless payments and P2P transfers). The younger 18-24 age group is adopting technology into their daily lives more and more, particularly in Smarter Travel, Retail, and Finance.

Nevertheless, the 25-34 age group continues to be Hong Kong's leading tech adopters. Historically the most digitally engaged segment, they have consistently registered the highest index scores since we first started measuring CDI in 2017. As the most digitally-savvy population with disposable income, they are particularly strong users across all sectors.

The older generations are also steadily embracing technology. The 45-54 age group registered the second highest CDI improvement (+0.35 increase) this year as they increasingly adopt Smarter Travel (mobile check-in), Retail (mobile loyalty membership programme management and mobile research prior to purchase), and Finance (mobile banking). While they are still less digitally engaged than the majority of the population, this improvement marks significant progress in the right direction. After registering a large leap last year, people over the age of 55 are continually progressing and catching up to younger demographics - they are now as digitally engaged as the 35-44 age group just two years ago (2.33 score in 2017).

Level of Digital Adoption* by Sector



*Level of digital adoption is defined as the average usage percentage of digital activities under each vertical.
The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219

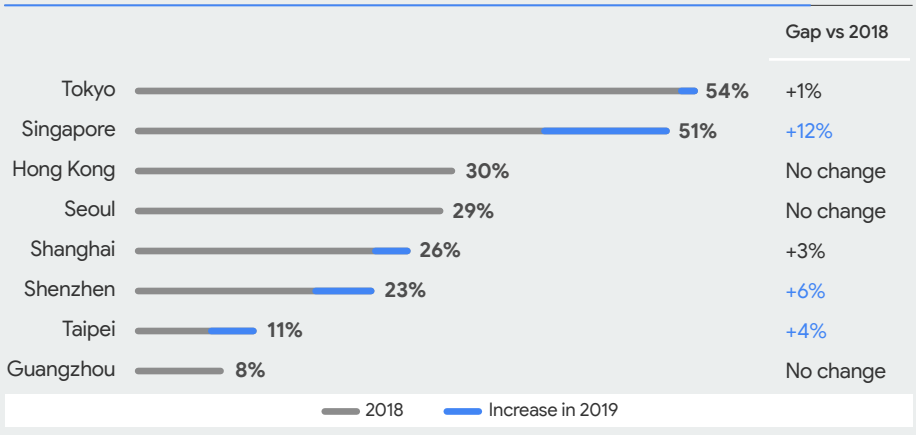
More digital transformation efforts needed to drive progress

There are differing perceptions of Hong Kong's status as a Smart City. Residents are yet to consider Hong Kong to be a Smart City, nor do they recognise it as improving.

Hong Kong is not yet seen as a Smart City by residents

Less than one-third of residents see Hong Kong as a Smart City - a percentage that has not improved since last year. Hong Kong residents were quicker to recognise progress in neighbouring cities, as half of the cities across the region showed increases in smart city association. Singapore (+12 percent since 2018) and Shenzhen (+6 percent since 2018) registered the largest improvements.

Cities Perceived to be a "Smart City" - Hong Kong Residents' POV



Question: Which of the following would you associate with being a "Smart City"?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219

Residents expressed that a Smart City would enable a happier and better quality of life. From spurring innovation to connecting people with nature, technology is perceived as a way to connect people to collaborate, as well as simply free up more time.

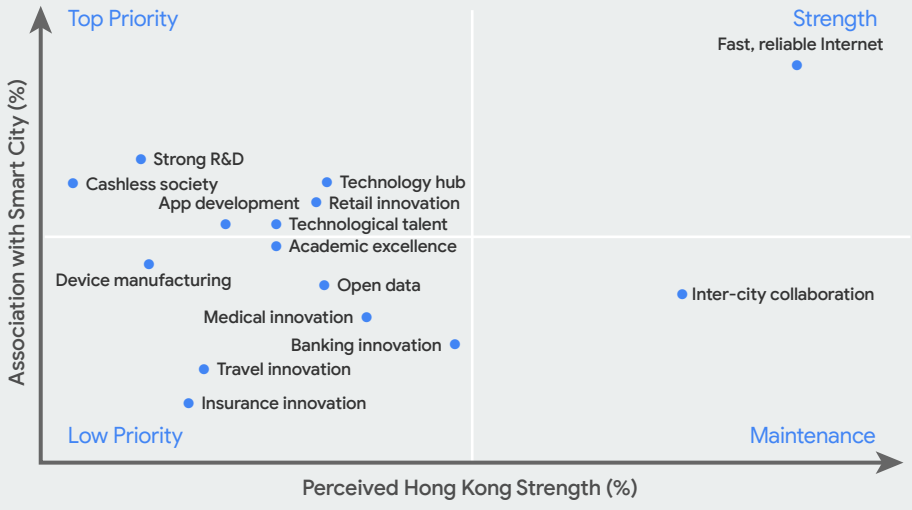
> *"Technology not only makes life more convenient, but also creates more time for us to return to nature and develop ourselves."*
>
> ***Resident, 35-44 age group***

Numerous important Smart City attributes can be further improved

Hong Kong does have resources in place for a strong Smart City foundation. Residents agree that Hong Kong's fast and reliable internet is its top Smart City strength by far and an essential part of the city's digital transformation. In contrast, cashless society and strong research and development (R&D) are both falling behind expectations, despite consensus that they are two of the most important Smart City factors.

Residents hope to see Hong Kong grow and develop as a tech hub that cultivates app development and technology talent. They see these as essential next steps in the short-term for Hong Kong to grow as a Smart City.

Hong Kong Residents' POV



Questions: Which three of the following would you most associate with a "Smart City"?
Which of the following do you think Hong Kong is strongest on?
Base: Hong Kong smartphone users representative, 2019 n=1000

Businesses recognise Hong Kong's Smart City ascent and look to play a larger part

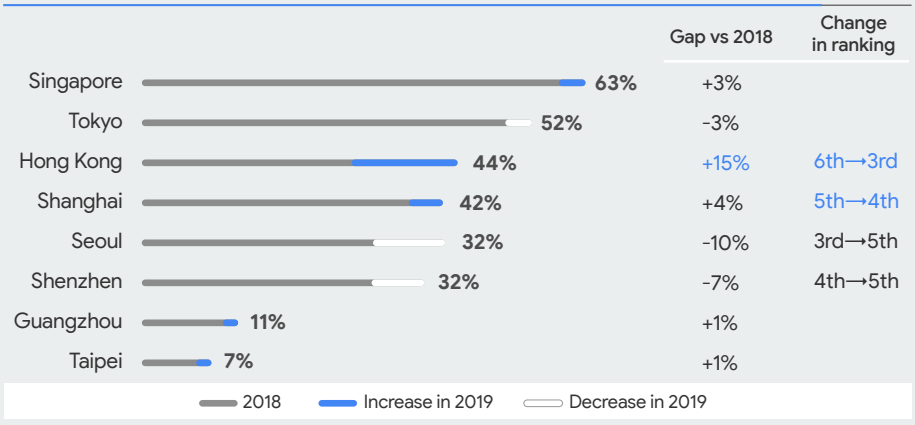
Overall, both corporates and SMBs are on the right track as they recognise the importance of digitalisation for their businesses and Hong Kong at large. While there are differences between where the city's corporates and SMBs currently stand on their journeys, we can see that their digital ambitions are becoming more and more nuanced. While some businesses have traditionally been more risk-averse when it comes to adopting technology, this year there is an increasingly optimistic outlook surrounding digitalisation which bodes well for Hong Kong's future prospects.

Businesses increasingly perceive Hong Kong and others to be Smart Cities

As the key driver for digital transformation, the business community has seen noticeable advancements in Hong Kong's digitalisation. In the past year, the number of corporates and SMBs that recognise Hong Kong as a Smart City has risen by 15 percent (44 percent of corporates) and 12 percent (39 percent of SMBs) respectively.

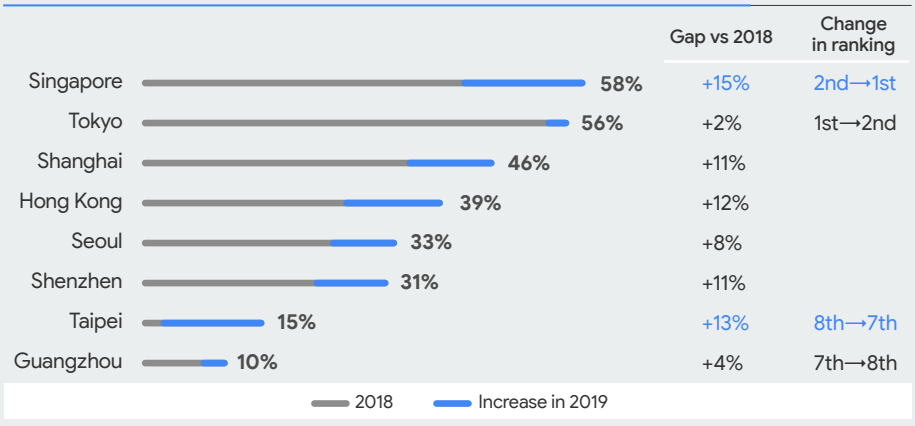
While corporates consider all of the cities in the region to be growing as Smart Cities, Hong Kong's 15-point increase was the biggest improvement registered, followed by Shanghai and Singapore. This is a positive sign that businesses consider Hong Kong's burgeoning Smart City economy to be rising faster than others and gives reason to believe that Hong Kong is putting effective Smart City measures in place for businesses to thrive.

Cities Perceived to be a "Smart City" - Hong Kong Corporates' POV



Question: Which of the following would you associate with being a "Smart City"?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99, 2018 n=100

Cities Perceived to be a "Smart City" - Hong Kong SMBs' POV



Question: Which of the following would you associate with being a "Smart City"?
Base: All interviewed Hong Kong SMBs respondents, 2019 n=100, 2018 n=101

Corporates continue to lead digitalisation

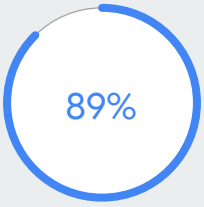
As has historically been the case, Hong Kong's corporates continue to lead the city's digitalisation efforts with government providing guidance and support. In 2019, the majority of corporates anticipate increasing their digital investment over the next two years (89 percent) and that the scale and focus of this investment will shift. This is a result of corporates collectively reaching a point of sufficiency in the provision of fundamental digital services.

In addition to providing sufficient existing services, corporates are simultaneously looking ahead to more holistic and complex ways for technology to contribute to their businesses. There is a palpable enthusiasm to innovate and digitalise, as 67 percent of corporates proactively keep abreast of the latest technology.

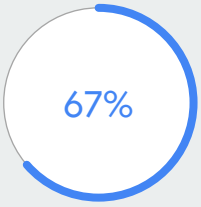
"The future of banking is all about 'going where the customers go' so that we can incorporate our financial products and services into customers' everyday lives to enhance usage convenience - we can do this by providing services where they shop, where they travel, where they purchase insurance and more."

Angel Ng, Citi Hong Kong and Macau

Hong Kong Corporates' POV on Digitalisation



of corporates **anticipate to increase investment level in the next 2 years**



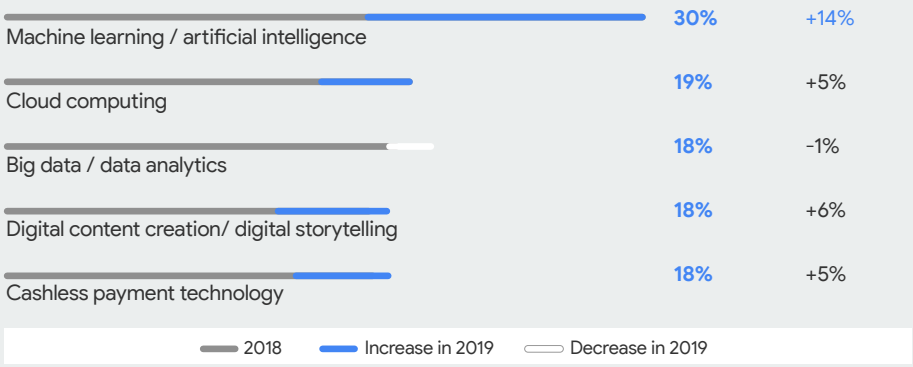
of corporates are **proactively searching for** the latest digital technology

Questions: How do you anticipate the progress of digital transformation in your company in the next 2 years vs current progress?
Which of the following statements best describes your organization when it comes to adoption of the latest digital technology?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99

Corporates are learning about the latest technology and moving beyond fundamentals such as app development and digital marketing, as well as increasingly looking at ways of applying new technology and tools. Artificial intelligence (AI) and machine learning are capabilities that are drawing attention - 30 percent of corporates are interested in applying AI and machine learning within the next two years (+14 percent since 2018).

> *"Many businesses have heard and expressed interest in AI, yet most have limited grasp on realising its benefits while others have overly high expectations on what AI can solve. We hope to build awareness and create a platform that bridges companies together to co-create tailored AI solutions for the industry."*
>
> ***George Tee, Hong Kong Science and Technology Parks Corporation***

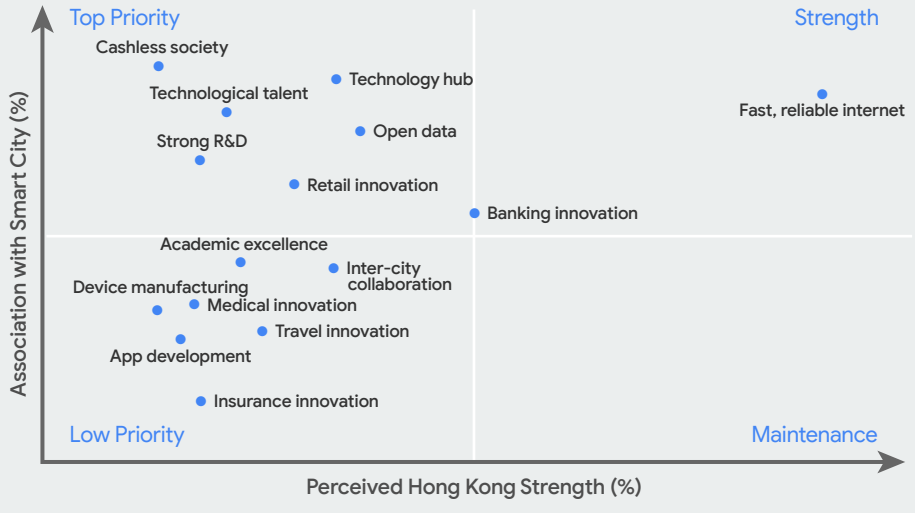
Top 5 Digital Initiatives Considered by Corporates in the Next Two Years



Question: Which of the following are you considering implementing within the next 2 years?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99, 2018 n=100

Regarding Hong Kong's future development, corporates share similarities with residents in that they expect Hong Kong to become more of a tech hub that develops skilled technological talent, leverages open data, and possesses strong R&D competence. These are all seen as achievable elements of a critical foundation that facilitates the city's strong economic environment, in addition to Smart City pillars such as cashless society as well as innovative banking and retail. In terms of growth, corporates have seen open data noticeably improve (+12 percent) to the point that they now consider it to be one of Hong Kong's top three attributes. Still, there is plenty of opportunity for open data to continue to grow and contribute to the city's digital ecosystem.

Hong Kong Corporates' POV

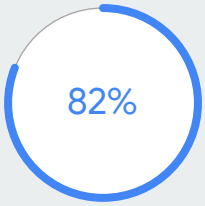


Questions: Which three of the following would you most associate with a "Smart City"?
Which of the following do you think Hong Kong is strongest on?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99

SMBs recognise the importance of digitalisation and are eager to catch up

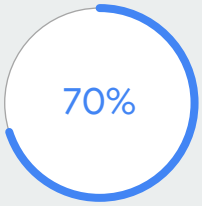
In 2019, SMBs are more likely than ever to recognise the importance of digital to their businesses. SMBs increasingly acknowledge that their entire industries are being disrupted by digital transformation and that they need to adapt accordingly. Eighty-two percent of Hong Kong SMBs now see digital transformation as critical to business success and 70 percent consider digital to be a fundamental part of their business - both of these figures have jumped 20 percent year on year.

SMBs Know Digital is Important



agree digital transformation is critical to business success

+20% vs 2018



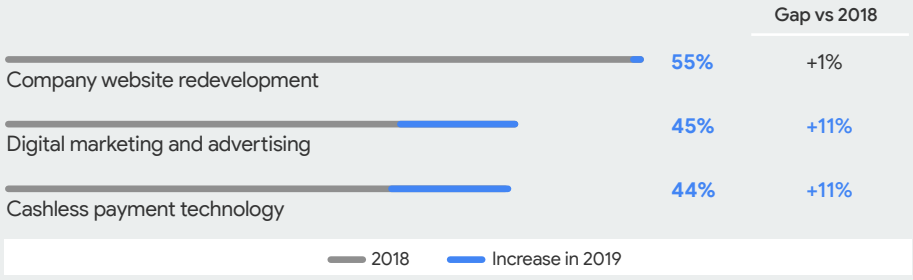
agree digital is a fundamental to their business

+20% vs 2018

Question: How much do you agree or disagree with the following statements - "Digital transformation is critical to business success" and "Digital" is a fundamental part of our business"?
Base: All interviewed Hong Kong SMBs respondents, 2019 n=100, 2018 n=101

Digital activities that SMBs have adopted thus far include digital marketing and cashless payment technologies. While SMBs have not been early adopters of technology, this increased activity represents foundational pieces Hong Kong's SMBs should build upon in order to make headway catching up.

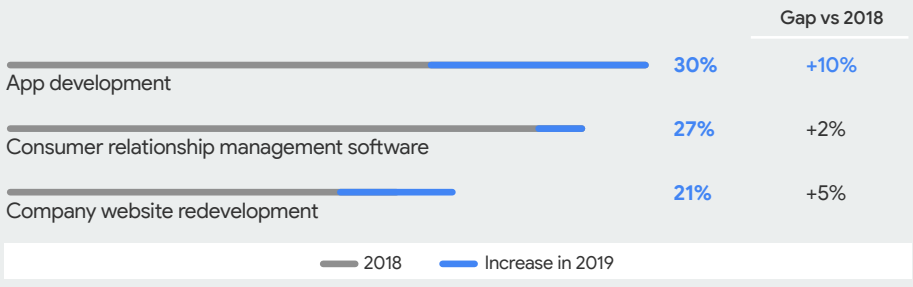
Top 3 Digital Initiatives Launched by Hong Kong SMBs



Question: Which of the following digital initiatives has your company already engaged in formal planning?
Base: All interviewed Hong Kong SMBs respondents, 2019 n=100, 2018 n=101

Further demonstrating their commitment to digitalisation, SMBs are considering investments in app development, customer relationship management software (CRM), and company website development over the next two years. This interest in app development and CRM suggests that SMBs are not only looking to catch up, but anticipating next steps that will meet customer needs and expectations.

Top 3 Digital Initiatives Considered by Hong Kong SMBs in the Next Two Years

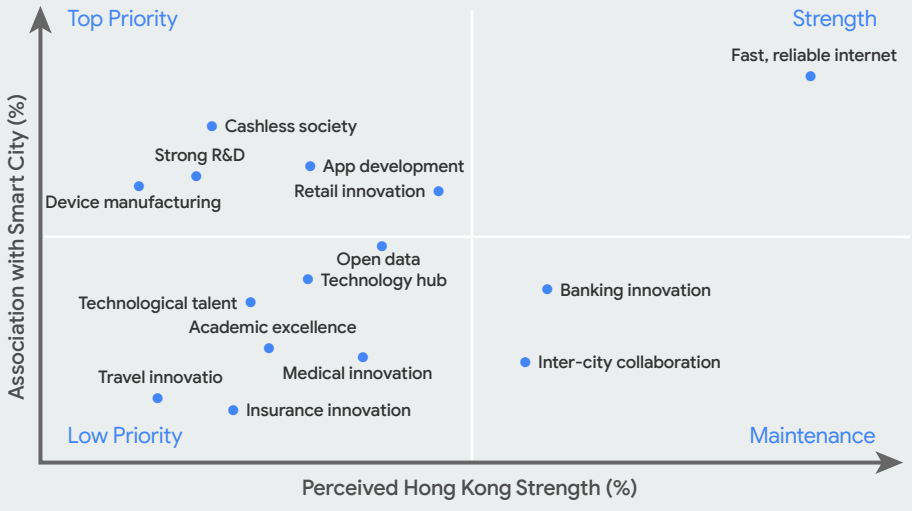


Question: Which of the following are you considering implementing within the next 2 years?
Base: All interviewed Hong Kong SMBs respondents, 2019 n=100, 2018 n=101

To move forward on their digital journey, Hong Kong's SMBs will need support, especially if they are to improve their pace. Many of their challenges mirror that of corporates, but problems are magnified in the SMBs landscape due to their comparative lack of resources and lower margin for error.

For the majority of SMBs that are starting to digitalise, there is greater emphasis on fundamental tech activities, such as app development, in the short term as this will enable them to catch up and become more active contributors to the city's transformation. To benefit their long-term development, SMBs share hopes of seeing a cashless society and strong R&D progress. SMBs also look to retail innovation and device manufacturing as opportunities for tech to provide solutions.

Hong Kong SMBs' POV



Questions: Which three of the following would you most associate with a "Smart City"?
Which of the following do you think Hong Kong is strongest on?
Base: All interviewed Hong Kong SMBs respondents, 2019 n=100

Findings by Sector

A Smarter Digital City is underway and progressing in the right direction, as key sectors across Hong Kong's economy are striving to digitalise. Here we look at the status of Smarter Travel, Retail, Finance, and Living to serve as a barometer for Hong Kong's progress.

Across sectors, firms are looking to develop customer-centric value propositions through service-led innovation. Enhancing services and customising offers that adapt to customers' shifting behaviour and respond to their emerging needs will be essential.

To further the progress of Hong Kong as a Smarter Digital City, we delve into the state of Smarter People and examine the mindset and skills that are needed to shape the city's digital transformation.

Smarter Travel - Progressing quickly towards a seamless journey

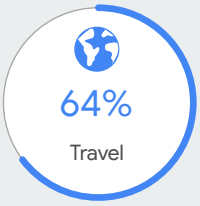
In 2019, Hong Kong travellers are using an array of digital tools during every stage of their journey, as evidenced by the widespread rise in smartphone usage before and during trips. Not only are digital processes increasingly being adopted, physical infrastructure is also becoming smarter, as travel hubs and services implement technology to ensure a more enjoyable journey for travellers and tourists.

Moving forward, Hong Kong's travel industry can expand their focus beyond individual travel tasks and work closer together to further refine the traveller journey with a hassle-free user experience, customised recommendations, and enhanced customer service. Some of these represent areas of ongoing improvement from last year's whitepaper, but innovative corporates are starting to address these gaps.

Hong Kong's increasingly smart travellers and travel environment

Overall, the travel industry's digital progress is gaining recognition. Smarter Travel engagement has grown steadily over the course of our whitepaper series, with an index score of 64 percent in 2019 versus 42 percent in 2017. The 22 percent increase represents the largest jump across the four key sectors, proving that consumers have been quickest to adopt digital tools in travel. Businesses also recognise the transformation of Hong Kong's travel and tourism industries, with 49 percent of corporates considering travel and tourism industries to be successfully digitalised, a 24 percent increase compared to last year.

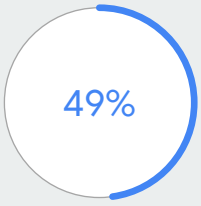
Level of Digital Adoption* by Hong Kong Residents



2019 vs. 2018 **+11%**

2018 vs. 2017 **+11%**

Digitalisation Progress in Corporates' Minds



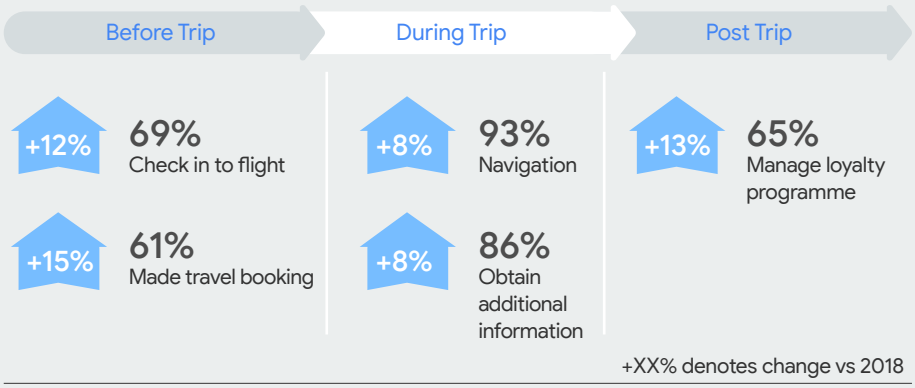
of Hong Kong Corporates think Hong Kong tourism and travel has been digitalised

+24% vs 2018

*Level of digital adoption is an index score that is defined as the average usage percentage of digital activities under each vertical. The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000
Question: Which of the following industries in Hong Kong do you think have been successful in digitising its services?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99, 2018 n=100

This year, 97 percent of travellers said they used smartphones before and during a trip. Before a trip, travellers are increasingly using smartphones for travel bookings (+15 percent) and check-in (+12 percent) versus 2018. During a trip, travellers most likely turn to smartphones for real-time navigation and directions (93 percent) as well as look up information on their desired destinations (86 percent). Travellers are also embracing the ability to add to their itineraries on the go by booking in the moment and receiving real-time confirmation. Managing loyalty programme memberships for hotels, airlines, and car rental is also on the rise (+13 percent year on year), as travellers collect digital rewards on their journeys.

Usage of Smartphones in Travel

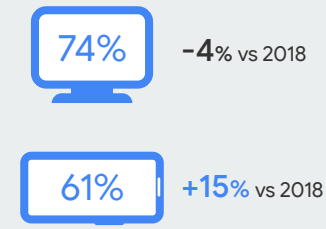


Questions: In the past 12 months, which of the following things have you done on your smartphone when booking your travel arrangements outside of Hong Kong?
In the past 12 months, which of the following have you used/done on your smartphone, during your travel trip outside of Hong Kong?
Base: Those planned a trip in the past 12 months, 2019 n=898, sourced from n=1,000 Hong Kong smartphone users representative, 2018 n=1062, sourced from n=1,219 Hong Kong smartphone users representative

Pain Points

1. Smartphone-optimised booking remains a challenge

An optimised user experience plays a crucial role in dictating travellers' digital behaviour. So far, these expectations are not being met - this is especially apparent when looking at mobile booking. While making travel bookings on smartphones is becoming more prevalent (61 percent, +15 percent since 2018), 74 percent of travellers are still likely to use PCs (desktops or laptops) to book their travel itineraries. Fifty-four percent of travellers consider smartphone screens to be unconducive for browsing and booking travel, while 37 percent think websites are not mobile-friendly. There are also those who harbour concerns regarding smartphone payment security while booking travel (44 percent).



Questions: In the past 12 months, what device have you used when booking your travel arrangements outside of Hong Kong?
Are there any current concerns that stop you from using (or using more often) your smartphone, to search for travel information and/or book your travel outside of Hong Kong?
Base: Those planned a trip in the past 12 months, 2019 n=898, sourced from n=1,000 Hong Kong smartphone users representative, 2018 n=1062, sourced from n=1,219 Hong Kong smartphone users representative

2. Handling unexpected customer service needs

While digitalisation has streamlined many aspects of the travel experience, some customer service processes remain difficult to automate. Changing itineraries and issue resolution are two scenarios that typically require human assistance. While customer support through web chat or phone calls is becoming more and more prevalent, chat can sometimes be slow or difficult to communicate through, while callers may encounter wait time, language barriers, or roaming charges.

Way Forward

Optimise the mobile user experience and improve real-time support to enhance the journey

It is crucial for operators to optimise travel tasks for smartphone screens in order to enable a better user experience and more browsing-to-booking conversions. Cleaner, easier-to-navigate mobile interfaces can help travellers access information faster, but operators should ensure all pertinent information is accessible. In addition to user interface, content should be optimised to traveller preferences. Customised recommendations for travellers based on feedback to service providers can help facilitate more tailored journeys. With deeper analysis, operators can better connect travellers to more relevant content, reviews, and offers, saving them time navigating options.

Open collaboration to build more seamless and unique value propositions

In order to fully enhance the traveller experience, collaboration can serve as the foundation. Individual firms cannot digitalise the travel sector on their own - it will take a concerted effort from multiple stakeholders to realise a Smarter Travel vision that transforms the journeys of Hong Kong's travellers and tourists. From travel agencies to airlines and hotels, every segment stands to benefit by collaborating on unique value propositions for travellers. Converging these services will help simplify and streamline the entire travel experience.

Moving beyond joint-ventures, holistic service offerings that span different providers and encompass every phase of a seamless travel journey remain an area of untapped potential. Policymakers, corporates, and SMBs can all examine how they can better facilitate partnerships among travel service providers. Collaboration begins when firms communicate with one another to identify areas where their services and capabilities naturally sync. Implementing collaborative practices such as open data sharing can help generate insights that shape the direction of a new value proposition.

Klook Travel Technology
Eric Gnock Fah
COO and Co-founder

Klook, a leading travel activities and services booking platform, is rapidly mobilising and uniting the fragmented global in-destination travel sector. In less than 5 years, Klook has transformed the booking behaviour from legacy pen and paper to on-demand digital confirmations for travel operators and travellers around the world.

Founded in 2014 with a mission to help fellow globetrotters "Keep Looking" for amazing experiences, Klook now has more than 30 million visitors every month. The company realised triple-digit growth in bookings in 2018 by addressing the gap between travellers in 100+ markets and local travel operators.

Klook in 2019

Going On-Demand: Embracing the Modern Traveller's Mindset

More travellers are taking a "go with the flow" approach to their vacations, moving away from hyper-scheduled days and advanced reservations. And they're bringing their mobile devices to manage every aspect of their trip. More than 75 percent of all Klook bookings in 2019 were made via mobile devices, and same-day bookings increased 9x from 2016 to 2018.

Klook provides instant confirmations for more than 90 percent of its bookings, and fully supports on-site mobile redemption. This has made it easier than ever before for travellers to enjoy local experiences and in-destination transportation. For example, Klook has digitalised the purchase and usage of tickets for Hong Kong's MTR Airport Express, and the rail networks of Europe Rail, Japan Rail, and China Railway High-speed.

For a more convenient user experience, Klook localises its platform by supporting 9 languages, 41 currencies and multiple payment methods, including credit cards and mobile payments.

Making Digitalisation Simple for Any Local Operator

To better collaborate with and support travel operators, Klook provides continuously updated cloud-based solutions, with an easy-to-use business interface, to travel operators around the world. Klook's Merchant App, a widely praised travel operator solution, provides an efficient booking management system, instant user feedback and enables Klook's QR code e-voucher redemption onsite. Merchant App alleviates the pain and expense of developing customised online booking systems, and enables operators to focus their efforts on enhancing their core services.

Built with SaaS (Software-as-a-Service) technology, Klook and its operators can scale on-demand. Operators do not need to waste resources building and maintaining their own servers. And Klook's dynamic scalability allows the platform to handle all the computing demands necessary to serve travellers' needs - especially during peak seasons.

Travel operators can also optimise their services with Klook's insights into global travel trends and actionable data analytics. Klook has also simplified the complicated travel information involved with booking transportation services like Europe Rail and Japan Rail. Thanks to Klook's user-friendly interfaces and infographics, rail services experienced a significant increase in bookings from 2018 to 2019.

Klook Sees Big Growth Opportunities Ahead

The tours and activities sector represents the fastest-growing major segment in the global tourism industry. To capture potential growth as well as stay ahead of the trend, Klook has been expanding geographically into the US, EU and Japan while enhancing product offerings and technological capabilities.

With more than 1,000 employees in over 20 offices around the world, one of the paramount issues for Klook is finding the right people to fuel continued growth and development. With a reputation for bringing innovative new technologies to the industry, Klook is expanding its global innovation centre in Shenzhen.

To empower the platform's evolution, Klook has a roadmap for enhancing its data analytics to provide deeper behavioural insights that improve the user experience for travellers and travel operators. While there's a vast quantity of data - and more every day, discerning that information into actionable recommendations is an ongoing process of improvements and refinements.

Looking Ahead

Keep Looking For Technology Advancements

In order to advance the entire travel sector, Klook continues to bring new technology resources to the industry. Machine learning-enabled features will further Klook's ability to provide customised recommendations for travellers based on their search and booking behaviours. By leveraging data and analytics to improve the discovery process, Klook can also support more business growth for the ever-expanding collection of travel operators on the platform.

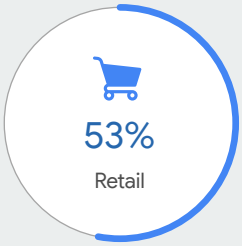
Machine learning and artificial intelligence bring fundamental structural changes to the entire travel ecosystem by strengthening business operations and automating some aspects of customer service. Adaptive algorithms can streamline the industry's digital revolution and meet the rapidly changing technological needs of modern travellers.

And as with all mobile-centric companies, keeping up with device changes and leveraging the latest advances - like 5G networks - is one of the top priorities for Klook. Increasing connectivity across more geographies will further the travel industry's digital evolution and expand future collaborations.

Smarter Retail - Delivering more convenient and immersive experiences

Hong Kong's retail sector is on the verge of digitalisation. Smarter Retail has made noticeable improvement over the past year and has now rebounded to gather positive momentum, as the digital index grew to 53 percent in 2019 (+9 percent).

Level of Digital Adoption* by Hong Kong Residents



2019 vs. 2018 **+9%**

2018 vs. 2017 **-4%**

*Level of digital adoption is an index score that is defined as the average usage percentage of digital activities under each vertical.
The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Consumers are embracing digital tools for shopping

In 2019, more consumers research products on mobile throughout the shopping journey - about two-thirds of consumers research products pre-purchase as well as in-store. This is an essential part of the shopping experience, whether it is reading product reviews or doing price comparisons.

Smartphone Usage Along Purchase Journey

Conduct product research before buying

2019 vs. 2018 +11%

Search for additional information in-store

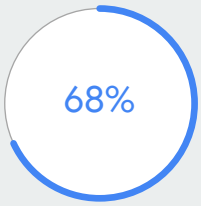
2019 vs. 2018 +6%

Questions: Did you do any online research, prior to making any purchase(s) in the last 6 months? If yes, which of your devices did you use at any stage of this online research? In the last 6 months, have you used your smartphone in a store to search for additional information to help you make an in-store decision?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219

While consumers enjoy taking advantage of Hong Kong's relatively convenient offline shopping experience, online shopping is becoming more popular - 7 out of 10 Hong Kongers now purchase products online (+10 percent). More consumers are increasingly buying via Smartphone (+11 percent) as opposed to PCs (desktops or laptops).

Online Purchase Device Usage %

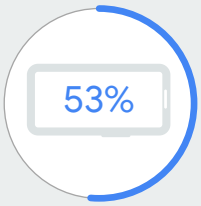
Online purchase %



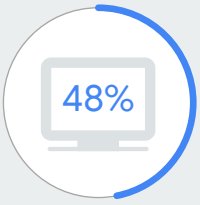
+10% vs 2018

Question: Thinking about the categories that you have purchased in the past 6 months, where did you buy them from?
- Those who answer 'I bought online'

Online purchase device usage %



+11% vs 2018



+1% vs 2018

Question: You mentioned that you have made an online purchase(s) in past 6 months. Which device(s) did you use to make your purchase(s)?
- Those who answer 'Smartphone' and 'PC/Laptop' respectively

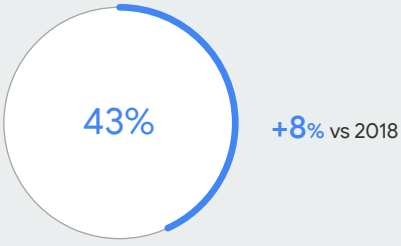
Base: Hong Kong Smartphone users representative; 2019 n=1000 and 2018 n=1219

Retailers are increasingly digital to align with customer behaviour

As residents increasingly embrace digital, they are becoming more open to digitally-integrated touch points along every stage of the consumer journey.

While more and more Hong Kong SMBs are expanding their businesses online (+8 percent), it is valuable for them to better understand customers' behaviours for clues on how to best digitalise and apply technology at the right moment. For example, restaurants and shopping malls could take into consideration how they can provide more convenient and immersive experiences to customers who tend to use smartphones for booking tables, looking for recommendations, managing their loyalty membership cards, searching for coupons, and even taking photos to share on social media. The key consideration for retailers should be how technology and data can help boost operations, efficiency, and customer satisfaction, hence driving revenue and customer retention.

SMBs Involvement in E-Commerce



Question: Which of the following digital initiatives has your company already engaged in formal planning?
Base: All interviewed Hong Kong SMBs, 2019 n=100, 2018 n=101

Pain Points

1. Delivery fulfilment forms a unique barrier

While e-commerce has been hampered in the past by the city's relatively convenient offline shopping and consumers' desire to test products, these barriers to adoption have lessened as consumers have become more digitally-savvy.

Delivery fulfilment, however, remains a challenge. Customers have difficulties receiving deliveries at home due to inconvenient scheduling and high delivery costs. Newer online shoppers also worry about product quality and safety during delivery, especially when factors like freshness are in play (i.e. frozen goods, food items).

On the business side, delivery is seen as a labour-intensive and costly process, especially for SMBs. Seamless and secure delivery will remain a point that e-commerce retailers should address as online shopping continues to grow in popularity.

"Our sales orders have grown explosively from 2,000 – 3,000 two years ago to over 13,000 orders on a daily basis. The delivery process is still very manual and labour-intensive, and prone to errors. This is, by far, the biggest bottleneck of the business, and a substantial large investment was required to build out a new system to address this issue."

Jelly Zhou, HKTVmall

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2. Retail SMBs need training and support to successfully digitalise

Beyond addressing delivery, the growth of Smarter Retail will require a joint effort to lift SMBs that generally have less experience with digitalisation at this stage. Retail SMBs will need assistance to secure the necessary funding, resources, and education.

With this support, SMBs can start to catch up. As they progress, SMBs will increasingly recognise their needs for expertise in specific fields such as web design, e-shop setup, digital marketing, and search optimisation. These knowledge gaps will have to be addressed if SMBs are to develop services that meet customers' expectations.

"Samsung, as a multinational corporation, has a lot of experience of what is the best practice, for example, retail practice in the market. We have been making an effort to contribute by bringing the knowledge and sharing with our partners."

Yiyin Zhao, Samsung Electronics Hong Kong

Way Forward

Innovations enhance retail in consumers' daily lives

E-commerce (with cashless payments as a part of this process) can be further simplified and augmented through customised user interfaces, especially on smartphones. To bring Smarter Retail to every demographic, tailor-made apps for different audiences are an area of opportunity. For older populations who are increasingly digital (i.e. the 45+ population), a simplified UI can go a long way in increasing the comfort of newer online shoppers and enabling them to participate.

Customer-centric features and services can serve to enhance the experience and attract more online shoppers. Chatbots can provide better customer service as they improve over time, while integration with international payments can open the global marketplace to Hong Kong's online shoppers.

Immersive retail experiences can be realised through technology like augmented reality (AR) to add a unique touch to store visits. To help consumers best take advantage of this new in-store environment, frontline staff should focus on assisting less digitalised consumers with Smarter Retail tech activations. Facilitating interaction makes for a more stress-free shopping journey and an inclusive retail environment for all.

Open API and data sharing can deliver value to retailers, merchants, and consumers

To bring more seamless retail experiences to life, Open API can play a role in highlighting areas of collaboration between all relevant stakeholders (i.e. retailers, merchants). This collaboration can ultimately manifest in more efficient and dynamic shopping and fulfilment processes for customers.

Analysing shared open data can also reveal opportunities to improve operational efficiency. In the case of retail, real-time traffic and transport data can be applied to help alleviate delivery issues. With this data, retailers and merchants can work with on-demand delivery platforms to better coordinate deliveries and plan the best routes. Aggregating warehouse, retail store, and customer schedules can also empower more responsive delivery that fulfils requests as they arise.

Collaboration to support SMBs is needed to strengthen the entire Smarter Retail sector

Retail SMBs are currently long on ambition but short on resources. Knowledge gaps are a critical area that needs to be addressed. SMBs should proactively look to their established corporate peers for guidance, while corporates should facilitate SMBs growth by sharing their knowledge and expertise. Whether it be through mentoring or skills development workshops, there are different ways for corporates to engage with retail SMBs and boost the sector's overall development.

Policymakers can also actively communicate with SMBs and different retail organisations to identify specific resource gaps and see how they can facilitate a solution. To address SMBs capital needs, policymakers may be able to help mitigate cash flow issues by looking for opportunities to generate SMBs funding or other development programmes. On a broader scope, policymakers can look at how to support the retail industry at large and how to raise the profile of SMBs among consumers. Organising or sponsoring industry conventions and events that connect SMBs with corporates and retail tech providers can also help spark fruitful new partnerships.

A.S. Watson Group

A.S. Watson
Malina Ngai
Group Chief Operating Officer, A.S. Watson Group

A.S. Watson Group has over 15,200 health and beauty retail stores in 25 markets. A.S. Watson leverages its extensive physical store network as an advantage to build Customer Connectivity by seamlessly integrating its online and offline platforms. A.S. Watson believes innovative physical spaces that combine the latest technology with different retail formats will continue to attract customers by offering the best shopping experience.

A.S. Watson in 2019

Building Customer Connectivity

A.S. Watson Group aims to make a seamless experience encompassing both online and physical stores to serve customers. This unique online and offline (O+O) approach not only entices potential new customers with ease-of-use, but also converts shoppers into more loyal patrons. According to A.S. Watson, customers who shop with them online and offline spend 2-3 times more than online-only or in-store-only customers spend on average. These customers also visit A.S. Watson stores twice as often and are considered to be deeply loyal. Online shoppers who schedule in-store pick up through click-and-collect service are also proving to benefit the business. When customers come to collect their goods in-store, they buy additional items roughly 20-30 percent of the time.

To build stronger Customer Connectivity via this O+O business model, A.S. Watson Group has implemented technology to enhance service quality and in-store user experience.

- Unmanned RFID checkout counters enable customers to checkout by placing their shopping baskets on the counter to automatically scan and tally the total price of all items instantly. These counters also support electronic payments.

- Smart ordering enables customers to digitally schedule their meals in advance, addressing a need to better manage long queues during lunch time and meeting customer expectations for convenient solutions that work with their schedule.
- AR technology helps customers more conveniently test make-up products by virtually showing how the products will look on their faces.

With these technologies, frontline staff can focus on providing better customer services, and A.S. Watson Group is seen as an innovative and modern retailer. These new experiences also serve to attract millennial customers as it dovetails with their tech-savvy lifestyles. In-store technology also helps the Group recruit millennial retail staff who enjoy using digital tools in their workplace to support sales efforts. This is especially important in the retail industry as millennials form the bulk of the workforce; in the past, the need for manual work could dissuade or deter millennials from pursuing careers in retail. New technology can therefore be a differentiator that could potentially affect the candidate's decision to work with a brand.

Experience is the new loyalty

In addition, data technology plays a vital role in shaping the A.S. Watson retail experience, as this can help the retailer better understand customer needs, perceptions, and shopping behaviour. To better understand and anticipate the needs of today's customers, the Group has established data and research functions like DataLab and WISE to keep maintaining conversations with over 135 million loyal customers. By always staying on the pulse with customers at all touchpoints including eStore, social media, mobile apps, and loyalty programs, it brings A.S. Watson's brands closer to the customers. The Group also monitors trending products and keywords in real-time to quickly adapt their marketing offer accordingly. With these evidence-based business insights, they are able to better customise digital communications and also innovate retail store concepts.

Retailers not only implement technology to attract and communicate with customers, they also seek to harness it to engage with customers in useful ways that advocate brand loyalty. For example, the launch of Watsons One Pass enables customers to collect benefits and points with virtual Watsons cards on their smartphones when they are traveling. This demonstrates the convenience of the borderless online and offline ecosystem and how retailers can use digital to engage customers in their daily lives.

Contributing to the development of the Smarter Retail ecosystem

By building deeper connections with both tech firms and the retail workforce, A.S. Watson Group enhances its skills development to further a Smarter Retail environment.

A.S. Watson Group organises the Tech Partner program that is building a network of technology experts to help accelerate digital transformation. By working closely with these tech partners, the program aims to establish long term relationships instead of addressing digitalisation with a short term client-vendor transactional mindset.

A.S. Watson Group also recognises IT manpower as a key challenge for the whole retail industry which needs IT support from both a technology and commercial perspective. To aid future development of the Smart Retail workforce, A.S. Watson Group hosted the first retail-centric big data hackathon to nurture tech talent in Hong Kong.

Looking Ahead

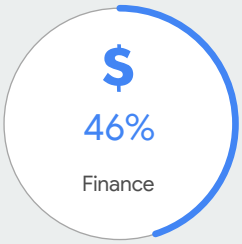
Enhancing Customer Connectivity with innovative physical and digital retail experiences

Upgrading Customer Connectivity to the best brands, products, services, offers and rewards is A.S. Watson Group's driving force to shape the future of retail. Continuing to expand in Hong Kong and worldwide, A.S. Watson Group is striving to stay at the forefront of innovation in both physical and digital retail – and, crucially, integrating the two – to deliver this vision.

Smarter Finance - Multiple innovations spur new value propositions

Being an international financial centre, the financial services sector has been innovating and embracing new technology, helping to set the tone for the city's increased digitalisation after a gradual ramp-up period. In 2019, residents are increasingly using online and mobile banking, contactless and mobile payments, as well as peer-to-peer (P2P) payment. The Smarter Finance index score increased by 8 points to 46 percent in 2019.

Level of Digital Adoption* by Hong Kong Residents



2019 vs. 2018 +8%

2018 vs. 2017 +1%

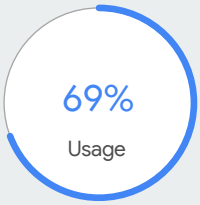
*Level of digital adoption is an index score that is defined as the average usage percentage of digital activities under each vertical. The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Mobile banking has established its foothold in Hong Kong and is only growing

Increased online banking activity is trickling over onto customer's smartphones, as mobile banking is growing by leaps and bounds, registering a 14 percent increase year on year (69 percent).

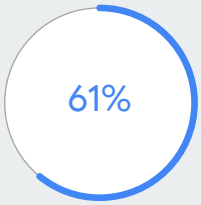
This surge is spurred by residents responding favorably to banks' successful efforts to offer more optimised mobile banking experiences - more than half of customers (61 percent) claim mobile banking is now easier than it had been over the past two years.

Mobile Banking



2019 vs. 2018 **+14%**

2018 vs. 2017 **+3%**



Think that mobile banking
has become easier in the past two years

Question: Have you used online banking (e.g. to pay bills, review/ manage bank accounts, insurance, investment) in the past 1 month?
And on what device(s)?
How do you feel online banking on smartphones has changed recently?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Firms continue to actively search for ways to make services more user-friendly and intuitive. It is important for institutions and businesses in the financial services sector to provide more holistic functionalities to dial up usage.

> *"In the past, online banking only enabled enquiry - checking your balance and reward points. Now online banking enables various transactions - from payment and time deposit to stock trading via mobile app."*
>
> ***Angel Ng, Citi Hong Kong and Macau***

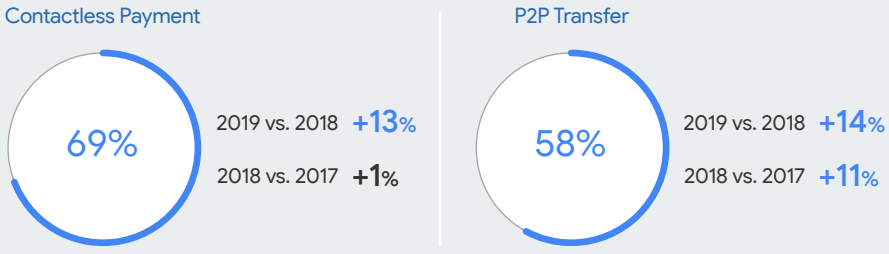
Mobile contactless payments are on the rise, while P2P payments continue strong momentum

When looking at Smarter Finance across Hong Kong, previously voiced concerns surrounding a cashless society are a discussion point that needs to be addressed. In 2019, there has been movement in the right direction as customers believe cashless society benefits their quality of life. Penetration of mobile contactless payments has increased over the course of the whitepaper series, most notably over the past year with a 13 percent jump (69 percent in 2019). While smart cashless payments have a way to go before they can be the city's preferred payment method, this year's progress may soon allay Hong Kong's perceived weakness as a cashless society.

Peer-to-peer (P2P) payments that allow individuals to easily transfer funds to one another via internet and mobile app have grown dramatically over the past two years; 58 percent of people now use P2P payments, as compared to 44 percent in 2018 and 33 percent in 2017. Part of this boost to P2P payments can be attributed to the Hong Kong Monetary Authority (HKMA) backed launch of Faster Payment System (FPS) in September 2018, a move that effectively linked different banks and systems together for more seamless payments. In the time since its rollout, FPS has been widely accepted; within 3.5 months of launch, FPS received over 2 million registrations.[1]

1 HKMA Annual Report 2018: International Financial Centre

Activities Conducted with Smartphones



Questions: Have you used contactless payment in the past 1 month?
Have you made an online 'person to person' (P2P) money transfer in the past 1 month? And on what device(s)?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

> *"FPS is an excellent example that different banks can start investing and developing on their own after HKSAR has set the framework. It won't create such a large impact and effect if it's just us building our solutions as different businesses. We need a common framework and standard to develop our solutions upon to enable customer usage. The solution will only really matter when all other players connect."*
>
> ***Angel Ng, Citi Hong Kong and Macau***

Finance system is evolving to usher in a new digital bank experience

Established financial institutions are now innovating with the emergence of disruptive new operating models, most notably virtual banks. As completely digital entities, virtual banks circumvent legacy systems that hinder change in traditional institutions. As a result, virtual banks are expected to innovate as they are built entirely on dynamic and scalable digital platforms. To meet high customer and industry expectations, virtual banks should pioneer new digital services and realise their potential to revolutionise the customers' smarter banking experience.

"Virtual Banks should build their own technology from scratch and not carry over legacy system baggage to be able to truly innovate. Virtual banks will push traditional financial institutions to shift their thinking from product development to service development."

Deniz Güven, Virtual Bank by Standard Chartered

While this represents one sign of the digital progress that has firmly taken place across many aspects of Hong Kong's finance industry, many companies still face unique industry-specific challenges.

Pain Points

1. Legacy infrastructure limits scope of digitalisation

Traditional brick-and-mortar banks have to take existing legacy infrastructure into account at every turn. Whenever these institutions seek to develop services or implement digital solutions, they have to ensure that the proposed upgrades are backwards compatible - any new measure has to be able to interface with the bank's existing physical infrastructure and systems. As replacing legacy infrastructure can be costly and fraught with challenges, incremental upgrades are often seen as the solution. However, these upgrades fail to take full advantage of newer tools and are inherently limited in scope due to the nature of traditional systems.

> *"Innovation, in many cases, is limited by the functionality and state of the infrastructure. Legacy may also limit the ability for the bank to innovate (i.e. developing new products, but not innovating on new services/experience)."*
>
> ***Deniz Güven, Virtual Bank by Standard Chartered***

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2. Diverse systems by different brands create complexity

A common barrier standing in the way of collaboration is the fact that Hong Kong's finance industry is fragmented by diverse systems, as banks have different interfaces and functionalities tailored to their specific businesses. These incompatible systems hinder the ability to collaborate across banks, financial institutions and other third-party service providers, which then slows down Smarter Finance innovation and impedes the development of the entire ecosystem. To address these interbank challenges and create a more open operating environment, Hong Kong Monetary Authority is taking steps such as Open API and the Fintech Supervisory Sandbox.

3. Ongoing need to source fintech talent

While talent is an ongoing challenge that affects all sectors, in Smarter Finance the problem is amplified. The continued growth and development of the industry necessitates fintech talent that is proficient in software engineering, data science, and cloud computing along with expertise in finance and related regulations. The talent deficit has to be addressed at all levels - whether it is building up pipelines, retraining the current workforce, or sourcing talent from overseas.

"There are currently not enough tech and software engineers with expertise in architectural design for banks and technology companies in Hong Kong. Fintechs and traditional financial institutions in Hong Kong are competing for the same talent."

Lucy Liu, Airwallex

> *"Talent is the key to the success of smart finance in Hong Kong. The launch of HKMA's seven smart banking initiatives in 2017 has already provided a conducive environment for fintech development and created strong demand for innovative banking services in this smart city. With concerted efforts from the HKMA and other key stakeholders, the fintech talent pool in Hong Kong is expected to grow rapidly to seize these future opportunities."*
>
> ***Nelson Chow, Hong Kong Monetary Authority***

Way Forward

Service-led digital innovation to meet customer needs and evolve legacy infrastructure

While legacy infrastructure can be upgraded in the interim, it is imperative nonetheless that traditional institutions proactively identify areas of opportunity that align with customers' increasingly digital behaviours and growing expectations. In the long term, traditional banks will need to have an open mindset that continuously seeks innovative ideas to develop their services.

When looking across the entire industry, the impending introduction of Virtual Banks is poised to deliver dynamic new service capabilities to tech-savvy customers. To compete in this landscape, traditional banks should be nimble and responsive by focusing their efforts on customer value propositions that meet emerging needs. From optimising the mobile banking user experience to converging multiple services into a single streamlined platform, traditional banks should deliver customer-centric experiences to thrive in this new era of finance.

Implementing the Open API framework to establish unified standards and drive collaboration

To build a Smarter Finance ecosystem, the Open API framework aims to drive cooperation and innovation. Designed to be user-friendly and barrier-free, this framework will facilitate the development and wider adoption of APIs, enabling banks to efficiently access shared data and information across different financial products and services.

In particular, Open APIs will help standardise data definitions and transfer processes across the finance sector. Under a unified standard, banks can accurately aggregate data and collaborate with third-party service providers to create more innovative, convenient, and secure solutions. Entering its next phases, the Open API framework is laying the foundation for finance stakeholders to share information; this will generate actionable insights that ultimately improve and enhance customer services.

Facilitation by policymakers to continue playing a key role in digital transformation

Smarter Finance policies can effectively nurture the finance industry. FPS, Open API, and Virtual Banks are examples of how decisive policy action inspires financial institutions to buy-in, act, and collaborate. These clear frameworks and protocols give firms the confidence to openly communicate and work together to advance the entire industry.

Not only will concentrated, sustained efforts by policymakers play a large part in driving innovation and collaboration, policy can also help address the challenges the finance industry faces, including the industry's need for fintech talent. Whether it be investing in upskilling the existing workforce or creating policies that attract candidates and companies to Hong Kong, policymakers can explore different ways to alleviate these concerns. We explore solutions to the tech talent shortage in further detail in the Smarter People and Recommendations chapters.

Case Study

Airwallex
Lucy Liu
President & Co-founder

Established in 2015, Airwallex is a fintech unicorn that has built a global digital payment ecosystem to help SMBs and businesses scale internationally. Airwallex provides three core products: (i) foreign exchange function (FX), (ii) a web application enabling low-cost, efficient international payments, (iii) a set of fully customisable APIs that support various marketplaces such as e-commerce platforms. The company utilises wholesale FX rates to route overseas payments and has built a scalable platform for the next generation of B2B payments.

Airwallex in 2019

Innovating a smarter FX and international payment process

Before Airwallex, businesses suffered from a lack of choice and transparency with complex, slow FX and international payment processes. In order to address these pain points and help businesses scale more easily, Airwallex focused on providing a more efficient and transparent international payment and remittance service for SMBs.

To digitalise this process, Airwallex has built an innovative international payment and remittance network that does not rely on traditional legacy infrastructure. In the initial development, the use of data analytics was crucial as Airwallex needed to gather objective feedback in order to identify customer needs and determine where improvements had to be made.

Striving to be “more robust, real-time, cost-effective, and transparent” than traditional remittance services, Airwallex’s customer-centric proposition saves SMBs 50 to 80 percent in costs per transaction. By deploying proven IT solutions and effectively utilising public cloud infrastructure, Airwallex has improved its service coverage, scalability, availability, fault tolerance, and security over the years. Airwallex also leverages technology to manage FX fluctuations and directly connect to a network of local settlement systems, while cloud-centric proprietary technology serves as the foundation for add-on applications. The result is a better, more seamless payments experience.

Building a collaborative and scalable international payment ecosystem

Over time, Airwallex’s strategy has evolved towards serving not only the client, but also the clients’ ecosystem. For example, Airwallex has helped customers such as JD.com with its payment paypoints, as well as JD.com’s merchants with theirs. With Airwallex’s API-enabled ecosystem, businesses and partners have the opportunity to collaborate and scale together. To facilitate this process, Airwallex has conducted complex integrations with financial institutions to abstract existing complexities and simplify processes for customers and marketplaces.

For example, Airwallex’s API capability for enterprises works with new economy businesses (i.e. e-commerce, online travel agents, online streaming services etc.) to seamlessly integrate them into a network of different banks. This simplifies the onboarding of new partners, centralises third-party partners on a single platform, and provides a standardised way to transact regardless of geography and bank.

Overcoming challenges such as disparate market standards and talent shortages

To scale across different countries, Airwallex had to secure regulatory approval and forge partnerships in desired markets. Although licensing processes in these new markets were well-structured, the process was drawn out at times. In order to enable successful partnerships, Airwallex and its partners had to embrace an open and collaborative mindset between fintechs and banks.

More often than not, Airwallex encountered a lack of a unified industry standards. This meant that an integration and adaptation to different standards across local banks was necessary – a time and resource-intensive process.

Hiring talent has also been a challenge in Airwallex's startup days. Specific talents are needed to develop products, especially senior engineers with expertise in architectural design for banks and/or technology companies.

Looking Ahead

Integrating partners to spur digitalisation

Banks looking to digitalise could consider collaborating with digitally native ecosystems to ease their digital transformation. In the case of Airwallex, for example, these banks see integration as a way to help partner businesses avoid the disparate standards that Airwallex previously had to overcome.

As Airwallex integrates more partners into its ecosystem, the company will collaborate to strategically understand what kinds of data are most pertinent to their processes. By leveraging data from various sources, Airwallex can facilitate better FX transactions across the ecosystem and realise the vision to create a new standard for international payments.

Developing even more streamlined solutions for customers

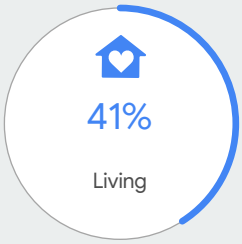
To offer streamlined solutions that meet customers' growing expectations, Airwallex will continue leveraging technology to further drive innovation. To develop a next-generation data warehousing and data stream processing solution, Airwallex will increasingly use cloud-based data and deploy automated analysis. This will enable more efficient data collection and analytics that will shed light on customer needs in real-time. In Airwallex's current growth phase, AI and machine learning are also going to play a role in ever-evolving risk modelling and decision-making industry environment.

Smarter Living - Signs of progress on the horizon

One of the most important parts of Hong Kong's digitalisation is a shift to a Smarter Living lifestyle. With a focus on enhancing the quality of life, there are many ways in which technology can positively impact Hong Kongers every day. In this section, we take a holistic Smarter Living view through three key pillars - Transport, Entertainment, and Healthcare.

In 2019, the Smarter Living index has seen steps in the right direction, but progress lags behind other key sectors. After remaining flat from 2017 to 2018, the index increased slightly to 41 percent this year. The incremental change is due to a mix of progress across the three pillars. Although transport has grown significantly, entertainment has only made small strides and healthcare is yet to register measurable improvement.

Level of Digital Adoption* by Hong Kong Residents



2019 vs. 2018 **+3%**

2018 vs. 2017 **No change**

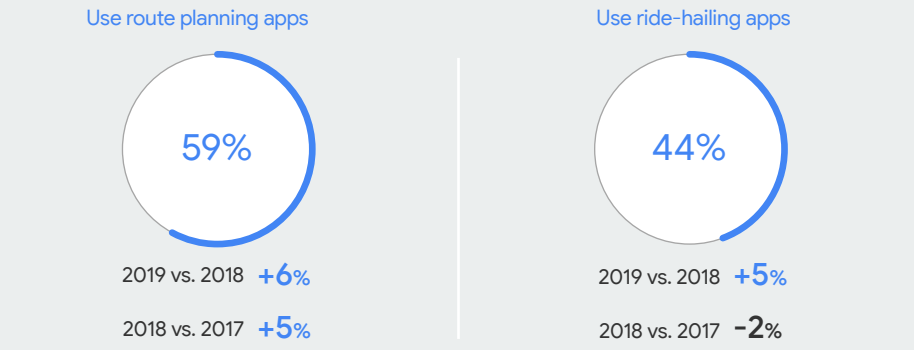
*Level of digital adoption is an index score that is defined as the average usage percentage of digital activities under each vertical. The same activities were assessed in 2017, 2018 and 2019
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Adopting Smarter Living will not occur overnight. Ongoing and sustained efforts by the public and private sectors will take time to develop and take hold among residents. To meet the needs of Hong Kong's increasingly tech-savvy population, Smarter Living can start realising its potential as 5G and open data will help power transport, entertainment, and healthcare initiatives that can contribute to a better quality of life.

Transport is surging

Transport has made the greatest improvement within the Smarter Living sector. Consumers are using digital transportation apps as part of their everyday commute, and in 2019 we see apps are enhancing functionalities to become even more convenient. Route planning is a critical part of the transport experience that has taken a large leap forward (+11 percent since 2017). Ride-hailing apps that efficiently match drivers and passengers have also shown increased usage as the city's residents adopt their on-demand services for better convenience.

Usage of Smartphones in Transport



Question: Which of the following connected commute apps do you use?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Open traffic data is also helping further optimise route planning and ride hailing capabilities.

> *"Hong Kong residents are increasingly relying on traffic data to suggest alternative routes when planning for their journey, e.g. a faster, less crowded but more costly route, a less costly but slower route, etc. So they can choose different courses according to their specific occasion, time availability and other preferences."*
>
> ***Sunny Cheung, Octopus Holdings Limited***

Entertainment is continuing to gain ground

Technology can play an instrumental role in helping people better enjoy their leisure time. Digitalisation in entertainment has been high in the past and consumers are only now increasingly engaged with connected entertainment in their everyday lives. Multi-platform media and information consumption has been facilitated by improvements in Smart TV online connectivity functions (+7 percent since 2018), while more and more consumers are purchasing and subscribing to entertainment streaming services (+5 percent since 2018).

Digital Adoption in Entertainment

Question: Which of the following connected entertainment areas do you currently use / experience / subscribe to / participate in?
Base: Hong Kong smartphone users representative, 2019 n=1000, 2018 n=1219, 2017 n=1000

Platforms and media are also devoting resources to customising and optimising content to be as user-friendly as possible. Beyond tailoring content suggestions to make it relevant to consumers, content is also being optimised to fit all devices (i.e. mobile/laptop screens) for a better user experience.

"The advancement of technologies, abundance and affordability of mobile data together with processing power and pricing of connected devices have truly liberated consumers. The same technologies have allowed us to address new markets that were not accessible to us before beyond the borders of Hong Kong, as well as improve the customer experience and deliver high quality content anytime, anywhere on mobile devices while also enabling 4K content to be delivered to big screens. With upcoming 5G launches in Hong Kong, we will be able to deliver an even richer and more immersive experience to consumers whether it be VR, AR or other applications."

Janice Lee, PCCW Media Group

Just as we see commuters engaging in mobile games more and more, the government has recognised the potential of e-sports to technologically engage future generations. With aims to inspire and foster the next wave of innovation, Cyberport has invested in further developing the e-sports industry.

"Digital entertainment and e-sports is an emerging industry which is so much more than gaming. The value chain covers animation, game design, VR and AR technology, player training, live-streaming and more. At Cyberport we are dedicated to promoting e-sports and in particular the technology and entrepreneurship opportunities behind the games."

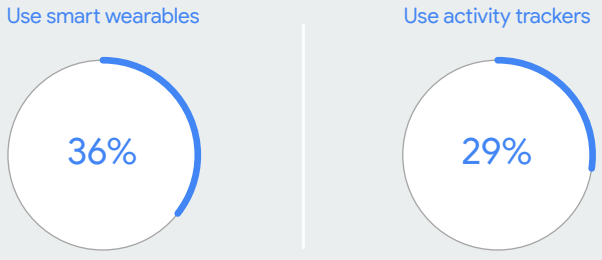
Peter Yan, Cyberport

Healthcare slated to grow moving forward

Residents do not currently recognise the digitalisation of healthcare (23 percent in 2019). While there are ongoing improvements being made to the healthcare system, healthcare can also be examined with a more holistic view that takes different healthy lifestyle factors into account.

To support wellness and fitness routines, broader adoption of technology such as smart wearables (36 percent) and sport & fitness activity trackers (29 percent) can help people stay attuned to healthy lifestyle habits.

Digital Adoption in Wellness and Fitness



Question: Which of the following digital electronics do you use?
Base: Hong Kong smartphone users representative, 2019 n=1000

Keeping health top of mind, the government and organisations have provided residents with updates via mobile apps in addition to traditional channels. While the government has launched the eHealth initiative with a focus on the Electronic Health Record Sharing System (eHRSS), it is critical to help the general public understand what its purpose is, how it is beneficial at a personal level, and what measures are being put in place to protect personal data and privacy.

"The Hospital Authority established a Big Data Analytics Platform to facilitate research projects. We have had difficulty in the past communicating why data sharing is necessary - but we believe its usage will benefit citizens and now we are moving in the right direction."

Dr. David Chung, JP, Innovation and Technology Bureau

Securing data is a prerequisite

As open data sharing is a key to supporting the development of key initiatives across Smarter Living and other sectors, steps should be undertaken by all responsible stakeholders to ensure data remains secure throughout the entire process. Collaboration that sets clear protocols and establishes proper data usage will enable all parties to move forward with confidence.

"A Smart City thrives on personal data. Only with trust will individuals share their data.We need to protect and respect personal data to build trust for our future. Personal data belongs to individuals, not organisations. Organisations must be transparent and accountable to individuals for their personal data privacy management."

Stephen Kai-Yi Wong, Barrister, Privacy Commissioner for Personal Data

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> *"A guideline or standard has to be established to build trust by outlining clearly the purpose of collecting such information and its application. It's all about the right to know."*
>
> ***Hon. Charles Mok, JP, Legislative Council***

Way Forward

5G to enhance the entertainment experience anytime, anywhere

The 5G network will empower entertainment providers to meet and exceed customer expectations for faster delivery, higher quality, and more immersive content.

With the expectation of essentially zero latency, 5G-enabled devices should experience dramatically faster download times for high resolution videos and uninterrupted higher quality live streams. This will greatly enhance the mobile viewing experience of video content. The significantly faster speeds of 5G can also empower other seamless and immersive digital experiences. Bandwidth-hungry mobile games, AR, and VR applications will now become more feasible for on-the-go gamers.

Collaborating to optimise Smarter Living services

Collaborating to share open data and real-time information can create a more responsive and streamlined transportation experience. Different transport service providers can collect and consolidate data as well as share information with one another to facilitate decision making that matches consumer demand with supply. This type of collaboration can enable better transport within the 1-hour living circle surrounding Hong Kong. With more real-time data, there will be better opportunities to plan more efficient transportation in and around the city.

Open data sharing and data analytics can also be applied to support healthcare efforts and to augment the capabilities of the eHRSS. It can also help relevant organisations improve healthcare provision as well as benefit related research and training programmes.

Case Study

GOGOVAN

GOGOVAN
Steven Lam
Co-founder and CEO

Founded in Hong Kong in 2013, GOGOVAN is the first app-based van hire platform for delivering goods in Asia. GOGOVAN leverages on-demand delivery services through the implementation of innovative technology and a dynamic pricing strategy to best-match customers and drivers. The company also serves to fill the gap between unconventional commercial and industrial demand.

Transforming the for-hire transport ecosystem

In the past, customers had to call for-hire vehicle operators to reserve vans for delivery. Often, the process was unpredictable as callers were left waiting for responses and ad-hoc requests could not be met with any regularity.

GOGOVAN launched to address the need for a more transparent and reliable van delivery service. With a better user experience, clear route planning, and transparent pricing, GOGOVAN provided security and service throughout the process. Benefits include:

- Better communication between drivers and users, enabled by real-time response times that optimised the availability of drivers and customers. The GOGOVAN app platform enabled instant ordering which minimises waiting time for all stakeholders.
- Transparent, accurate price forecasting. Heat-mapping technology helps accurately forecast and adjust delivery prices based on real-time traffic information.

For businesses and SMBs clients, GOGOVAN was an attractive option as it saved them from the trouble of investing in an in-house delivery team. While forming an in-house delivery team could help address a firm's delivery needs, it was also a pain point as businesses struggled to evaluate its ROI. With GOGOVAN, businesses no longer had to worry about this aspect and could instead focus on utilising its on-demand service. Businesses also benefited from the fact that GOGOVAN is able to handle last minute ad-hoc requests unlike more traditional delivery services.

As another critical stakeholder in this process, delivery drivers also bought into the GOGOVAN concept and registered to drive for the service. Drivers were quick to realise the platform's ability to increase their productivity by effectively managing scheduling and streamlining payment.

Looking Ahead

Customising quoting and route planning while increasing logistics efficiency

To take their platform to the next level, GOGOVAN is exploring AI and machine learning as tools that can potentially further customise quoting and route planning capabilities. As they build up this skill set, GOGOVAN is also looking forward to leveraging open data and the new 5G network as this will help facilitate even better information flow and faster overall operational speeds. Open data should also help GOGOVAN increase efficiency with better transport planning across their network, as road usage information will help them further optimise the process of matching customers with nearby drivers.

Smarter People - Strengthening tech talent to drive transformation

While we have discussed technological tools and infrastructure as driving forces behind digitalisation, ultimately it is the people who adopt technology and further its implementation that form the backbone of a Smarter Digital City transformation.

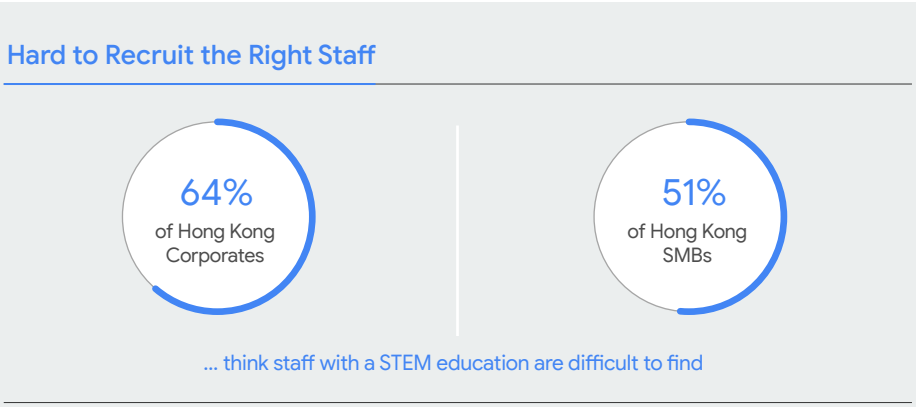
Although Hong Kongers are embracing technology in 2019, the city's technological talent is in short supply. Corporates, SMBs, and startups looking to digitalise are struggling to find employees with the necessary tech skills and industry knowledge. Only 12 percent of corporates believe Hong Kong is strong in tech talent development, leading some to source candidates from abroad. Constrained by a lack of resources and expertise, SMBs and startups are inhibited in their ability to find the necessary talent.

It is critical to build a sustainable talent pipeline to encourage young minds to embrace science, technology, engineering, and mathematics (STEM) competencies, and to retrain the current workforce with emerging tech and industry knowledge. Hong Kong's knowledge economy can be boosted by a Smarter Workforce - where people acquire new skills to better use machines and apply technology and AI in their everyday work to solve business challenges, optimise operations, and open up new opportunities.

Together with an influx of international talent, they can form the Smarter Digital City workforce that propels the city into the future.

Creating a strong tech talent base with STEM education as the foundation

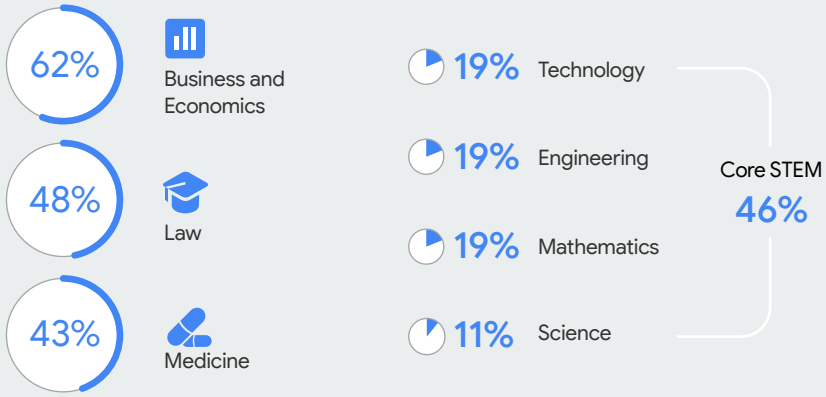
STEM education forms the basis for a skilled tech workforce, but Hong Kong currently lacks the supply to meet demand. In 2019, staff with a STEM education are the hardest for corporates to find (64 percent), while Hong Kong SMBs deem it to be the second most difficult discipline to recruit (51 percent).



Question: Which of the following subjects do you think it is difficult to recruit staff in Hong Kong?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99
All interviewed Hong Kong SMBs respondents, 2019 n=100

As home to internationally recognised universities that attract local and international students, Hong Kong has resources in place to address the demand for a STEM educated workforce. In discussing STEM education with Hong Kongers, we observe that perceptions of STEM subjects may have contributed to the city's existing tech talent deficit. The current consensus is that Hong Kong's historically established industries - business, economics, law, and medicine - are the city's top academic strengths. These may be taking precedence among students' studies as a result.

Corporates' POV - Top Perceived Academic Strengths in Hong Kong



Question: Which of the following subjects do you think Hong Kong is strongest academically?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99

A positive shift in how Hong Kongers value STEM education and skills will be needed to fuel the city's digitalisation. There are ongoing efforts being made to foster interest in tech and other STEM fields.

> *"We aim to secure more tech-savvy talents in Hong Kong by raising digital literacy among secondary school students through the IT Innovation Lab in Secondary Schools initiative."*
>
> ***Dr. David Chung, JP, Innovation and Technology Bureau***

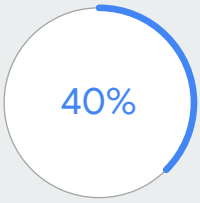
Over the course of their STEM education, students will also need to develop their holistic critical thinking skills to apply the scientific approach to real-world situations. They should be able to clarify, analyse, and solve problems with others in their future jobs, a process that starts with communication.

"We have a business faculty; we have an engineering faculty, but they don't interact that often. Nowadays, it is time for teamwork - we need to interact to come up with shining ideas."

Dr. Justin Law, The Hong Kong Polytechnic University

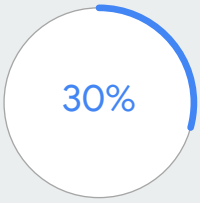
Enhancing data skills to meet growing needs

While investing in STEM education will help develop the talent businesses seek, it is also important to gather feedback on what skills people want to learn. When it comes to technological skills, 40 percent of workers are eager to learn more about AI. This demand dovetails with the increasing percentage of corporates interested in applying AI and machine learning within the next two years (30 percent). In this scenario, helping workers achieve their goals of acquiring desired AI skills will result in better supply to meet corporates' growing needs. Moving forward, there may be more opportunities to match the demand for certain capabilities with a knowledge-hungry workforce.



of **Residents** want to learn more about the application of **machine learning / artificial intelligence**

Question: Which of the following digital skills would you want to learn more about?
Base: Hong Kong Smartphone users representative; 2019 n=1000



+14% vs 2018

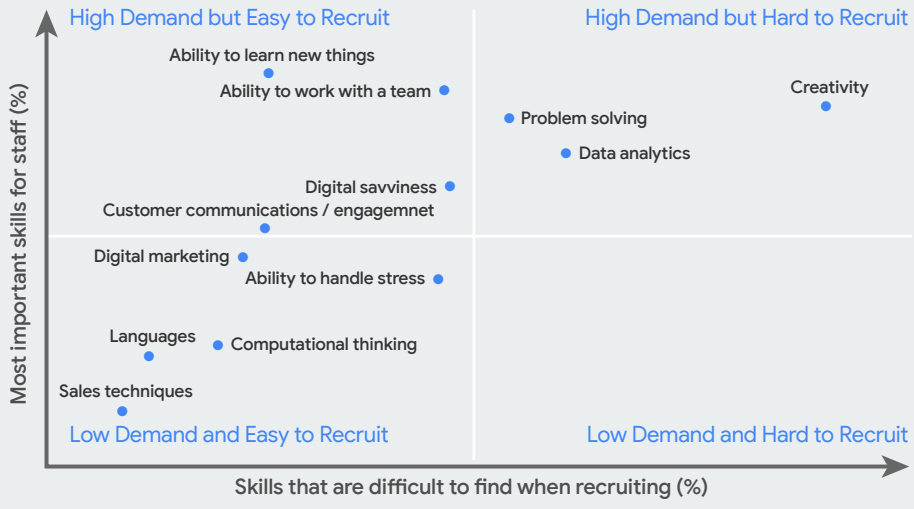
of **Corporates** consider implementing **machine learning / artificial intelligence initiative** in the next 2 years

Question: Which of the following are you considering implementing within the next 2 years?
Base: All interviewed Hong KOng corporate respondents,2019 n=99, 2018 n=100

The need for soft skills and specialised industry knowledge for today's tech talent

In today's fast-changing digital world, society and businesses face more complicated challenges and the need to apply technology and AI solutions has increased. Talent today, whether it is in tech or business, is required to master their industry expertise, technical skills, as well as soft skills. From our findings, Hong Kong corporates point out the demands and challenges in talent acquisition - where isolated technical skill is not sufficient. It is worth noting that skills including creativity, problem solving, and data analytics are in high demand.

Hong Kong Corporates' POV



Questions: Which of the following skills/ knowledge do you think are most important to have from your staff?
When recruiting staff, with which of the following do you think it is difficult for you to find staff?
Base: All interviewed Hong Kong corporate respondents, 2019 n=99

In addition to addressing these current needs, tech talent should also have essential interpersonal skills to fit into the company culture and cross-function with other teams. Communicating and collaborating with coworkers across different disciplines plays a key role in successfully realising company goals. The ability to work in a team as well as the ability to learn new things are the most desired soft skills in Hong Kong's tech talent.

> *"Talent is required to be an expert in key areas but also to work in a collaborative culture. Technology talent must be capable of working with other disciplines (legal, regulatory, financial, technical and marketing)."*
>
> ***Deniz Güven, Virtual Bank by Standard Chartered***

When building the city's Smarter Workforce, there are individual sector needs that should be taken into account. While competition is fierce for talent across all the key sectors, finance in particular has problems sourcing tech talent. This is due to the need for skilled candidates who have a deeper understanding of the finance industry's complex systems and regulatory standards.

For all of the sectors, a workforce with a wealth of specialised industry knowledge and expertise will be a prerequisite to digital transformation. Tech talent should have a deep understanding of their specific businesses and industries so that they can fully grasp the context in which to innovate; only then can they successfully create and apply new digital solutions.

> *"As consumer behaviour has been evolving, it's important to open employees' horizons by letting them know the progress and evolvement around the globe. Especially for youngsters as they are at the starting stage therefore they need a lot of resources and time investment."*
>
> ***Bruce Lam, CSL Mobile Limited***

Way Forward

Building tech skills and upskilling to jumpstart competitiveness

In building the Smarter Workforce, there is a need for existing workers to acquire new skills and to upskill their existing knowledge base in order to improve their capabilities and catch up. By promoting industry best practices as well as professional training and certification programs, businesses can help employees clarify goals and provide direction on which skills to pursue.

By developing new skill sets in in-demand fields such as AI and machine learning, workers can better future proof their career paths and position themselves to thrive in the Smarter Digital City. In addition to upskilling to meet current needs, workers can take the initiative to get a jumpstart on future learning opportunities that will accompany emerging technology; for example, as data analytics evolves, more experts will be needed to develop and institute protocols that ensure clear, responsible usage.

Developing the Smarter Digital City cross-function tech workforce

As creativity is the most important trait currently lacking in today's workforce, our city's education system, parenting, and continuing education models should evolve to address this need. By nurturing creativity along with the necessary technical skills (e.g. data analytics and AI), interpersonal skills (e.g. teamwork), and industry knowledge, the city's tech talent will be better equipped to contribute to a Smarter Digital City moving forward. All of Hong Kong's stakeholders can help develop well-rounded STEM-skilled employees in the long run. Investing in education and advocating out-of-classroom training programmes is the first step to promoting STEM fields and digital competencies among students. By starting early and reaching young minds, the city can plant the seeds for a future wellspring of innovative tech talent.

For businesses to effectively recruit fresh STEM graduates, corporates and SMBs should create an attractive job market that offers appealing remuneration packages and growth opportunities. In the meantime, the business community can look to upskill their existing workforce with on-job training that helps facilitate future growth and development.

Expanding the talent pool to foster a collaborative culture

To address the talent gap in the short term and build a thriving tech workforce moving forward, Hong Kong can look to attract innovative companies and tech talent from abroad. An influx of international tech talent can help raise the collective experience level of Hong Kong's smarter talent pool.

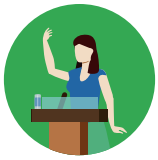
Sourcing diverse tech expertise from developed markets is the first step, but connecting and integrating them with the local talent pool to establish a collaborative tech culture and inspire localised innovation will be key. Policymakers and the business community can work together to create a vibrant ecosystem that actively facilitates connections and knowledge sharing between local and international talent. Tech hubs can also serve as a space for tech minds to congregate, network, exchange knowledge, and ultimately work together. In an environment that encourages learning from one another, all parties will benefit.

Recommendations

Hong Kong has a number of pieces in place to serve as the foundation for a Smarter Digital City of the future. The city is a highly regarded international hub with a diverse workforce and well-maintained infrastructure. Combined with its free trade environment and strong financial system, there are many reasons why the international business community has long been attracted to Hong Kong. While tech talent has posed a challenge to digitalisation on all levels, the city has the fundamentals in place (such as internationally recognised universities) to equip the future generation as well as current workers with the necessary multi-disciplinary skills to flourish in a Smarter Digital City. Moving forward, new technology including the growth of open data platforms and the 5G network standard will further evolve the city's digital landscape. Driven by Hong Kong's increasingly digitally-savvy residents and an emerging Smarter Workforce at its core, all of these factors contribute to a vibrant fast-paced city brimming with potential.

Now primed to evolve into a Smarter Digital City, Hong Kong should build its Smarter Workforce by upskilling workers to become more proficient in tech such as AI, engage in new research disciplines, and master problem solving solutions. This will enable them to compete with international peers, future proof their careers, and more ably contribute to their respective industries and the city itself. With this Smarter Workforce forming the cornerstone for digital transformation, Hong Kong can bring initiatives to life through even better collaboration.

Looking forward to 2020 and beyond, many initiatives are being implemented that can transform our way of living and strengthen the economy to meet growing expectations. The key to the success of these initiatives will hinge on the ability of all stakeholders - policymakers, corporates, SMBs, residents, and talent - to bring an open mindset and actively collaborate to drive innovation that will be beneficial for all. By communicating what can be improved and how working together will address these needs, we can develop the technology and services that will enhance Hong Kong's overall quality of life and create new opportunities in the digital economy to realise the Smarter Digital City we know Hong Kong can be.



For Policymakers

Policymakers can lead the city's digital transformation by actively advocating Smart City initiatives among the community to realise their benefits and working together with stakeholders in both the public and private sectors to more effectively address needs. Communicating with target stakeholders - whether it be corporates, SMBs, or residents - will help them better grasp how initiatives are designed to improve their quality of life and/or businesses and thus encourage adoption. These open lines of communication will also help the government gather valuable feedback to drive more effective solutions. As the government facilitates a more open and collaborative ecosystem, all of the city's stakeholders should contribute to greater knowledge sharing to propel the next wave of digital innovation.

Economy

1. Proactively advocate existing digital initiatives to increase adoption rate

Since the Smart City Blueprint was published in 2017, there has been considerable investment in new initiatives to support the digitalisation of both businesses and services for Hong Kong citizens. Policymakers can further advocate these initiatives to ensure businesses and the public are fully aware of benefits and how to participate to the fullest extent. Actively promoting digital initiatives with clear communications should help to better their adoption from launch. From there, encouraging wider adoption and regular usage among stakeholders, as well as gathering feedback can help initiatives spread and grow in effectiveness over time.

Policymakers sought to address Hong Kong's relative lack of digitalisation by implementing the Technology Voucher Programme (TVP) to provide subsidies for the digital transformation of SMBs. After receiving feedback, the government fine-tuned the scheme by raising its funding ceiling, expanding eligibility criteria, and adapting application procedures. Such ongoing improvements can drive higher usage and adoption over the long run. Gathering feedback from an initiative's user base and potential audience can reveal specific areas to enhance functionality and usability over time. It would also be helpful for policymakers to continuously collect feedback from businesses so as to address their evolving needs.

2. Enhance facilitation of strong R&D development

With all key stakeholders (residents, corporates, SMBs) stressing the importance of strong R&D as a key Smart City attribute, we have seen government support R&D efforts through a variety of channels. Cyberport, Science Park, and research funding to universities are all contributing and ensuring the city's R&D is on the right track, but the pace of progress can still be improved.

Moving forward, the government continues to build Hong Kong as a hub for global research collaboration by driving machine learning and AI as areas of focus. To develop these capabilities, the government should continue bringing different players together for closer collaboration with initiatives like the InnoHK platform (research clusters on healthcare-related technologies, AI and robotics technologies) providing the necessary infrastructure for stronger combined R&D efforts.

3. Support local tech companies and startups by promoting Hong Kong as an innovative tech hub

While guidance, funding, and collaboration opportunities will help foster the development of local tech companies, incubation and acceleration programmes like the Global Acceleration Academy spearheaded by the Hong Kong Science and Technology Parks Corporation can help better connect enterprises with startups. Both corporates and startups are positioned to benefit through opportunities to exchange knowledge; innovative startups may be able to fulfil corporates' unmet needs by approaching problems from a different perspective. Efforts to match corporates with relevant startups have been well-received in the past and can be expanded in scope to match local businesses with international players to create more business opportunities and drive innovation.

More resources are needed to facilitate and grow the ecosystem so that local companies and startups can scale faster and better compete. The Smart Government Innovation Lab initiated by the Office of the Government Chief Information Officer is another example of how the government can take the lead to bridge innovative solutions available in the market and use cases in the public sector. The government should continue to strengthen its support of local tech companies and startups by building and expanding the reach of certain collaborative platforms that generate increased opportunities for these firms to gain knowledge and advance.

Ecosystem

1. Maintain free and open internet

Widely accepted by all as the most important attribute in a Smart City, a free and open internet is the foundation to the city's continued digital transformation and evolution moving forward. The internet serves as the definitive platform to exchange information and knowledge and drive collaboration between both public and private sectors in society.

To support the digital ecosystem and facilitate data flow, the provision of a free and open internet should remain a priority. Technology that enhances the adoption of a better internet experience for all such as public WiFi hotspots and the new 5G network standard should also be a focus in connecting the city.

2. Enhance and expand the open data ecosystem

To encourage data exchange and build an open data ecosystem, policymakers should demonstrate their commitment to opening up government data for cross-sectoral use, as data will form the basis for future app development, individual analysis, and academic study. The government has taken the first step by setting up an open data platform as well as the Hong Kong GeoData Store, a public portal for exploring and downloading open spatial data.

To set the path forward, policymakers should continue to be proactive in identifying and facilitating specific industries and opportunities where open data can make a difference, such as healthcare and transport. Collecting stakeholder feedback should be part of the process to help policymakers make open data even more useful (e.g. make data available in user-friendly format, review open data platform terms and conditions to remove potential obstacles for businesses). In the next phase, policymakers can focus on moving from Big Data to Big Query to further enhance data analysis capabilities. For example, deeper analysis of existing healthcare data can help to advance the development of ML-based diagnostics tools, while transport data insights can inform the city's urban planning and address pollution and congestion issues.

Education

1. Cultivate creativity and life-long learning well into the future with ever evolving technology

To support the long term vision of a workforce that powers the Smarter Digital City, policymakers should look at how best to enhance computational and creative thinking in primary and secondary school curricula. Initiatives that help ensure personal laptop availability and access for Hong Kong's primary students are a starting point to improve digital literacy from an early age. This can take the form of subsidies to lower cost barriers or partnerships that facilitate personal laptop adoption. Government should also continue to provide dedicated resources for schools on STEM education (e.g. IT Innovation Labs in Secondary Schools implemented by the Office of the Government Chief Information Officer) and encourage schools to incorporate digital skills education (e.g. coding and computational thinking, AI) into their core curriculum to better equip students for the future. To help school administrations institute best practices, the government can consider providing more platforms for school staff to share their experiences and learn from one another through seminars and professional development workshops. Policymakers can also consider fostering this knowledge exchange among students by organising extra-curricular STEM fairs and competitions that connect students from different schools and inspire innovation.

Educational institutions should also enable life-long learning by focusing on cultivating creativity, critical thinking, and problem solving skills together with proficiency in new technology. These will prove to be essential for future success as digital continues to evolve our daily lives. By developing multi-disciplinary thinkers, the city can develop talent that effectively applies their educational background and skills in the real-world business context.

2. Create a dynamic tech career environment to attract and retain talent

While a lack of talent poses the biggest barrier to corporates and SMBs on their digitalisation, the city should focus efforts on nurturing local talent and attracting qualified tech workers from abroad to come to Hong Kong. Policymakers can help the city better recruit and retain talent by promoting Hong Kong's growing capabilities as a R&D hub both locally and overseas, characterised by a job market with plentiful emerging opportunities and career prospects.

Initiatives that fast-track the admission of tech experts can help add diversity and expertise to Hong Kong's existing talent pool. Providing an environment and network where talent can discuss their industries, exchange knowledge, and find opportunities to collaborate will help foster a greater sense of community and drive shared success; hubs such as Science Park and Cyberport are already helping to develop this vision and should continue taking next steps.

3. Encourage on-going training to dial up tech and data skills among the existing workforce and SMBs

To truly realise the Smarter Digital City ecosystem, it is critical that each stakeholder, especially SMBs, equip digital skills on top of fundamental competence. Policymakers can help encourage more STEM, coding, digital marketing, and other relevant tech courses that give SMB staff the necessary skills to help their businesses succeed.

There is plenty of untapped potential in today's existing workforce that is waiting to be realised. Funding support for businesses and various on-job training can inspire both SMBs and their workers to seek out growth. For individuals, the Continuing Education Fund (CEF) provides learning opportunities for new skills while the Reindustrialisation and Technology Training Programme subsidises businesses to train staff, expand their skill sets, and learn new technologies. This can help current workers especially Gen X (the 38-58 age group) adapt to the digitalising world by enabling them to fully engage in their work and daily lives without feeling left behind. This is a group eager to develop their skills, as over one-third of workers aged 45+ are interested in learning more about AI, machine learning, and data analytics. Supporting these workers and others in their pursuit of knowledge will yield a more capable workforce and pay dividends for companies. Helping workers along their path today will also ensure that the city has more tech-savvy mentors for the future generation. With forward-looking leadership, policymakers and businesses can successfully work together to invest in existing talent, empowering workers to help build a stronger overall ecosystem.

For Corporates

Corporates are moving beyond fundamentals and pushing innovation forward to fulfil consumers' needs. By digitalising their businesses and upskilling their workers, corporates are leading efforts that will enact the city's greater digital transformation. To develop the city's tech talent pool, corporates should leverage their resources to train existing workers and attract tech talent from abroad to better participate in Hong Kong's new Smarter Digital City, fostering a tech-savvy workforce with greater expertise. Corporates can also better enable SMBs and startups by sharing knowledge and industry practices that can boost the business community as a whole and encourage development across all sectors. As data-driven projects such as AI and machine learning initiatives are positioned to help shape customer-centric innovation, corporates can use the opportunity to share transparent and secure processes, as well as champion their workers to hone an analytical mindset. With their support, corporate employees can rise to the challenge and better contribute to digitalisation efforts to realise business goals.

Economy

1. Focus on service-led customer experience supported by digital to meet customer expectations

As consumers become more digitally-savvy and their expectations grow, corporates have to meet demand and focus on how to fulfil consumer needs. Instead of just providing different products and solutions, corporates should approach problems from the customer perspective in order to provide more thoughtful customer-centric services. Developing services that immediately connect with consumers' existing needs should be prioritised, as they will encounter the least friction to adoption. Once existing needs are successfully addressed, services can evolve to the next stage.

This includes looking at opportunities on how best to integrate technology into consumers' daily lives or setting out to address individual pain points consumers encounter along their journey. With greater insight into customer needs, habits, and behaviours, corporates should better tailor user experiences and provide relevant and timely services that are truly useful.

2. Invest and partner in digital initiatives across the board for long term business impact

As leaders of innovation who frequently introduce new technology to the greater public, corporates have extensive experience driving adoption among consumers. In the past, we have seen that new technology often takes time for consumers to adopt, as people often need to warm up to new experiences. Corporates should make technology adoption as painless as possible for consumers who are willing to transit to a more digitalised world. Although consumers may be hesitant to adopt technology in the beginning, such as cashless payment and AR, over time corporates should be able to help them become more familiar with the process and gradually enjoy the digitalised experience. Eventually greater efficiency that benefits both businesses and their consumers will come to fruition.

In addition to streamlining the adoption process and realising greater efficiency, corporates should continue to be bold by experimenting with technology that offers new benefits to customers and differentiates businesses from competition. When searching for these solutions, corporates should leverage existing scalable resources and solutions (e.g. cloud-based services) by forging partnerships with tech experts and startups. This is much more cost-effective than investing in building tools from scratch. Through joint effort and collaboration with suitable tech partners, corporates should be able to better adapt their customer value propositions and realise their vision.

Ecosystem

1. Build a partner-ready platform to enable collaboration and co-creation

Corporates can play a greater role in driving progress by investing in shareable platforms (i.e. APIs and cloud services) that facilitate external stakeholders such as startups and SMBs to fully utilise existing technology to achieve common goals. This will contribute to the overall development of the Smarter Digital City ecosystem.

Collaboration is especially needed in the adoption stage. Providing training and helping partners more easily adopt technology helps all parties recognise the implementation of new tools as a win-win situation. To keep up-to-date with the latest developments, corporates can also actively seek out collaborative opportunities with top tech experts to learn about new solutions that stand to impact relevant stakeholders and business performance.

2. Starting with customer-centric projects to move from Big Data to Big Query

Over the past few years, corporates have acknowledged the importance of data as an integral part of efforts to develop better customer services. As more resources and data become available, corporates should look at how they can better optimise data analysis to derive the most relevant insights in the most efficient way possible. With faster and more comprehensive analysis, corporates can deliver more customised recommendations and offers to customers that respond to their needs at the right time and right place, enhancing convenience and improving conversion rates. Beyond better serving customers, Big Query can also help corporates reflect on their processes and shed light on opportunities to improve operational efficiency.

As corporates move into this new phase of Big Query, transparency and the importance of data protection and privacy are crucial parts of this process. To reassure data owners, corporates should consider educating on the benefits of data sharing, and be transparent with plans to use data. By taking these factors into account, corporates can successfully develop trusted services that mutually benefit all parties.

3. Preparing for the future with 5G

Purposefully designed to enable connectivity like never before, the launch of the 5G network next year will create new opportunities for firms to innovate across all of the city's industries. This enhanced connectivity has the potential to transform how people interact with technology on a daily basis and set higher expectations for new products and services. To capitalise on these opportunities, corporates should move from a wait-and-see approach to a more proactive process of assessing how 5G can enable improvements in current services as well as generate brand new value propositions.

With extremely low latency, 5G can inspire more seamless and immersive experiences on-the-go. 5G should also facilitate even more complex functionalities, real-time and on-demand information distribution, enhancing the efficacy of open data sharing to benefit quality of life. Corporates should ready their business model for the new 5G standard by exploring all of its potential capabilities and applications to stay ahead of rising expectations. While innovating new services, corporates should also ensure privacy and security tools are in place to keep pace with the increased volume of data transfer in the immediate 5G future.

Education

1. Recruit and upskill staff to meet the digital transformation demand

As digital transformation takes place, corporates have a responsibility to clearly communicate with their employees on the benefits of new tech-driven initiatives. To build the necessary tech skills to drive progress, corporates should recruit trained talent as well as invest in upskilling existing workers and improving their capabilities. Partnerships with relevant organisations help corporates institute on-job training and skills workshops, while corporates can also support staff by leveraging free online training courses or facilitating external training courses with time off or stipends.

Building an open culture that promotes experience and knowledge sharing within the company can also help, as international corporates can look to sister offices abroad in developed markets to provide additional expertise. When looking to build a greater talent base in the future, corporates should also put effort into recruiting by offering attractive remuneration and training opportunities. In combination with an upskilled workforce, corporates can better achieve business objectives while promoting the personal growth of individual employees.

2. Reveal learning opportunities with data-driven projects that drive customer innovation

To drive innovation, corporates have started initiating data-driven projects using machine learning to better understand high-value customer touchpoints. To evolve more customer-centric services in time to meet growing needs, corporates should increase emphasis on data-driven initiatives and devote more resources when possible. As corporates embark on these projects, learning and skills deficiencies will inevitably reveal themselves. This insight will give corporates a better idea on how they should allocate and upskill talent to address these gaps.

A new wave of data-driven projects will challenge staff with the opportunity to develop their data skills and uncover areas to grow the business. Due to their nature, these projects should help staff foster a computational thinking and analytical mindset in their work. By empowering and equipping staff to take on these learning opportunities, corporates can drive new customer innovation.

For Small and Medium-Sized Businesses

SMBs are now dedicated to digitalising but need support from stakeholders to ensure they can catch up and meet growing expectations. As SMBs embrace digitalisation, they should proactively match and communicate with corporates and policymakers to ask questions as well as provide feedback to further build a collaborative ecosystem. In this way, SMBs can secure necessary knowledge and guidance from partners with the correct expertise to speed up their efforts. Furthermore, SMBs should utilise all resources that are already available in the market. For example, taking advantage of ready-made solutions that can address existing needs to make the best use of their finite resources, as well as exploring educational opportunities to ensure existing workers receive the necessary training to upskill themselves and make greater contributions to digitalisation. A stronger, more tech-savvy SMBs landscape will help Smarter Digital City progress with benefits that trickle down to consumers.

Economy

1. Take immediate action to implement digital initiatives and start integrating them into daily operations

SMBs have increasingly realised the importance of digitalisation to their businesses and industries. The majority of SMBs (82 percent) are now aware of the benefits of digital transformation, as well as consider digital to be a fundamental part of their business (70 percent). This is a marked change in mindset year on year, as SMBs become more driven to digitalise.

Encouragingly, SMBs are now acting on this: they are starting to implement more digital initiatives. To catch up, all SMBs should actively plan and engage in further digital activities, and start integrating these useful business tools and technologies to drive higher impact. From setting up e-commerce and redeveloping websites to driving visitor traffic through digital marketing and advertising, SMBs have begun this process but should act now to speed up progress. As next steps, SMBs should upgrade their daily operations across different touch-points such as POS, customer reviews, maps, etc.

Ecosystem

1. Leverage readily available in-market platforms and solutions to speed up digitalisation

In the market, there are already many ready-to-adopt initiatives in-place for communication, collaboration, customer service (e.g. chatbots), and transaction (e.g. EPS, e-commerce). SMBs and startups should fully leverage these tools by implementing them into their business model. This will help augment capabilities quicker and allow SMBs and startups to focus their energy on addressing more glaring issues.

Looking to ready-made solutions should also apply to the process of strengthening digital expertise; SMBs should seek out partnerships with corporates and other organisations that can provide guidance. This is especially important for startups who will rely on support from both government and established corporates to help enable better access to resources. While expertise will be invaluable to incubating SMBs and startups on their journey, these smaller firms can contribute back to the ecosystem by proactively sharing feedback and ideas that may reveal new insights to better meet customers' needs.

2. Go digital to start to build your customer database

As it stands, SMBs cannot only focus on collecting more data relevant to their products, services and customers, they should already start looking ahead to prepare for new data analysis tools that can transform their businesses and better serve their customers. SMBs would be well served to start considering how they can build their customer databases with consumer buy-in and consent. It is important that SMBs start out by engaging in clear processes that meet high consumer expectations for transparency and privacy.

To streamline data collection, digitising to paperless operations is an essential step. This will ensure data is recorded in a compatible manner for digital applications moving forward. Once sufficient data is consolidated, SMBs should be equipped to perform deeper analysis that informs future action and investments.

Education

1. Be open to learning programmes available from partners and corporates

To speed up their digitalisation efforts, SMBs should proactively seek out partners and corporates to work with and scale up their knowledge. Following the latest tech news can only take SMBs so far; proactively seeking specific guidance and upskilling themselves can further help SMBs take the next step on their digital journey.

This includes raising questions and discussing initiatives with partners, as well as transparently sharing knowledge and information to inspire new ideas. Besides having an open and collaborative mindset that facilitates exchange, SMBs should also look to take advantage of training programmes that are available from the government, corporates, and digital experts.

2. Encourage and support staff to take training days and continue their education

SMBs will need to draw upon a skilled workforce to power digitalisation. To enable this, SMBs should equip staff with the skills and tools they need by promoting on-the-job training that applies to existing and future business needs. As the first step in this process, SMBs should identify which training courses develop the digital skills most needed at the company. With a plethora of free online resources and digital skills certifications (e.g. digital marketing) available, SMBs have the ability to help staff upskill without requiring significant expenditure.

For more specialised and intensive paid training programmes that require time out of office, SMBs should support staff to take the opportunity to enroll in these by providing stipends and flexible scheduling wherever possible. These incentives should encourage staff to take the next step and invest in themselves by upskilling. Such practices will eventually benefit the firm, as SMBs are able to show employees that they are an important asset while improving their capabilities and encouraging them to grow together with the company. Giving people the confidence and tools they need to improve as skilled tech workers will ultimately have a knock-on effect that enhances everyday quality of life and contributes to Hong Kong's transformation into a Smarter Digital City.

Reference

Methodology

This whitepaper represents a culmination of comprehensive research into Hong Kong's digitalisation and its credentials as a Smarter Digital City, integrating the experiences and views of the city's consumers, corporates, policymakers, and neighbours.

The study employed primary research encompassing the following four steps to deliver its insights and recommendations:

Step 1 Consumer Digital Index Survey

Ipsos conducted a 25-minute online self-completion survey with 1,000 Hong Kong residents.

The following parameters were set for the consumer sample:

- Demographic representation of the smartphone using adult population in Hong Kong
- The survey allowed for a natural fallout of the current level of digital engagement

Step 2 Corporate and SMBs Quantitative Survey

Ipsos approached 299 business leaders, both corporates, and SMBs owners or senior managers, to explore their experiences and perspectives on digitalisation. The businesses sample comprised of:

- 99 representatives from Hong Kong corporates
- 200 representatives from SMBs owners or senior managers

Natural fallout resulted in the following representation for Hong Kong corporates:

- Representatives from all four verticals: Finance, Travel, Retail, and Living
- 27 C-level participants and 72 B-level participants

The SMBs sample comprised of those solely or primarily responsible for applying digital and IT solutions split across the three cities as follows:

- 100 representatives from Hong Kong
- 50 representatives from Guangzhou
- 50 representatives from Shenzhen

Respondents were comprised of Ipsos and Google contacts who were willing to participate in the study.

Step 3 Corporate In-depth Interviews

14 in-depth interviews were conducted with corporate leaders, policymakers, and other academics. Each of the one-on-one, in-person interviews lasted approximately 60 minutes.

The study's key areas of investigation were covered as follows:

- Two Finance interviews with corporates
- Two Retail interviews with corporates
- Four Living interviews with corporates
- Six interviews with academics and policymakers

Step 4 Sector Case Study

Finally, four sector specific case-studies, one per sector, were created via a combination of desktop research and interviews with executives from each of the target case study companies. Each interview lasted approximately 70-90 minutes. The case-studies highlight how each company leverages technology in transforming their respective sectors by addressing the pain-points customers face in the sector.

Digital Score Calculation

A consumer digital engagement score was created as an integral part of the consumer quantitative study. This was calculated by assessing consumers' actual behaviour and usage across an array of mainstream, emerging, and innovative digital activities. This facilitated a better understanding of true digital engagement, rather than relying on a consumer's self-assessment.

The following steps were taken to calculate the digital engagement score:

Step 1 Categorise Digital Activities

All 1,000 participants were shown a pre-defined list of digital activities. These activities were classified into three incremental categories: mainstream, early adoption, and evolutionary. Mainstream activities were already being done by the majority of participants. Early adoption and evolutionary activities respectively were those only performed thus-far by a minority.

Step 2 Participation-based Digital Score Calculation

The digital score for each respondent was calculated based on their participation in each digital activity. Scores were calculated by awarding a point value to each participant based on their engagement across all digital activities considered.

The point value assigned was dependent on the category of the activity, whereby mainstream activities earned the lowest scores and evolutionary activities achieved the highest. The sum of all points awarded per participant determined their personal digital score.

Step 3 Define Digital Engagement Level

Based on the digital scores achieved, Ipsos further categorized participants into five digital engagement brackets according to the ratio of their individual digital score, compared to the highest total score possible. Participants were classified into:

- High, Mid-high, Mid, Mid-low, and Low Engagement.

Step 4 Calculate Hong Kong Digital Score Based On The Engagement Level

Hong Kong's aggregate consumer digital score was calculated by considering the engagement of all 1,000 Hong Kong participants across the five levels.

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Google Hong Kong and Ipsos would like to sincerely thank the business leaders, policymakers, and other expert respondents for their generous participation in this study.

We also wish to extend special thanks, in particular, to the following people for their valuable time and insights:

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September 2019

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