Transforming Hong Kong for Tomorrow

Smarter Digital City 2.0

Google

Ipsos

Smarter Digital City 2.0 is a report commissioned by Google
with all methodologies and results delivered by Ipsos.

Foreword

Welcome to our second edition of Smarter Digital City Whitepaper. This annual research report aims to answer one simple question: how can Hong Kong become a Smarter Digital City?

Hong Kong appears well positioned to be a future digital leader due to its diverse talent pool, geographical location within the Greater Bay Area, and open internet infrastructure. And yet, just last year, a government survey on IT usage by Hong Kong businesses found that only 34 percent had a web presence, and around 8 percent had received orders online.[1]

This research, commissioned by Google Hong Kong and conducted by Ipsos, helps us better understand the challenges and opportunities that lie ahead for Hong Kong. The resulting whitepaper considers Hong Kong's approach to digitisation and its credentials as a Smart City, integrating the experiences and views of the city's consumers, small and medium-sized businesses, corporates, policymakers, and neighbours.

The findings from this year's research project indicate that our beloved city has some work to do: the pace of digital adoption remains slow and continues to lag our nearest neighbours in Shenzhen and Guangzhou. While some industries like travel have shown signs of improvement since last year, there is much work to be done in retail, finance and healthcare before Hong Kong realises its potential as a Smarter Digital City.

---

1 Hong Kong Census and Statistics Department, Technology Usage and Penetration in the Business Sector, 2017

Encouragingly, 85 percent of corporates have increased digital investments this year, and 9 out of 10 expect to invest even more in the next two years. However, the outlook is less positive for Hong Kong's small and medium-sized businesses, with only half citing digital as fundamental to their future.

I do hope that you will enjoy reading this whitepaper, and find the information and insights useful, usable and accessible. I welcome your feedback on this year's research findings and recommendations, and trust that you will be able to use these insights as a catalyst for conversations that will uncover opportunities for Hong Kong to become a Smarter Digital City.

Together, we can transform Hong Kong for a better tomorrow.

Sincerely,

Valentine

Leonie Valentine
Managing Director, Sales & Operations, Google Hong Kong

Project Overview

Hong Kong is a leading cosmopolitan city that serves as a unique conduit between East and West. Given the city's stature and its significant resources, there have been high expectations for Hong Kong to become an internationally-recognized, digitally-integrated Smart City, characterised by a robust and diversified economy and higher quality of living. The Smarter Digital City Whitepaper 2.0 explores the most pressing issues for Hong Kong's digital transformation and identifies any continued barriers, opportunities for digitisation, and topics for further exploration.

This whitepaper is designed to inform and inspire action through strategic and tactical recommendations, reflecting the collective experience and insights shared by the more than 2,000 people who generously took the time to participate in this study.

Newly added contents vs 1.0

In 2018, we explore crucial issues for the first time including expectations of innovation surrounding the Greater Bay Area Initiative (GBA), healthcare under Smarter Living, as well as the city's talent gap under Smarter People. The study also breaks new ground to further consider the experience of corporates and small and medium-sized businesses (SMBs).*

---

* For the purposes of this study, 'SMB' 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).

Enabling a city-wide digital transformation requires understanding the perceptions and needs of all stakeholders, spanning consumers, corporates, SMBs, and policymakers. By understanding these needs, digital transformation can be realised with the adoption of pertinent new technologies and behaviors that are worthwhile for all involved.

Consumers

Digitisation

Corporates

Small and Medium-Sized Businesses

Policymakers
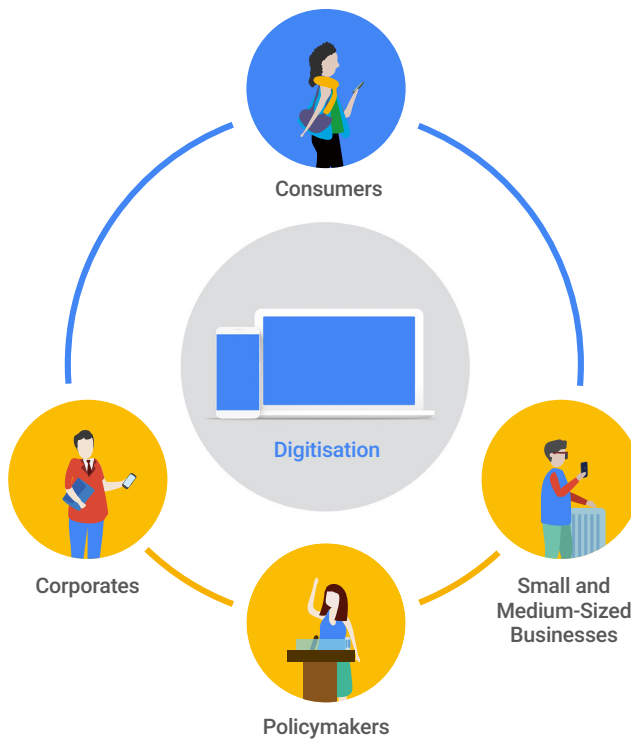
Key Findings

While the government's Smart City plans for Hong Kong are highly commendable, efforts made thus far are still a "work in progress" and yet to be fully recognised by consumers and much of the business community.

Despite its international stature, Hong Kong is not yet perceived to be a leading Smart City by Hong Kong residents. While Hong Kong's infrastructure largely meets expectations, especially when it comes to Internet provision, consumers and corporates both consider there to be major gaps in R&D, technology hubs, app development, and tech talent.

As with last year, consumer digital engagement levels were examined across four vital sectors: Travel, Finance, Retail, and Living. As these sectors are critical for the future health and prosperity of Hong Kong, the government has shared ambitious plans to boost all four as part of its Smart City Blueprint.[1] Of the four sectors considered, only Travel enjoyed a significant year-on-year boost in digital engagement. The other sectors remained relatively flat in comparison, suggesting that progress has been slow to materialise and gaps between expectations and reality remain sizeable, yet addressable.

1 Innovation and Technology Bureau, Hong Kong Smart City Blueprint, 2017

The Business View: Corporates are leading the digitisation path while SMBs need a push

The majority of Hong Kong corporates are keen to play their part and seize commercial opportunities ahead. Seventy-three percent of corporates now anticipate fast or very fast digital transformation in their company. In fact, 85 percent have increased digital investment this year and even more (93 percent) plan to further increase investment levels over the next two years. However, only 50 percent of Hong Kong's SMBs currently see digital as a fundamental part of their business, with even less SMBs anticipating very fast or fast digital transformation in their company, reflecting a digital preparation gap between large corporates and SMBs.

Corporates broadly welcome the collaboration and new opportunities associated with the Greater Bay Area Initiative. They foresee Hong Kong playing a leading role, given the city's well established infrastructure, internet connectivity, and reputable business environment that leverages international connections.

However, many corporates interviewed are unclear how the city, and themselves, stand to benefit from the initiative specifically.

Smarter Travel: Progress made

Although significant digitisation progress has been made and 98 percent of consumers now search for information online before they travel, only 22 percent think Hong Kong's tourism and travel industry has successfully digitised its services, and they are concerned about the reliability of instant information offered. This indicates a disconnect between consumer expectations and what is being offered in Hong Kong. Competition from global travel providers also raises expectations, and risks taking business away from Hong Kong enterprises if they do not adapt to meet consumer needs.

While some still value the personal service offered by 'traditional' travel agents due to accessibility and detailed decision making support, overall digitisation of Travel is underway through every step of the process, from pre-trip research to online check-in to using smartphones to navigate at the destination and digitally managing airline loyalty programs. In the future, only enterprises that can fulfill traveler expectations of a seamless trip experience connecting separate arrangements for improved convenience and simplicity can win the market.

Smarter Finance: Small steps taken, leaps to come

While digitisation in Finance has experienced mixed results, the sector has made small strides, most notably in mobile payments and peer-to-peer (P2P) transfers. Consumers appreciate different benefits from online and offline services. Many continue to bank or apply for products offline mainly due to security concerns, or because they value the reassurance and in-person advice offered around more complex financial products. They value online options due to enhanced convenience and options to complete transactions faster. Taking lessons from the best offline consumer experiences, businesses and institutions must emulate their security reassurances and sense of dependability, while maintaining the ease of use and choices offered online.

Both government and corporates are starting to innovate in this sector, with startups making an impact and the establishment of virtual banks on the near horizon. Many banks still rely on decades-old infrastructure fraught with risks and high costs, presenting an opportunity for adopting new technologies to address legacy issues and improve customer experiences.

Smarter Retail: O2O needs a push

This year's study shows that Retail is primed for a rebound, even though digital adoption on retail journey among Hong Kong consumers surveyed is down four percent compared to 2017. While much of the population still prefers to browse and shop in-store, many Hong Kong retailers have started to keep up with what customers want in a constantly evolving digital era.

Looking ahead, online-to-offline commerce (O2O) is set to dominate Hong Kong's retail environment. With digital infrastructure in place, the pre-store digital experience will serve as an information provider. Such initiatives will strengthen consumer confidence and serve as an interconnector with physical stores. In particular, 'click and collect' represents an opportunity to combine Hong Kong consumers' desire for choice and efficiency with the enjoyment of walking through shops and seeing the final goods in-person. Corporates are taking action to provide a more seamless consumer path to purchase to make the journey faster, easier, and better.

Smarter Living (Healthcare): New challenges require a new approach

With Hong Kong's over 65 population expected to make up around 30 percent of the population by 2036, the healthcare system will face an ever greater burden meaning new approaches are desperately needed for the city to maintain its excellent healthcare standards. Only 21 percent of the public and 11 percent of corporate respondents think Hong Kong's healthcare system has been successfully digitised so far, with delays in diagnosis and treatment highlighted as particular concerns.

Whether deeply analysing data for research and predictive purposes or disrupting the field with one-stop data hubs that aide online self-diagnostic tools, the healthcare sector is innovating through new technologies. Encouragingly, Hong Kong residents trust healthcare providers and the government to look after their data more than any other institutions. While new technology mitigates risks, security and privacy must be protected.

Smarter People: Talent gaps remain

Respondents overwhelmingly agree that to make progress with any of the efforts and initiatives required, having the right talent available will be essential. This year's study suggests that Hong Kong must redouble its efforts to develop and attract the talent it needs.

Only 14 percent of Hong Kong residents think their city is successfully developing talent that can apply technology and science in practice. Concerns remain that this demand cannot be met by current 'production lines', whether it be schools, universities, or vocational training, and indicates the need for further investment and planning to ensure the gap is addressed in both the short and medium term.
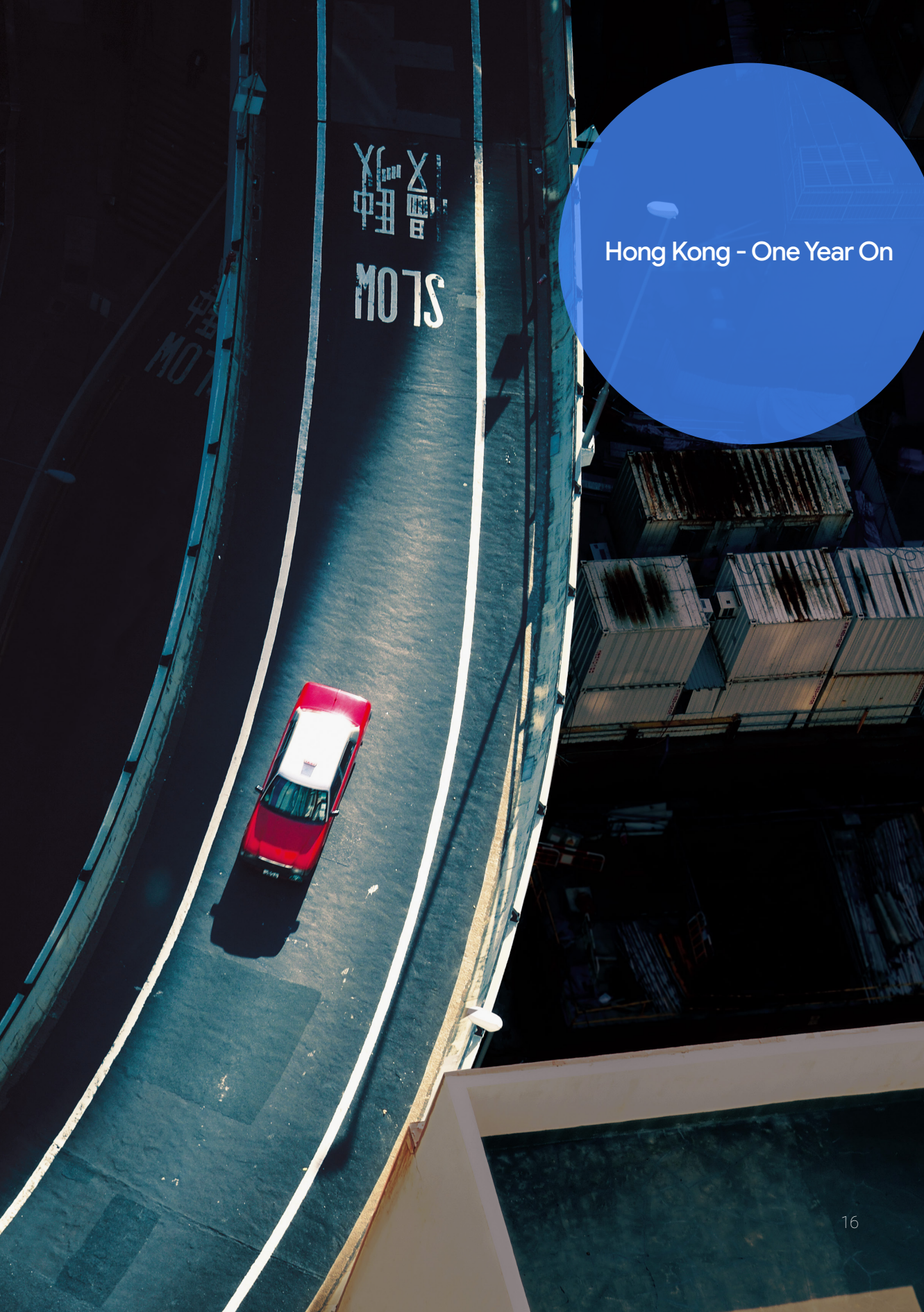
Hong Kong - One Year On

The 'Smart City' concept has increasingly captured the attention of Hong Kong. The launch of the government's Smart City Blueprint last December helped pique considerable interest by signaling the administration's intent to drive innovation and technology. This year has already seen a 90 percent increase of people searching for 'Smart City' related content in Hong Kong.[1]

Like 'Smart City', the Greater Bay Area Initiative, which aims to link Hong Kong and several Chinese cities including Guangzhou, Shenzhen, Zhuhai, and Macau to form an integrated economic hub, also offers a potential rallying cry and catalyst for innovation.

Here we explore the evolving perceptions held by the public and the business community, and consider whether the high expectations for Hong Kong's development as a smart, digitally-integrated city, are being met one year on.

1 Google, Google Search Index Data, 2018

Smart City Perceptions

When discussing smart cities in the region, less than one-third of Hong Kong residents consider their city to be a smart one, ranking it third behind Tokyo and Singapore. Moreover, expectations for future progress are muted. Only 14 percent of the public surveyed think the government is significantly investing in making Hong Kong a smarter city, down one-third year-on-year from 21 percent in 2017.

Top 5 Competitive Smart City Associations: A Hong Kong Perspective

53%	Tokyo
39%	Singapore
30%	Hong Kong
29%	Seoul
23%	Shanghai
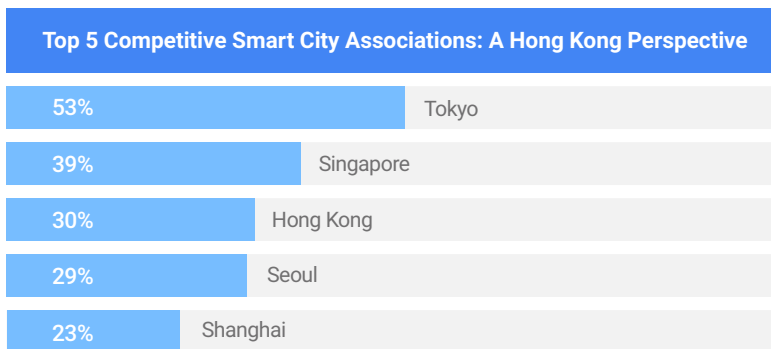
Question: Which of the following would you associate with being a "Smart City"?
Base: n=1219, Hong Kong smartphone users representative.

"Technology development competes with time. If Hong Kong keeps discussing, consulting, waiting for approval, we are doomed to lag behind."

Consumer, 18-24 years old, Digital savvy

When asked how they would define a successful Smart City, respondents were most likely to highlight the importance of basic infrastructure. Both residents and corporates were quick to identify fast and reliable Internet as critical for a Smart City to function and both agreed that Hong Kong meets expectations in this area.

Beyond Internet provision, residents and corporates determined that a Smart City is driven by technical talent development, research and development (R&D), and hubs for tech businesses. Currently, both parties consider these areas to be falling well short of expectations in Hong Kong.

In addition to these factors, corporates also cited cashless capabilities and technological innovation in retail and e-commerce as areas of high importance that are far from fruition in Hong Kong. As such initiatives currently have a way to go, they represent areas of opportunity that can help propel business growth and further realise a prosperous Smart City.

"When compiling innovation index in terms of input factors — infrastructure, education, research, business environment, GDP, legal system, free trade — Hong Kong ranks highly. But when looking at the innovation output — intellectual properties generated, creativity contribution, number of startups, and their ability to commercialise — the city's output ranking is far behind its input ranking. We are not able to convert our input efficiently into useful output."

Professor Dominic Chan, The Chinese University of Hong Kong

Top 6 Attributes Associated with "Smart City"		
Consumers' POV	Associated with "Smart City"	Strength of HK
Fast and reliable internet	39%	40%
Possess hubs for technology businesses	30%	19%
Strong Research and Development	30%	9%
Strong technological talent development	26%	14%
Strong app development	24%	14%
Cashless society	24%	7%

Corporates' POV	Associated with "Smart City"	Strength of HK
Cashless society	40%	11%
Strong technological talent development	37%	18%
Fast and reliable internet	37%	65%
Technological innovation in Retail and e-commerce	36%	13%
Possess hubs for technology businesses	31%	16%
Strong Research and Development	27%	4%

Question: Which three of the following would you most associate with a "Smart City"?
Base: n=1219, Hong Kong smartphone users representative; n=100, All interviewed Hong Kong corporate respondents
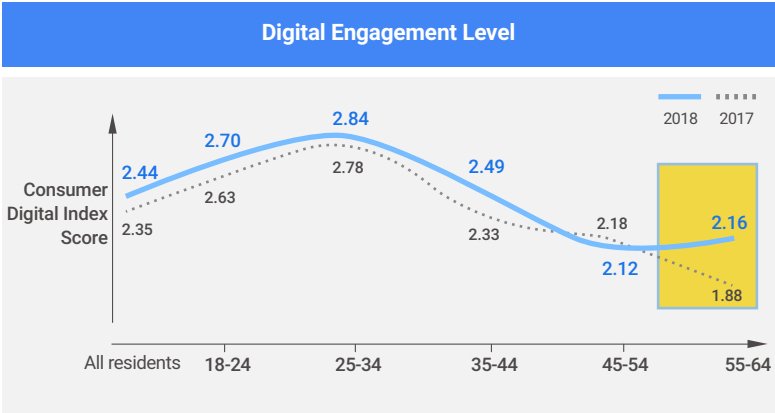
Charting Hong Kong's Digital Engagement Across Consumers and Businesses

Using the same methodology as last year's Smarter Digital City whitepaper to examine the digital engagement level of Hong Kong's residents, this year uncovered that Consumer Digital Index (CDI) scores remained stable year-on-year.

Upswing of digital engagement among senior citizens

Surprisingly, the greatest progress in digital engagement level was concentrated among a significant proportion of Hong Kong's population - residents around ages 55 to 64 made major strides to start catching up with their fellow citizens. The upswing in their digital engagement appears to be following the typical 'Diffusion of Innovations' curve and is a promising example of how the impact of digitisation on quality of life can generate positive momentum.

Digital Engagement Level

	2018	2017

Consumer Digital Index Score

	All residents	18-24	25-34	35-44	45-54	55-64
2018	2.44	2.70	2.84	2.49	2.12	2.16
2017	2.35	2.63	2.78	2.33	2.18	1.88

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

"I have started to use a mobile payment app lately. You can sometimes forget about bringing your Octopus card but you'll always bring a smartphone, so mobile payment has become very convenient now. "

Consumer, 55-64 years old, less digital savvy

Faster digitisation progress in travel

Consumer adoption of digital channels relating to the Finance, Retail, and Living sectors has remained almost unchanged. Of the four sectors, Travel stands out as a noticeable exception, up 11 points this year thanks largely to greater use of mobile navigation and online check-in functions.

Level of Digital Activities Adoption			
	2017	2018	Change vs 2017
🌐 Travel	42%	53%	+11% ⬆
💲 Finance	37%	38%	+1%
🛒 Retail	48%	44%	-4%
🏬 Living	38%	38%	0%
TOTAL	41%	42%	+1%

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

Progress in the Business Community

Corporates have accelerated their digitisation path

While the Hong Kong public ranked Hong Kong to be in the middle of the pack as a 'Smart City' (third out of six total regional cities considered this year), Hong Kong corporates had a comparatively lower outlook, ranking the city to be the least smart of all six regional neighbours. Looking forward, the majority of corporates are keen to play their part and seize commercial opportunities ahead that will benefit both their businesses and the city at large.

Sixty-seven percent of corporates surveyed are proactively researching the latest digital technologies of significance to them, up 19 percentage points year-on-year. This is perhaps unsurprising, given 73 percent of corporates now anticipate fast or very fast digital transformation in their company, another significant bump compared to 2017.

Hong Kong Corporates POVs on Digitisation

+19% vs 2017

↑

67%
of corporates are proactively searching for the latest digital technology

+17% vs 2017

↑

73%
of corporates anticipate very fast / fast digital transformation in their company

+8% vs 2017

↑

93%
of corporates anticipate to increase investment level in next 2 years

+10% vs 2017

↑

85%
of corporates have increased digital investment this year versus 2017

Base: All interviewed Hong Kong corporate respondents, 2018 n=100, 2017 n=101

Illustrating the capacity for digital transformation to stimulate growth, 85 percent of corporates have increased digital investment this year, and 9 in 10 expect to invest even more over the next two years. Machine learning and artificial intelligence, improved cybersecurity, and app development are the standout areas of improvement for corporates this year.
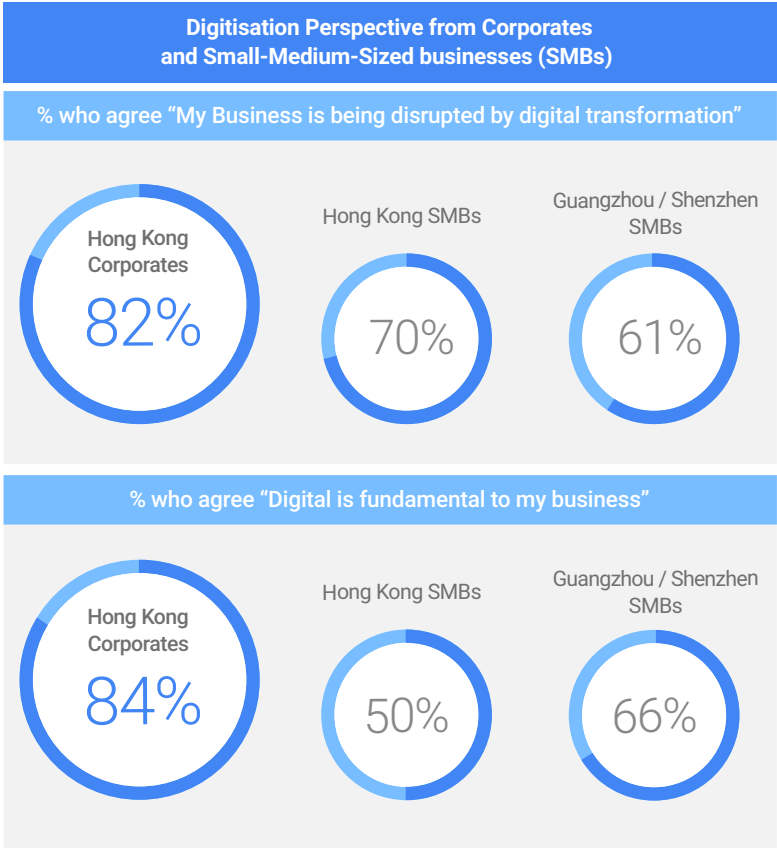
24

Digital Initiatives Launched by Hong Kong Corporates			
	2018	2017	Change
Machine learning / artificial intelligence	47	21	+26
Improved cyber-security	58	40	+18
App development	67	49	+18
Big data / data analytics	70	55	+15
Augmented reality / virtual reality	27	13	+14
Cloud computing	54	41	+13
Digital marketing and advertising	88	83	+5
Digital content creation / digital storytelling	71	69	+2
Cashless payment technology	45	43	+2

Questions: Which of the following digital initiatives has your company already engaged in formal planning?
Base: All interviewed Hong Kong corporate respondents, 2018 n=100, 2017 n=101

SMBs need to actively participate to bolster digitisation

However, the digital outlook is less compelling for the city's SMBs. While the majority of Hong Kong SMBs feel technology is disrupting their business, only 50 percent agree that digital is a fundamental part of their future. SMB counterparts in Shenzhen and Guangzhou are also feeling the effects of digital disruption and more of them consider digital to be fundamental to driving business, which is reflected in their willingness to digitise.

**Digitisation Perspective from Corporates
and Small-Medium-Sized businesses (SMBs)**

% who agree "My Business is being disrupted by digital transformation"

**Hong Kong
Corporates**
82%

Hong Kong SMBs
70%

Guangzhou / Shenzhen
SMBs
61%

% who agree "Digital is fundamental to my business"

**Hong Kong
Corporates**
84%

Hong Kong SMBs
50%

Guangzhou / Shenzhen
SMBs
66%

Base: All interviewed Hong Kong corporate respondents (n=100); Hong Kong SMBs (n=101), Guangzhou SMBs (n=50) and Shenzhen SMBs (n=50)

Moreover, from an action perspective, digitisation for Hong Kong's SMBs has been primarily focused on systems automation as a means of reducing costs and boosting profitability. By contrast, SMBs in Shenzhen and Guangzhou are more likely to invest in cashless payment technology or utilise big data, with a greater focus on improving customer experience and customer acquisition.

The Greater Bay Area Initiative

The growing discussion and collaboration among the regional neighbours will stimulate Hong Kong's digital transformation.[2]

"The Greater Bay [Area] is a vision. It expands the market opportunity beyond Hong Kong and positions our nearby cities clearly, focusing on their strengths. It makes this region stronger. It will help Hong Kong and the region as a whole, in terms of business opportunities, talent availability, and exchange."
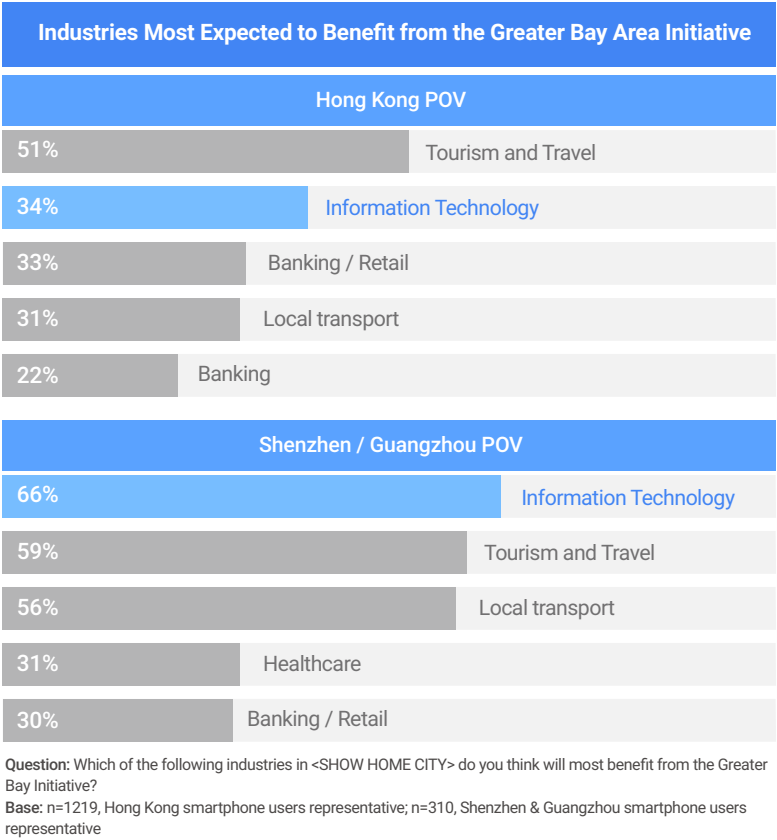
Janis Tam, Swire Resources Limited

Interest in the GBA is growing fast but clarity can be improved

From a shallow base, there has been a 146 percent increase in searches relating to the GBA in the last year,[3] primarily driven by interest in physical infrastructure, plans, and news coverage. Eighty-seven percent of the public are aware of the GBA Initiative, but only 15 percent of those surveyed consider themselves to be familiar with it.

After the GBA Initiative was explained to them, over half of Hong Kong participants surveyed expected the travel and tourism sectors to benefit most from it. Only one third of Hong Kong respondents anticipate the GBA will improve local information technology; by comparison, neighbouring cities Shenzhen and Guangzhou see digital as a business foundation and expect the GBA to further boost their information technology industry. The paths to success for the GBA Initiative and Hong Kong's digital transformation are intertwined, yet the ultimate destination and rate of progress remains unclear.

2 KPMG: The Greater Bay Area Initiative, 2017
3 Google, Google Search Index Data, 2018

Industries Most Expected to Benefit from the Greater Bay Area Initiative

Hong Kong POV

51%	Tourism and Travel
34%	Information Technology
33%	Banking / Retail
31%	Local transport
22%	Banking

Shenzhen / Guangzhou POV

66%	Information Technology
59%	Tourism and Travel
56%	Local transport
31%	Healthcare
30%	Banking / Retail

Question: Which of the following industries in <SHOW HOME CITY> do you think will most benefit from the Greater Bay Initiative?
Base: n=1219, Hong Kong smartphone users representative; n=310, Shenzhen & Guangzhou smartphone users representative

While 34 percent of Hong Kong corporates claim to already be familiar with the GBA Initiative, there is a significant opportunity for higher volume and more targeted communications from leaders and policymakers. Such an effort can help ensure the GBA Initiative serves as a driver for progress.

Optimistic but unclear on Hong Kong's position

Corporates interviewed broadly equate the GBA with greater access to a market that allows for a free flow of resources, people, information, and goods. There is a sense of confidence that Hong Kong's businesses possess the necessary soft skills and experience, particularly in the finance and real estate industries, to help enterprises across the region better compete in a new international digital economy.

"By no means should we shunt ourselves to the wings, we should be able to merge in, play a core and competitive role, unless we are willing to be faded out from the international stage as a fishing village."

Richard Yeung, Convenience Retail Asia Ltd

Equally, Hong Kong stands to benefit from the comparative strengths of its neighbours, especially from innovative approaches to product development and the potential offered by a substantial and highly productive workforce. Shenzhen, in particular, is highly regarded as a leading tech talent hub with a burgeoning track record for smarter, digitally integrated, urban planning - crucial resources for Hong Kong's digital transformation. While there is more work to do as the GBA Initiative continues to take shape to define a more detailed and integrated roadmap for the region, there is plenty of reason for optimism amongst Hong Kong and its neighbours moving forward.

Findings by Sector

Mirroring the Hong Kong government's commitment to make people happier, healthier, smarter and more prosperous, and to encourage businesses to help foster innovation, this study includes deep dives into four sectors central to Hong Kong's ongoing development: Travel, Finance, Retail, and Living.

Smarter Travel   **Smarter Finance**   **Smarter Retail**   **Smarter Living**
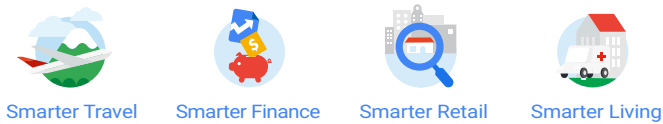
For all four, the objective for policymakers, businesses, and other stakeholders should be to promote greater personalisation, effectiveness, and enhanced experiences. Consumers expect to be able to make faster decisions and for companies or other providers to respond quickly to their needs, whether it be securing insurance, booking a last-minute trip abroad, or handling a complaint. Increasingly, this means consumers will seek more advanced functionality and increased sophistication from existing tools, with technology playing an ever greater role in streamlining their lives.

While new technologies and approaches can enable a more convenient way of life for consumers, they can also help to lessen the burden on providers. Whether it be the costs of servicing physical stores and bank branches, or the difficulty of treating millions of outpatients patients at a hospital, digitisation can empower more sustainable and cost-effective services.

In this section, we explore the current state of play and what policymakers and the Hong Kong business community can do to promote positive change for Travel, Finance, Retail, and Living. Ultimately, what lies at the heart of all these sectors are the People of Hong Kong. With this in mind, we delve into the current state and prospects of the city's collective talent and human resources -- the fundamental driver of Smart City transformation.

Smarter Travel

Smarter Travel encompasses the technology, infrastructure, and online & offline travel solutions, which combine to provide a hassle-free and more enjoyable experience from start to finish.

For some travelers, their priority might be finding the perfect hotel and the cheapest flights. For others, it could be discovering new ways to connect with a destination, through map-based recommendations, translation tools, or unique homestays.

Hong Kong's Smart Travelers

Faster digitisation progress in travel

Of all the sectors explored in this year's study, Travel has made the most progress; with digital engagement up 11 points year-on-year.

Changes in behavior most responsible for driving this shift are the use of smartphones for navigation when traveling, and using smartphones for online check-in - two examples of simple and cost-effective ways technology is making travel easier
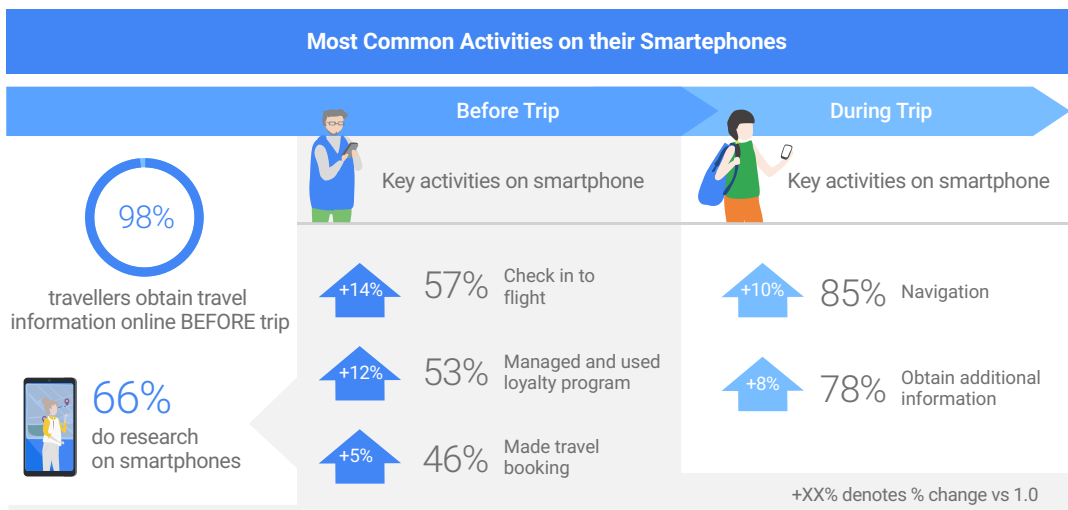
Of the more than 70 initiatives included in the Hong Kong Government's Smarter City Blueprint, Smarter Travel featured heavily.[1] Reduced waiting times and a hassle-free journey are a priority for all travelers, whether business or leisure; to this end, Hong Kong International Airport is cutting queues and accelerating check-in by introducing smart luggage tagging and facial biometrics, while augmented reality (AR) in a mobile app will soon help travelers find their way.

1 Innovation and Technology Bureau, Hong Kong Smart City Blueprint, 2017

Consumers expect more from travel digitisation

Ninety-eight percent of consumers now search for information online before they travel and 66 percent of them search using smartphones, where they have increased their engagement on usage like flight check-ins, loyalty program management, and navigation during trips.

However, frustrations remain. Only 22 percent of residents think Hong Kong's tourism and travel industry has been successful in digitising its service.
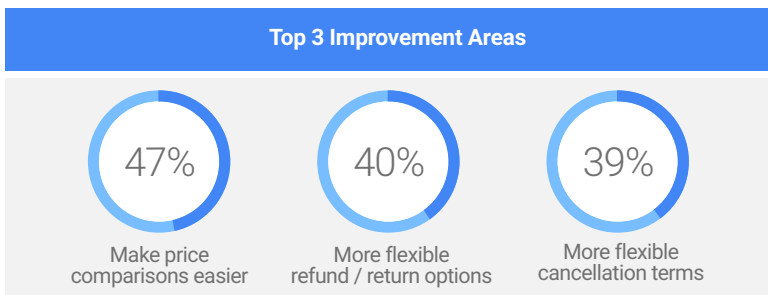
Most Common Activities on their Smartephones

Before Trip	During Trip
Key activities on smartphone	Key activities on smartphone

98% travellers obtain travel information online BEFORE trip

66% do research on smartphones

Before Trip
- +14% **57%** Check in to flight
- +12% **53%** Managed and used loyalty program
- +5% **46%** Made travel booking

During Trip
- +10% **85%** Navigation
- +8% **78%** Obtain additional information

+XX% denotes % change vs 1.0

Base: n=1,062, those who have planned a trip in past 12 months, sourced from n=1,219 Hong Kong smartphone users representative

Pain point 1: Outdated information overload

Smarter Travel starts with smarter planning and smarter bookings. There is currently a disconnect between consumer expectations and what is being offered in Hong Kong.

When consumers currently search for information or compare different offerings online, they are often overwhelmed with crowded and confusing offers from online travel agencies (OTAs), hotels and airline companies. Forty-seven percent of travelers call for easier price comparison options to improve the booking experience. When it comes to finding the information they need to make their decisions, 35 percent of Hong Kong residents request improved real-time price bidding on flights and hotels to augment their travel booking experience. This finding suggests information being presented is failing to sync with expectations and is not real-time.

Top 3 Improvement Areas		
47%	40%	39%
Make price comparisons easier	More flexible refund / return options	More flexible cancellation terms

Question: Which of the followings are critical to improve your satisfaction?
Base: n=300, Smarter Travel Bookers

"Data on the comparison websites might not synchronize with the latest promotions by individual hotel or airline company in real time, demanding extra effort to check them out. Even for the same booking platform, different language versions offer different prices. "

Consumer, 35-54 years old, digital savvy, Travel vertical

Pain point 2: Inconvenient smartphone UX

Consumers continue to rely on laptops during the discovery and booking stage, with smartphones becoming more valued once a trip is underway. Concerns over mobile payments (43 percent) and websites or services not being smartphone friendly (40 percent) were cited as significant concerns by Hong Kong consumers.

Device(s) Used for the Below Travel Activities	On Smartphone	On Laptop	Gap
Searched information before trip	66%	73%	-8%
Made travel booking	46%	79%	-33%
Managed and used hotel / airline / car hire loyalty card / membership program	55%	63%	-9%
Check in to flight	57%	48%	+9%
Searched for travel information during my trip	78%	38%	+40%

Base: n=1,062, those who have planned a trip in past 12 months, sourced from n=1,219 Hong Kong smartphone users representative

"I can see more information on a desktop, some filtering functions and data are missing on the mobile versions."

Consumer, 55-64 years old, digital savvy

Apart from expecting the aforementioned pain points to be addressed, consumers are also expecting even more progress from the travel industry.

Higher expectation: Beyond pricing matters

While a focus on price is undoubtedly important for many travelers, it negates other crucial elements of Smarter Travel, including the ease and enjoyment of a journey or stay. Current price comparison-based acquisition and linked products, from flights to car hire, do not cater to other considerations associated with a more premium or differentiated service.

Many Hong Kong consumers still value the personal service offered by 'traditional' travel agents and feel more confident making bookings when having someone to offer recommendations and answer their questions.

"You have to search for a hotel, find it on Google Maps, and then look for comments on how to find it. There's a lot of homework to do."

Consumer, 25-34 years old, less digital savvy

Speeding Up the Pace of Progress and Facing New Development

Many travel businesses in Hong Kong are cautiously waiting for more evidence of local consumer demands shifting, rather than directing consumers to new, smarter solutions.

This wait-and-see approach will not help Hong Kong establish itself as a Smart City and transform one of its most four crucial industries. Globally, competition is fierce. Leading international OTAs are rapidly improving their offer and earning even greater market share, with some investing more than $1 billion a year on new technology.[2]

"If you want to grow, you need to open up new channels and reach out to new audiences and have new ways of doing business."

Akina Ho, The Great Eagle Company Limited

"A lot of the ways you feel quality is by touch and feel or by the experience, but with digital you don't really get that, you get a very one-dimensional thing. I think it's wait and see and there's pressure on brands to change the way they do that."

Edward Bell, Cathay Pacific

2 Deloitte, 2018 travel and hospitality industry outlook, 2018

Besides driving new initiatives, it's always useful to open up to see how global trends develop in the local market. The sharing economy's impact on the travel and tourism is unrelenting and in Hong Kong, 59 percent of corporate respondents believe the sharing economy could benefit tourism. The sharing economy also impacts consumer expectations - particularly around price, flexibility, and richness of experience.

Globally, Airbnb is now the most searched travel brand behind Booking.com, and vacation rental brand searches are up 22 percent year-on-year. On the other hand, hotels are at three percent and OTAs at eight percent, suggesting pressure on 'traditional' players is unlikely to lessen anytime soon.[3]

3 PhocusWright, Asia Pacific Online Travel Overview Tenth Edition, 2018

Way Forward

Tailored travel experiences

While Hong Kong consumers welcome the competitive prices offered through online search tools, many lament the lack of the personal touch and service associated with more traditional channels. Sixty-nine percent of travelers are more loyal to a travel company that offers personalised experiences online and offline.[4]

The complexity, scale, and competitiveness of the travel business requires a degree of speed and sophistication difficult to achieve through manual means. Processes need to be incredibly efficient and nimble to meet consumer expectations, enabling them to quickly book flights, accommodation and other travel-related services.

To better tailor travel experiences to suit individual needs and avoid information overload and tiered product comparisons, travel companies should deliver personalised information to different travelers that is specific to the occasion, from planning family holidays to booking month-long business trip itineraries, in order to curate unique travel packages and experiences.

4 Google, 3 ways travel marketers can fine-tune their measurement strategy, 2017

Furthermore, optimising the reach and messaging of marketing efforts on smartphones can increase customer satisfaction through initiatives that cover everything from customer service chatbots to the identification of preferred air routes.

"One of the next digital trends that will drive the travel industry is AI. We have gone through the period of no information to overwhelmed information, and the next one will be the personalisation of information."

Eric Gnock Fah, Klook

"You can build incredibly elaborate itineraries [...] and be very surgical about where and how you want to spend your time; you know where you want to put the money into things. It's all about personalisation."

Edward Bell, Cathay Pacific

Differentiation through experiences

For airlines, and even more so for hotels, there is downward pressure on pricing. The prevalence of OTAs not only slims margins but also limits opportunities to build direct relationships with customers necessary to create better, more personalised experiences.

Industry consolidation also aggravates efforts to differentiate. Loyalty programs continue to be commonplace and essential, but there are many ways vendors can inspire consumers through innovative experiences - particularly for premium or business travelers who are less motivated by the bargain-hunting frequently championed by OTAs.

There are endless possibilities to engage consumers, from inspiration (including videos and virtual reality) to research (custom content), and the in-destination experience (immersive technology and personalised guides).

For example, one international luxury hotel group is pioneering 360° video and photography virtual journeys, optimised for mobile and tablet users, to differentiate and drive direct reservations with high-value customers. Additionally, WiFi, GPS and NFC technology can facilitate greetings or offers based on a guest's location and situation.

"Hong Kong is a place where East meets West, reflecting the city's mix of talents and cultures, as well as its strong flow of travel with the world. All these enable the flourishing collaboration of travel and technology here."

Eric Gnock Fah, Klook

Smarter Finance

Smarter Finance promises customers more personalised financial services and transactions with improved mobility, speed, ease and security. The focus for Smarter Finance is improved customer experience facilitated by better understanding of each customer's needs that delivers personalised or even tailor-made products and services.

"Smarter Finance means the provision of more customer-centric financial services where transactions will be conducted with greater speed, safety, mobility, and convenience."

Nelson Chow, Hong Kong Monetary Authority

However, finance has been one of the last sectors to be significantly transformed by technology, with many products and ways-of-working remaining largely unchanged. Regulatory demands, legacy systems, and industry complexity have all dampened the impact of I&T disruption.

Hong Kong boasts many innovative fintech companies which have made a modest impact on the general population. While there is still room to grow, Smarter Finance has started to gather some momentum moving forward. Leading corporates have also started to realise the importance of their role in not only detecting consumer pain-points, but in addressing them with solutions.

Shifting Customer Expectations

Increasingly, customers expect seamless and personalised experiences from their banks and insurers, much like those provided by other commercial applications. From a commercial perspective, physical branches and call centres are costly to maintain, and these industry stalwarts cannot meet the growing demands of a Smart City.

Fast and reliable interactions are highly valued, with online and mobile increasingly relied upon for personal banking, as well as comparing credit cards and other financial products.

"I prefer to bank online instead of holding my phone, queuing up, pressing buttons, listening to the boring music and waiting for so long."
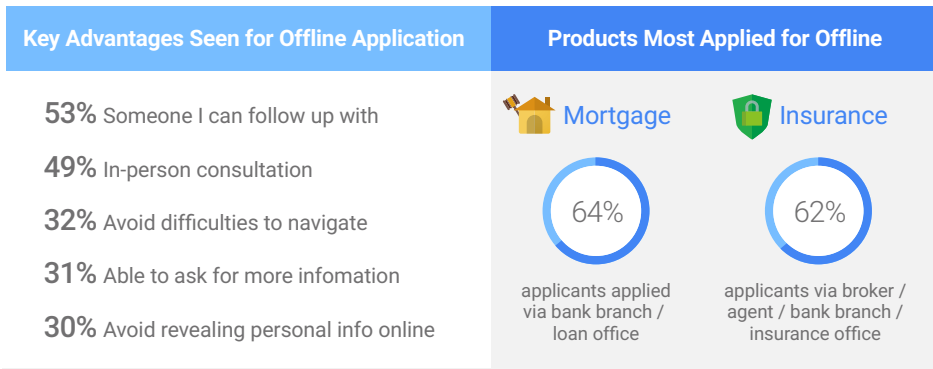
Consumer, 35-54 years old, digital savvy

Simpler banking

Fifty-seven percent of Hong Kong residents have used a smartphone to make a payment in the past month and 44 percent have made a P2P money transfer using a smartphone in the same period, up 11 percentage points year-on-year.

HSBC is one of the big players making progress in the P2P payments space, with its PayMe app recently reaching one million customers in Hong Kong. Not only do products like PayMe make life easier for users, they simultaneously provide the bank with greater opportunities and data points to better understand and serve its customers.

While customers are responding to simple and streamlined solutions online, many find offline engagement provides them with more tailored products and services, including after-sale services. Customers also tend to ask questions and want follow-up support when considering financial products and so in-person consultation (49 percent) and having a contact to follow up with (53 percent) were seen as major benefits for offline application, establishing it as the primary means of applying for complex financial products like mortgages and insurance.
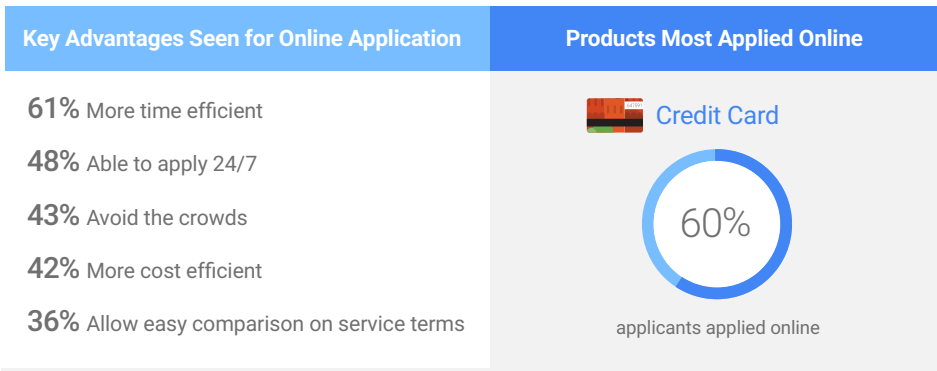
Key Advantages Seen for Offline Application	Products Most Applied for Offline
53% Someone I can follow up with	🏠 Mortgage — 🛡️ Insurance
49% In-person consultation	**64%** — **62%**
32% Avoid difficulties to navigate	applicants applied via bank branch / loan office — applicants via broker / agent / bank branch / insurance office
31% Able to ask for more infomation	
30% Avoid revealing personal info online	

Base: n=300, Smarter Finance Applicants; includes n=50 Mortage, n=50 Loan, n=100 Credit Card, n=100 Insurance

When it came to online, consumers mostly used online platforms to apply for credit cards, while commending the process for being more time efficient (61 percent) and for being available 24/7 (48 percent).

There are opportunities for banks and financial services products to connect offline and online in an omni-channel approach that could make their offerings both personalised and efficient, with the right support and customer service in times of need.

Key Advantages Seen for Online Application	Products Most Applied Online
61% More time efficient	Credit Card
48% Able to apply 24/7	
43% Avoid the crowds	**60%**
42% More cost efficient	
36% Allow easy comparison on service terms	applicants applied online

Base: n=300, Smarter Finance Applicants; includes n=50 Mortage, n=50 Loan, n=100 Credit Card, n=100 Insurance

Value trust and transparency

On-demand insurance coverage and instant credit card applications have become increasingly available with just a few clicks. While commoditization has encouraged competition, intensified pricing sensitivities, and offered an array of easily attainable solutions, this commoditized market has also rendered the best options indistinguishable to some consumers who are unsure of what to look for.

Some respondents professed concern with the lack of a trusted way to compare different options available to them. When lacking the means to properly gauge the trustworthiness and transparency of the information presented, the benefits of easy-to-use on-demand comparisons is quickly lost.

"There's no single comparison tool centralizing data to ease comparison. Some comparison websites with a stronger database include more cards, but I have to cross check different platforms to validate the information."

Consumer, 35-54 years old, digital savvy

For both online and offline applications, security and credibility are most valued by consumers. Whether through internal infrastructure and robust operating procedures, or external communication and dependable user experience, emphasising security and building credibility are paramount to establishing trust. To deliver the online processes expected of a trusted financial provider or service, a clear and accessible UI and UX encompassing all required information is a must.

Important Factors in Application Experience	
Those who made application online	**Those who made application offline**
Functional	*Functional*
56% Can complete transaction quickly	**47%** Low overall cost
53% Easy to use	**45%** Offers good customer service
43% Low cost overall	**34%** Can complete transaction quickly
Emotional	**Emotional**
67% Secure	**67%** Credible
58% Credible	**58%** Secure
53% Simple	**53%** Reassuring
51% Reassuring	**51%** Simple
28% Exclusive	**28%** Responsive

Base: n=300, Smarter Finance Applicants; includes those who made application online (n=118), those who made application offline (n=182)

Drained by Legacy Infrastructure

Established enterprises are often hindered by legacy infrastructure, including siloed systems and manual processes. Numerous institutions still run large portions of their transactions through decades-old mainframes, creating operational risk.

Equally, massive data and application silos have proliferated across lines of business. Consequently, business operations often rely on significant manual processes that are fraught with risk while also being costly, with maintenance dominating 75 percent of IT budgets. This complexity results in fractured insights, due to limited views of customers, operations, products, and a lack of agility to deliver personalised customer experiences.

Confidence around data protection remains low in Hong Kong, as only 30 percent of residents trust financial institutions to look after their data. Risk management processes in Hong Kong have traditionally been manual and fragmented, creating vulnerabilities. At the other end of the spectrum, bad actors are growing increasingly tech-savvy, meaning financial institutions must continue to focus on risk and fraud protection, particularly with regard to 'know your customer' (KYC), credit card fraud, and anti-money laundering (AML).

Innovation Paving the Way

Following years of relative stagnation, fintech innovators have started to gain funding and scale, and are disrupting traditional players by offering new digital capabilities with speed and simplicity that increase customer expectations.

As is the case in other global financial hubs, competition for customers and expertise is growing. Banks have invested in fintech companies and programs to help catch up, but now they must accelerate widespread innovation across their products and operations.

The government is playing a growing role and there are now more than 250 fintech companies in Cyberport alone. Notably, the government will launch the world's first Faster Payment System in September 2018, linking different banks and systems for payments in Hong Kong dollars and Chinese Renminbi anytime and anywhere.

Moreover, the Hong Kong Monetary Authority (HKMA) will facilitate the establishment of virtual banks in Hong Kong from next year - further raising the importance of building trust online through quality service and an enhanced user experience. Not only will this offer new customer experiences, it should also help promote financial inclusion, particularly for the city's SMBs in need of funding and assistance to support their own digital transformation.

"As a rule of thumb, when there is competition, everyone will look for improvement, without it, everyone will stay stagnant. Virtual banking is one example, and it's beginning to improve actually."

Tat Lee, WeLab

Way Forward

Collaboration with shared vision

Adopting a collaborative rather than competitive mindset, such as that which exists for a start-up within an accelerator, allows for more rapid development of smarter digital solutions. For example, if banks and insurers could securely connect and share relevant customer data, and deploy streamlined business processes with advanced analytics and AI, these new capabilities could help them become more agile to adapt quickly to changing business needs.

Additionally, companies can adopt open standards and create APIs that enable them to partner more effectively with startups, researchers, and other innovators to develop new solutions to old problems, as well as novel offers and experiences.

Collaboration can reduce the time and costs required to launch new products which benefit Hong Kong customers while creating more opportunities for all parties to benefit. The public stands ready to adopt such innovations, as 52 percent of Hong Kong residents would welcome more technology companies offering financial services products, and 59 percent would welcome new distribution models for insurance.

Thus far, there has been a lack of sufficient incentive for industry players to cross-collaborate. Respondents believe the government has a role to play in encouraging collaboration and securing data pools. This can promote innovation and raise awareness of the advantages offered by Smarter Finance, which in turn can encourage consumers to try new options and reap the benefits.

"A single player will not be able to make the change. You'll need many players in the market to join hands and work together to bring change. We are looking forward seeing the existing banks or the conglomerates promoting fintech."

Tat Lee, WeLab

Better understanding by smarter data usage

Hong Kong's financial institutions do not suffer from a lack of data, but gaps in data storage and analysis form barriers that prevent capabilities such as queries over large data sets to generate new insights, and AI-assisted strategic decision making.

Processing data and applying findings through smart implementations such as machine learning or language processing APIs can potentially make it easier to understand customers, predict behaviors, and anticipate moments of need. These solutions are mutually beneficial; they can help finance companies to personalise help-center content, conduct real-time sentiment analysis, sort and route customer inquiries for faster resolution and provide product recommendations.

For example, AXA has used machine learning to predict if a driver may cause a "large-loss" traffic accident with 78 percent accuracy. Not only does it safeguard against risky drivers, but it can also help to reward safe drivers with faster decisions and lower premiums.

To grapple with the increasing volume, velocity, and complexity of data that must be analysed to monitor and manage risk adequately, artificial intelligence analyses petabytes of data in minutes, helping banks track billions of transactions to identify patterns of fraudulent behavior—and perform more comprehensive credit and risk analysis.

Cultivate talents for innovation

As with every element of a Smart City, hiring and developing the right talent will be crucial to facilitate Hong Kong's Smarter Finance journey. With diminishing demand for manual processes and a growing demand for digital skills (data analysis, engineering, ML specialists), business cultures must find ways to nurture the next generation of local fintech talent.

While financial institutions have made progress investing in technological integration, they will be well-served to focus on developing talent and equipping their workforce to function in the new digital environment. To accomplish this, businesses can explore existing programs that empower them to advance fintech initiatives while creating more opportunity for talent to apply their learned skills and gain new ones. Talent can also be further developed when businesses actively partner with startups and tech firms to facilitate knowledge exchange. Through joint seminars, workshops, and accelerator programs, businesses can expand their talent knowledge base as well as inspire potential contributors to further pursue their interest in tech.

"You hear more and more people share about fintech in recent years, but there is only a scarce number of people who truly master the financial technology. They are either highly talented with no knowledge of finance or finance talents with no technology background. It's still extremely hard to find someone with the mindset or experience of both."

Tat Lee, WeLab

Smarter Retail

Smarter Retail puts the customer front and center, creating an experience which offers convenience, choice, and fast fulfilment.

Hong Kong retail purchases are already heavily influenced by digital. The technology and touchpoints utilised depend entirely on the customer and their personal purchase journey.

"From consumer's point of view, Smarter Retail should mean no matter where and when I buy, I get the greatest convenience and satisfaction"

Janis Tam, Swire Resources Limited

The Hong Kong Retail Journey

Year-on-year, little has changed for retailers and shoppers in Hong Kong. A concerted push from corporates and the government has not yet made a notable impact. Digital adoption among Hong Kong consumers surveyed is down four points compared to 2017.

The use of smartphones for retail has been steady in Hong Kong year-on-year and continues to be completely dwarfed by usage in Shenzhen and Guangzhou which are both typical mobile-first markets, with infrastructure and logistics better suited to e-commerce.

Activities Conducted with Smartphones		
Hong Kong Consumers		**Shenzhen / Guangzhou Consumers**
42%	Make a purchase	66%
43%	Make reservation when eating out	62%
39%	Order delivery	76%

Base: n=1219, Hong Kong smartphone users representative; n=310, Shenzhen & Guangzhou smartphone users representative

Much of the Hong Kong population still prefers to browse and shop in-store, with e-commerce absolute numbers accounting for just 4.7 percent of total sales, significantly lower than the 14.6 percent in APAC.[1]

However, based on industry leaders' opinions, online shopping awareness is growing around the new retail options coming to market.

"Not much has changed in the past two years. The main difference is that people are more aware of the need to change, but it ends there because they don't know how to change."

Ricky Wong, Hong Kong Television Network Limited

1 eMarketer, Asia-Pacific Retail and Ecommerce Sales, 2018

For Hong Kong, online to offline (O2O) commerce is of particular significance and is well suited to leverage the city's retail density, traditional consumer preferences, and world-leading smartphone penetration with combining the best of both worlds.

'Click and collect' represents a vital cog in the O2O machine. Respondents reported increasing demand to make purchases via an app or website, while still preferring to collect their items in-store. As a result, pick up in store continues to exceed delivery volume.

A more efficient experience with easy delivery and price comparisons are seen as the key advantages of shopping online. Poor product variety is the biggest weakness associated with Hong Kong's e-commerce businesses, reflecting a growing expectation that consumers should be able to get everything they need in one go.

Key Advantages Seen for Online Purchase	
44% Delivers to my door	**33%** Can avoid the crowds
42% Easy price comparison	**30%** More cost efficient
41% More time efficient	

Questions: What do you see as the key advantages of buying online instead of in-store?
Base: n=300, Smarter Retail Purchasers

A largely convenient retail environment

Compared to many large cities, the convenience gap between online and offline retail is less pronounced in Hong Kong. For everyday goods and even luxury items, brick and mortar outlets are omnipresent, open until late, and feature prominently in commuting routines, sitting side-by-side with offices and socializing hotspots.

"Physical retail space is still very important because shopping centres and malls are not only places where people go for entertainment and leisure, but also a hub for social functions as well."

Damien Wu, Link REIT

Whereas shopping centers in other developed markets, particularly out-of-town locations, are struggling, Hong Kong's malls and supermarkets benefit from being within walking distance of large residential areas which suits consumers who favour the immediacy of bricks and mortar.

The city's retailers have also traditionally benefited heavily from shoppers visiting from the Chinese Mainland, with more than 44 million coming to Hong Kong in 2017, up 3.9 percent year on year.[2]

2 China Daily, Hong Kong tourist arrivals up 3.2% in 2017, 2018

The personal touch still matters

One reason that offline channels dominate is that many Hong Kong consumers value opportunities to 'touch and feel' certain products before purchasing, particularly apparel, accessories, and beauty products. Over half of respondents suggest that being able to assess an item in-person is the key advantage for offline purchasing. When shopping for luxury goods, a face-to-face 'pampering' experience also continues to be highly valued. Anecdotally, once consumers know their brand, size, and colour preferences, they are more likely to use online channels for future purchases.

Key Advantages Seen for Offline Purchase	
55% Can touch and feel the product	**40%** Trust the quality while making a purchase from store
47% With me right away	**32%** It is convenient to go to store
41% In-person consultation	

Questions: Which of the followings are the key advantages of buying from a store instead of online?
Base: n=300, Smarter Retail Purchasers

A Risk-Averse Business Culture

Broadly, respondents suggest that consumers will adopt whatever option is the cheapest and most convenient for them. Rather than consumers being resistant to change, often the reticence stems from the retailers who have delayed or resisted enacting new technologies or initiatives.

This is reflected in only 17 percent of SMB retailers in Hong Kong engaging in e-commerce, compared to 46 percent of their counterparts in Shenzhen and Guangzhou. Smaller retailers still see their primary competitors as the 'shops next door' rather than a global e-commerce player. Concerns over the risks of implementation costs are the most common reason stated by Hong Kong's SMBs which have refrained from embracing digital, hindering overall progress.

"If the technology you offer makes the purchase journey or the process easier, consumers will adopt it. I think a lot of companies don't understand that. There has to be a huge commitment to change"

Richard Yeung, Convenience Retail Asia Ltd

Way Forward

Although relatively slow and siloed, clear progress is being made to facilitate Smarter Retail in Hong Kong. For instance, Circle K is now using artificial intelligence for product recognition, making self-checkout easier and reducing the time customers spend queuing. Meanwhile, other initiatives like smart labeling are helping to make supply chains more efficient and reducing the environmental impact of transporting and storing products.

Despite pockets of progress, Hong Kong's wider e-commerce environment must evolve to meet growing expectations and safeguard against increased competition from international players, as well as the rising costs associated with running traditional brick-and-mortar stores.

While offline costs increase, online tools, spanning digital marketing to business operations, continue to become more accessible for even the smallest or niche retailers. With world-record levels of smartphone penetration, being mobile-ready is essential. Despite this, many brands and retailers still do not invest in the basics, like mobile-friendly websites, nor do they embrace innovative measures such as app development. As well as offering a strong sales channel for e-commerce and 'click and collect', these brand-owned channels offer enormous value from a CRM perspective.

Know your customer

It has been a long time myth that Hong Kong consumers aren't online. In actuality, 79% of Hong Kongers have smartphones, and 98 percent of them go online once per day.[3] Digital is already ingrained in the shopping journey, as 86 percent of Hong Kong consumers will use digital channels to research information prior to purchase. As more and more consumers seek to engage with brands online, it becomes inevitable for both corporate and SMB retailers to digitise and shape the experience from the consumer perspective.

The foundation of Smarter Retail is a nuanced and continuously updated understanding of the customer and their needs. By analysing data and implementing new strategies, retailers are better able to deliver value by engaging consumers at the right time and right place, with offers and an experience tailored to them.

"Most retailers don't die because of technology, it's because they don't keep up with what customers want. Customers are changing a lot faster because of technology. Many people get confused by that."

Richard Yeung, Convenience Retail Asia Ltd

Building the foundation

To entice Hong Kong consumers, SMBs must be present where their customers are (offline and online). Boasting a digital presence - simply having a website or an app that is easily located through search - is key before discussing the utilisation of more advanced technologies. As more and more corporates and SMBs successfully build their online presence, a more thorough and complete retail ecosystem will follow.

3 Hong Kong Census and Statistics Department, Thematic Household Report no.64, 2018

Bridge the gap between offline and online

Purchase decisions are increasingly complex and the barriers between offline and online are dissolving, with 6-in-10 Hong Kong luxury consumers now expecting to enjoy the same shopping experience regardless of channel.[4]

Investing in technology and encouraging digital interaction can help retailers to better connect both online and offline, creating a seamless experience for their customers. This, in turn, shortens the decision cycle, alleviating uncertainty around product choice, product availability, or concerns around quality and suitability.

Today, engaging content and personalised promotions, delivered through a device or interaction, can excite or reassure, transforming a lead into a sale. Businesses need to rethink and refresh their ways to interact with customers, for example, using videos to share more product information and reviews; offering on-the-spot coupons and reminders when customers are nearby; or creating immersive in-store experience and mobile guidance with technology across platforms, especially via mobile. Getting the basics right, and getting the cross-functional teams working together are critical.

Smarter Living

Hong Kong has the highest life expectancy in the world with relatively low costs for patients.
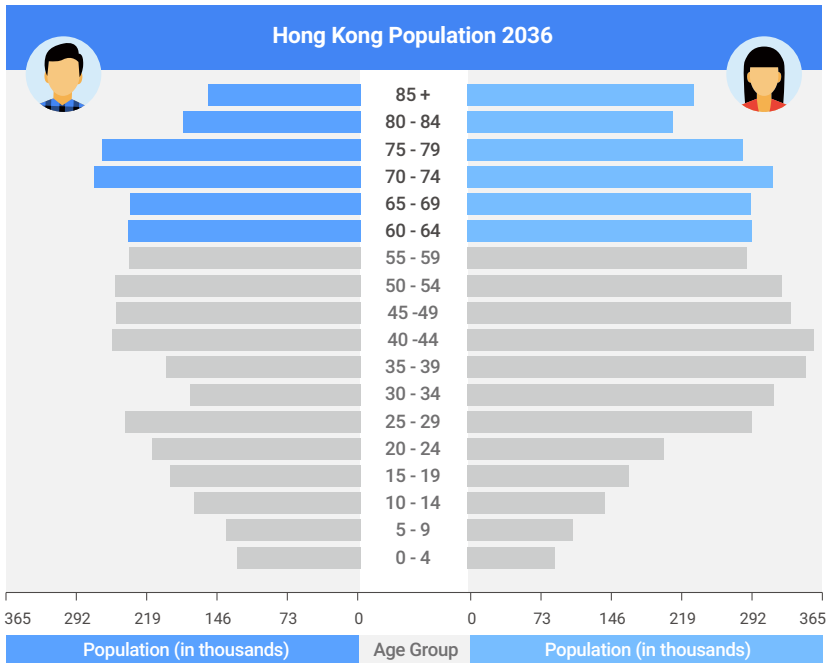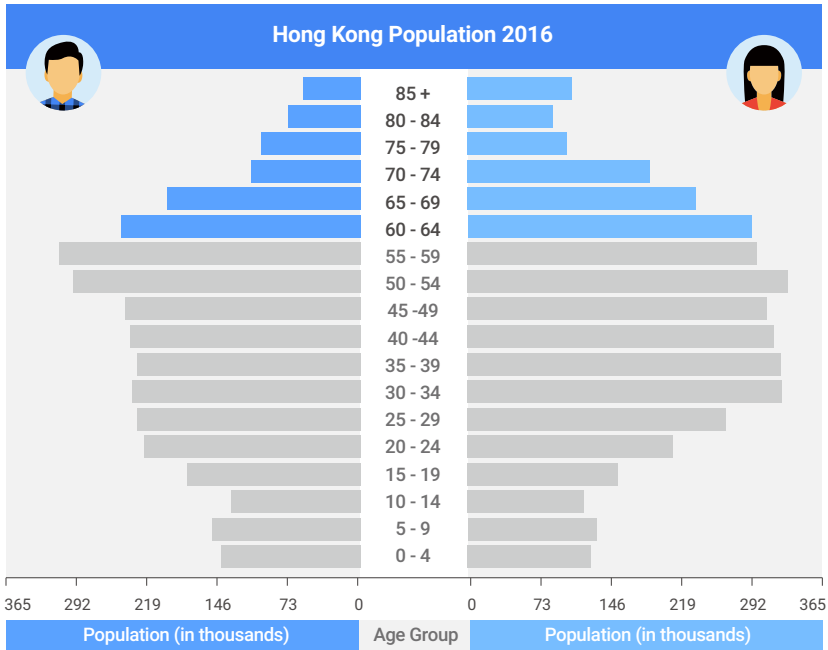
The government hopes to further promote healthy living and aging in different settings, including hospitals, care homes, and in the community. This includes the promotion of technologies to support the elderly and new approaches to develop and administer therapies.

Hong Kong's over 65 population is expected to grow from 1.16 million in 2016 to 2.37 million by 2036, representing a jump from 15.9 percent of the population to 29.1 percent.[1] As with many other developed economies, this shift will place an ever greater demand on Hong Kong's healthcare system, while simultaneously have fewer workers to fund and service it.

"You really have to think about the application. How is the digital economy influencing healthy aging?"
Professor W. John Kao, The University of Hong Kong

---

1 Hong Kong Census and Statistics Department, Hong Kong Population Projections, 2018

Hong Kong Population 2016

	Age Group	
	85 +	
	80 - 84	
	75 - 79	
	70 - 74	
	65 - 69	
	60 - 64	
	55 - 59	
	50 - 54	
	45 -49	
	40 -44	
	35 - 39	
	30 - 34	
	25 - 29	
	20 - 24	
	15 - 19	
	10 - 14	
	5 - 9	
	0 - 4	

365 292 219 146 73 0   0 73 146 219 292 365

Population (in thousands)   Age Group   Population (in thousands)

Hong Kong Population 2036

	Age Group	
	85 +	
	80 - 84	
	75 - 79	
	70 - 74	
	65 - 69	
	60 - 64	
	55 - 59	
	50 - 54	
	45 -49	
	40 -44	
	35 - 39	
	30 - 34	
	25 - 29	
	20 - 24	
	15 - 19	
	10 - 14	
	5 - 9	
	0 - 4	

365 292 219 146 73 0   0 73 146 219 292 365

Population (in thousands)   Age Group   Population (in thousands)

64

Data and Digitisation

The Electronic Health Record Sharing System was launched in March 2016 and much of the Hospital Authority's public health records have been digitised and consolidated. Hong Kong's healthcare environment benefits from a homogeneous structure which has enabled some standardisation and makes the potential for collaboration with third parties.

"For us, 90 percent of hospitalization is with the Health Authority and the data is clean. With the 90 percent of data, we are able to do a lot of things."

Dr The Honourable Ching-choi Lam, Haven of Hope Christian Service

However, only 21 percent of the public and 11 percent of corporate respondents think Hong Kong's healthcare system has been successfully digitised.

Respondents highlight delays in diagnosis and treatment, coupled with other inconveniences (including staff shortages and communication problems) as ongoing issues for patients and their accompanying family members. 55 percent of Hong Kong residents hope for healthcare digitisation to bring faster and more accurate diagnoses.

"Being suggested for several tests and need to wait for a month for the result, I waited long for the diagnosis without doing any treatment. Nothing was done for pain relief, and there was no instruction on what to do at this moment."

Consumer aged 35-54, less digital savvy

	Improvements Most Wanted in Digitisation of Healthcare	
Only 21% of residents think Hong Kong has been successful in digitising healthcare	55%	Faster and more accurate diagnoses
	49%	Quicker treatment
	43%	Lower healthcare costs
	40%	Easier information sharing among healthcare professionals
	34%	Reduced need to visit clinics or hospitals

Base: n=1219, Hong Kong smartphone users representative.

To lead this digitisation, 44 percent of the public would like to see a central database accessible to all healthcare professionals, and 41 percent would like to see a central database also available to be used by researchers for public policy development.

"With the big data collected from [Hong Kong] citizens, doctors could uncover the relationship between the diseases and the age, as well as analysing new or emerging diseases."

Consumer aged 25-34, digital savvy

Way Forward

Improve diagnosis through data

Hong Kong residents trust healthcare providers and the government to look after their personal data more than any other institutions. However, limited data sharing with partners, including researchers, insurance companies, and other private enterprises could hinder the development of smarter healthcare in Hong Kong.
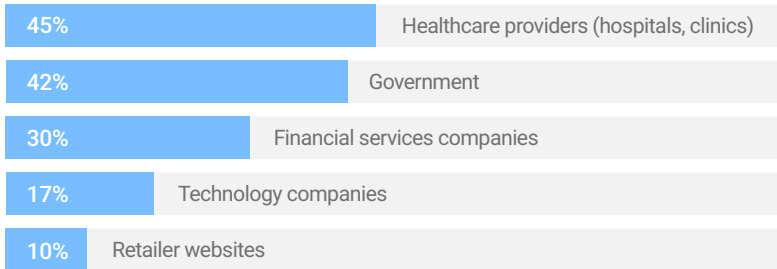
Progress is likely to be incremental, with Stage Two of the Electronic Health Record Sharing System scheduled to be delivered in phases by 2022. Once launched, it will support a broader scope of data sharing and facilitate patients' active management of their health, and enhance core functionalities and privacy protection. It is, however, important that such sharing is not geographically located to allow world-renowned researchers to be able to contribute to the research process.

"I can see that when you have electronic medical records, prevention or intervention initiatives aremuch more easily done online."

Chua Hoi Wai, The Hong Kong Council of Social Service

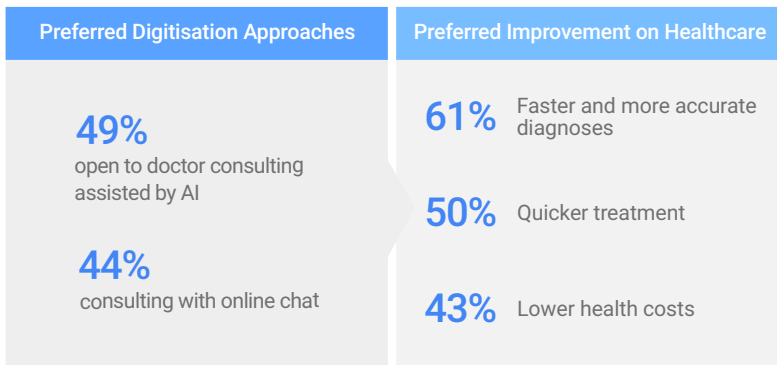| Trusted Organisations in Keeping Personal Data	
45%	Healthcare providers (hospitals, clinics)
42%	Government
30%	Financial services companies
17%	Technology companies
10%	Retailer websites

Question: Which of the following organisations do you trust in keeping your data secure? Please select all that apply.
Base: n=1219, Hong Kong smartphone users representative

Personalisation and improvements through innovation & technology

People aged 55-64 in particular call for healthcare benefits to be delivered through innovation and technology, including faster consultations, and diagnosis, and are prepared to consider technological solutions to provide these benefits. Given the demographics of Hong Kong, this is a significant hurdle to address.

Those Aged 55 to 64	
Preferred Digitisation Approaches	**Preferred Improvement on Healthcare**
49% open to doctor consulting assisted by AI	**61%** Faster and more accurate diagnoses
44% consulting with online chat	**50%** Quicker treatment
	43% Lower health costs

Questions: Which of the following aspects of digitisation of healthcare would you like to see?
Base: n=300 age 55-64 Hong Kong respondents sourced from n=1219, Hong Kong smartphone users representative

For example, having shared patient and treatment data securely available can enhance productivity, allowing doctors to focus on patient medical needs, instead of hunting for data. This can also help to reduce staff burnout and improve resourcing. With quality data available, introducing artificial intelligence can improve medical treatment outcomes by up to 40 percent, and reduce treatment costs by as much as 50 percent.[2]

Automated detection algorithms can naturally complement workflows and support doctors in a time-efficient manner, for example with algorithms designed to make it easier for pathologists to find even small instances of breast cancer metastasis in lymph node biopsy.

Furthermore, consolidated patient records like those already being used elsewhere allow patients and their doctors to receive reminders to perform checks or administer care. Emerging and existing technologies, including simple mobile apps, can facilitate personalised solutions for every patient.

"A lot of current traffic flow is a waste. In hospital, if someone needs help, he will ring the bell. It is either everyone will come or none at all. So, all of these can be replaced with face recognition or indoor GPS. These technologies are quite accurate. We have a shortage of manpower and with these technologies, we are able to overcome this issue."

Dr The Honourable Ching-choi Lam, Haven of Hope Christian Service

"In the future, there will be a lot of modules but the patient doesn't need to have them all. if you have diabetes, you only need to install the diabetes app."

Dr Cheung Ngai Tseung, Hong Kong Hospital Authority

---

2 Frost & Sullivan, Cognitive Computing and Artificial Intelligence Systems in Healthcare, 2015

Promote self-care and care in the community

With 7.6 million specialist outpatient attendances annually in Hong Kong,[3] measures to reduce hospital visits not only reduce costs and free up resources, they can also provide patients with autonomy and a greater sense of control. Integrating health and social care and using technology and community-based rehab helps patients, especially the elderly, to avoid hospital admissions and receive treatment at home or in the community.

"You can use apps to monitor your daily lifestyle and there will be health education as well. All these data can be linked to our system and the doctors can see them during a consultation. And in the future, there will be machine learning based algorithms which can give advice to patients."

Dr Cheung Ngai Tseung, Hong Kong Hospital Authority

Collaboration in the sandbox

One respondent described Hong Kong as a 'sandbox' - an ideal environment for managed development of Health digitisation. Encouragingly, the Innovation and Technology Fund has already invested in more than 460 biotechnology projects, including pioneering initiatives like non-invasive prenatal diagnosis and robotic-assisted surgery.[4]

Partnerships between government, private enterprises, universities, and healthcare providers offer enormous potential and the chance to pool resources, including data, funding, and expertise.

---

3 Innovation and Technology Bureau, Hong Kong Smart City Blueprint, 2017
4 Innovation and Technology Bureau, Innovation Hong Kong, 2018

As in other sectors, Hong Kong's internationalism is a core strength - collaborating with partners across the Greater Bay Area and beyond offers the potential for smart healthcare to compete with finance or tourism as a key growth driver.

"We need to think of a way to create technology here, test it here, apply it here, but where does Hong Kong stand in the world? We have stricter monitoring. Our analysis is accurate. Our healthcare system is very precise. These are our strengths. As long as we can apply this to the manufacturing capability of the GBA I think everyone can benefit from it. When we market to the world, the chances of success are higher."

Dr The Honourable Ching-choi Lam, Haven of Hope Christian Service

The Hospital Authority with public and private collaboration has taken significant steps to digitise. The scale and consolidation of the data sets offer huge potential to address opportunities such as predictive and preventative strategies, educational strategies, and driving efficiencies in utilisation of limited human resources. Following the partnership models being tried and proven elsewhere by governments elsewhere,[5] more must be done to develop preventive medicine and personalised care.

"Since the government promoted [Gerontechnology] more companies from different countries are willing to visit Hong Kong to explore the market, whereas in the past they found [us] too small for their interest, now it has changed."

Chua Hoi Wai, The Hong Kong Council of Social Service

5 Bloomberg, Israel to Invest $275 Million in Digital Health Project, 2018

Smarter People

As well as investment and infrastructure, the success and pace of Hong Kong's Smarter Digital City development will depend on the city's ability to develop, attract, and deploy human capital. State-of-the-art R&D centers will require specialists with the right training and experience, new medical facilities will require doctors and technicians trained to work in conjunction with machines, and schools will need teachers skilled and ready to prepare the next generation for a dynamic and digitally-enabled workplace.

By 2030 as many as 375 million workers globally may need to switch jobs as digitisation, automation, and AI disrupt the world of work.[1] While policymakers are rightly encouraging STEM education in schools and universities, realizing the government's mission of building a smarter knowledge-based will entail engaging all sections of society, including those already in work and those looking to catch-up or reskill.

As set out in the government's Smart City Blueprint, Hong Kong must also continue to attract international expertise to support and supplement its homegrown talent. Through public-private partnerships and greater collaboration with partners old and new, Hong Kong has an opportunity to pool resources and nurture a population with the skills and confidence required to thrive in a Smart City.
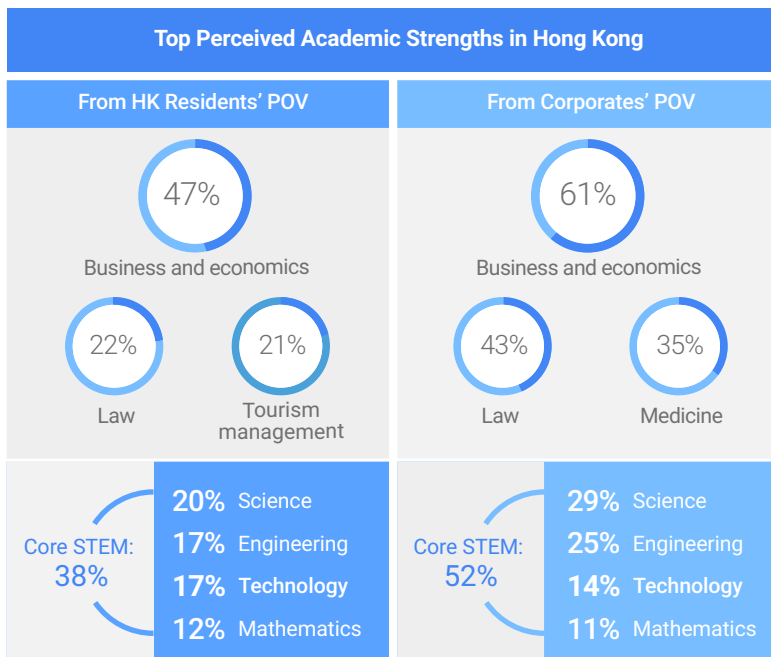
1 McKinsey Global Institute, Jobs lost, jobs gained: Workforce transitions in a time of automation, 2017

Digital Talent Gap

Hong Kong boasts a rich patchwork on schools teaching in a multitude of languages with different specialisms, with many increasingly prioritizing STEM education. However, with expected salaries and professional status traditionally weighted towards finance or law, schools and universities have historically focused on 'traditional' subjects and approaches to teaching.

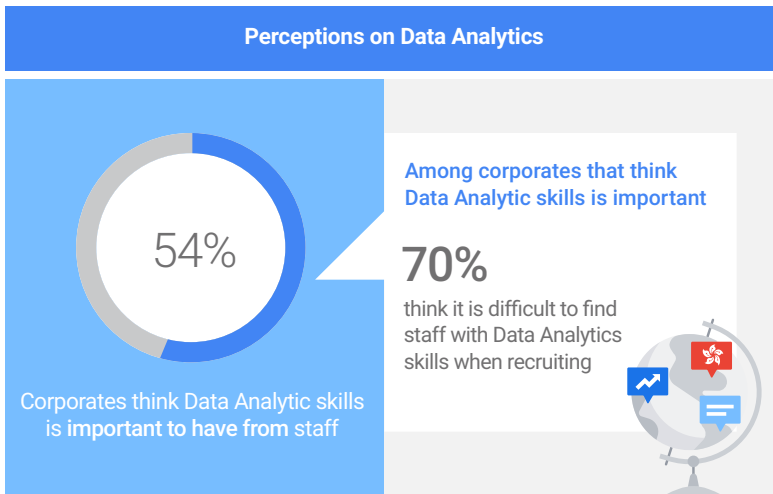*"Talent is an important topic where Hong Kong didn't put much effort into encouraging creativity from a young age."*

Male consumer, 18-24 years old, digital savvy

Top Perceived Academic Strengths in Hong Kong

From HK Residents' POV

47%
Business and economics

22%
Law

21%
Tourism management

Core STEM: 38%

20% Science
17% Engineering
17% Technology
12% Mathematics

From Corporates' POV

61%
Business and economics

43%
Law

35%
Medicine

Core STEM: 52%

29% Science
25% Engineering
14% Technology
11% Mathematics

Base: n=1219, Hong Kong smartphone users representative; n=100, All interviewed Hong Kong corporate respondents

However, nowadays digital talent shortage is the common drawback for each party to drive digital transformation, which in turn is slowing the progress of a Smart City that requires an extensive and adaptive talent base to connect smarter technology with the end user, whether it be in a hospital, classroom, or train carriage. Among corporates that feel important toward data analytics, most found it challenging to locate enough supply of technical expertise with data analytics, the first step among digitisation, in ever higher demand.

Perceptions on Data Analytics

54%

Corporates think Data Analytic skills is **important to have from** staff

Among corporates that think Data Analytic skills is important

70%

think it is difficult to find staff with Data Analytics skills when recruiting

Base: n=100, All interviewed Hong Kong corporate respondents

Only 14 percent of Hong Kong residents think their city is successfully developing digital talent. Concerns remain that this demand cannot be met by current 'production lines', whether it be schools, universities, or vocational training. For the government and businesses, this requires further investment and rigorous planning.

"If we state where we want to be as a Smart City in five years, you can start planning what kind of talent supply is needed and how to bridge the gap."

Janis Tam, Swire Resources Limited

"The agricultural revolution probably didn't have enough farmers to start, and the industrial revolution didn't have enough skilled workers to produce the nuts and bolts we needed."

Suresh Balaji, HSBC

Encouragingly, amongst the adult population, 80 percent of Hong Kong residents would like to improve their digital skills, with machine learning, app development, and data analytics proving to be the most popular areas of interest.

Hong Kong Residents' Perceptions toward Digital Skills Training

Big Data and AI	App and Coding	Digital Marketing / Content
41% Machine Learning / AI	**41%** App Development	**41%** Digital Marketing
34% Data Analytics	**34%** Coding Skills	**34%** Digital Content Creation

80%
Of Hong Kong residents would like to learn more about digital skills

Base: n=1219, Hong Kong smartphone users representative.

New opportunities and greater demands on talent will not fall solely on technology companies, with every sector and specialism impacted to varying degrees, including government, technology companies, training institutions, universities and schools.

"Talent cultivation is our key focus. We are also attracting many overseas talents to join the Cyberport community and Government is implementing its Technology Talent Admission Scheme (TechTAS) through Cyberport, such that any Cyberport companies getting talents from overseas can enjoy a fast path to obtain working visas to work in Hong Kong."

Peter Yan, Cyberport

Way Forward

Back to school

Solving the root cause of the digital talent shortage is a long-term program. Curriculum designers propagate related courses to embed digital philosophy into the learning mindset. For example, making basic STEM and computer science education mandatory for all school children helps them to acquire foundational tech skills and may stimulate their curiosity and interest in pursuing further digital studies.

Though not limited to Hong Kong, the education system remains heavily geared towards taking and passing tests. In higher education, changes are now being made to reflect the fact that experiences outside the classroom nurture an analytical mind. For example, The University of Hong Kong is now pushing to provide undergraduates with more opportunities to study abroad and apply their subject knowledge in different situations.

By encouraging experiential learning, changing from a test-based system, and exploring a flexible curriculum, students will become better equipped to look beyond their discipline and hone the critical thinking required for a digital economy. Such initiatives are not only essential for Hong Kong's development as a Smart City, but also to ensure the city's universities remain competitive and relevant.

Collaboration with vision

Only four percent of corporates and nine percent of the public believe Hong Kong is performing well in research and development. This is unquestionably an area where the government, universities, and businesses should do more to pool resources and expertise.

Respondents suggest Hong Kong has become quite 'comfortable' and therefore elements of the business community tend to adopt a defensive mindset and be less entrepreneurial than their counterparts in other international business hubs.

Equally, educators, business, and policymakers could benefit from a renewed sense of urgency to ensure opportunities are not squandered and the digital talent gap is bridged quickly.

"We cannot say"I will review it after five years." It's the same for a company. If it doesn't work after six months, we must change. Now policymaking can't be like it was back then."

Dr. Winnie Tang, The University of Hong Kong

While finance and the other 'traditional' industries will always be important for Hong Kong, a transformational approach, achieved through technology adoption and collaboration, can facilitate a move from traditional finance to fintech; driving future growth and creating jobs.

Clearer communication

All of this requires a well-communicated vision. It needs to make clear what the opportunities are and how people can best prepare themselves to play their part. Educators and industry must work in close partnership to better prepare the population for a rapidly changing workplace.

While training teachers will help better prepare students, there is also a need to shift how student success is evaluated in order to foster long-term success. Beyond gauging success through public exam scores, a more holistic approach to evaluating student performance is a means to encourage them as well as identify and build upon their unique strengths.

Making use of resources and infrastructure already available at hubs like Cyberport or The Hong Kong Science Park, government efforts can be supplemented with private sector expertise. Introductory sessions and boot camps offer a chance to engage and upskill the city's small business owners and civic groups, among others.

These initiatives can also play a significant role in supporting the government's mission to promote digital inclusiveness by helping older citizens or those from disadvantaged backgrounds to engage with and benefit from a Smarter Digital City.

"If the private sector is willing to offer free products and services to the community, I think the government should think of a holistic approach to initiate a private-public-people partnership (collectively called 4P approach) to enhance the collaboration."

Dr. Winnie Tang, The University of Hong Kong

Hong Kong's schools and universities must work with policymakers, NGOs, and private sector partners to help educators to develop programs better suited to the realities of a digital economy.

Ascend to make the push

Some policymakers have also called on the government and corporates to do more to help train people through Smart City-focused apprenticeships, reflecting the reality that university is not necessarily the best or most feasible option for all. This offers excellent potential for the city's SMBs which are falling behind but often lack the resources to hire digital-ready graduates or recruit talent from abroad.

International collaboration is increasingly vital as a digital economy does not adhere to national boundaries. All stakeholders must also work together to make Hong Kong an attractive place for international talent to apply their skills while continuing to develop the local talent pool. Efforts should include initiatives to integrate talent better and ensure companies and other organizations can act swiftly to secure the skills they need.

"Through the TechTAS arrangement, Cyberport companies can enjoy a fast path to get overseas talents to work in Hong Kong. The process can be shortened from six months to four weeks."

Peter Yan, Cyberport

The Greater Bay Area also offers great potential from a talent development perspective, acting as a magnet to attract investment and talent which may have previously gone elsewhere.

"If Hong Kong represents a hub reaching out to the Greater China and the global market, it will be an attractive global node and cradle for tech professionals."

Eric Gnock Fah, Klook

Recommendations

Achieving the digital transformation that will help build Hong Kong's long-term health and competitiveness requires buy-in from multiple stakeholders. Beyond actions undertaken by the government, corporates, SMBs, and the public also plays a crucial role in driving digitisation. From actively providing feedback to service providers, to testing new digital services and staying up-to-date with technology, residents who ask for better, more efficient options can foster a smarter city environment.

Reflecting on this year's research findings, here we offer recommendations for policymakers, corporates, and SMBs to help progress Hong Kong toward becoming a Smarter Digital City through three pillars: (1) "Economy" boosted by technology adoption and open platforms; (2) "Ecosystem" powered by technology; and (3) "Education" in nurturing the next generation of talent.
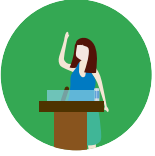
For Policymakers

When it comes to the role and way forward for Hong Kong policymakers in further developing Hong Kong as a Smart City, the study raises several clear insights to reflect upon. Through working with the public and private stakeholders, policymakers can translate these insights to bolster their plan of action. In addition to continually investing in and implementing initiatives that improve daily lives through digitisation, policymakers can stimulate positive digital behaviour and incubate innovation among all levels of society by continuing to share and update a well-defined agenda that drives conversation and inspires action:

Economy

1. Promoting Tech Adoption

Policymakers play a crucial role in determining the framework for the city's economy and establishing the mindset for progress. As corporates and SMBs look to outpace their competition and differentiate their businesses, technology can provide readily available solutions today while also evolving to meet future needs. With tailored incentives and initiatives promoting tech adoption across different industries, the government can address and ease specific concerns corporates and SMBs may have when it comes to digitising their offerings or securing their data.

Driving cost reduction is a primary concern for Hong Kong's businesses, particularly SMBs, in the face of growing competition. Policymakers can address this by expanding and streamlining the application for programs such as the Technology Voucher Programme (TVP) to encourage the adoption of scalable and streamlined digital solutions such as off-premise cloud services. Such services would also help the city's businesses safeguard against risks including disaster recovery and cybersecurity threats. Further grants and digital training initiatives specifically-tailored for SMBs can also help upskill small business owners who continue to harbor concerns over implementation costs and digital skills gaps.

2. Support R&D

Research and development is the foundation to drive technology adoption and transformation, but corporates and the public do not currently consider it to be an area of strength in Hong Kong. This is unquestionably an area where the government should do more to pool resources and expertise.

To maximise output and leverage current resources, Public-Private Partnerships (PPPs) between government, private enterprises, universities offer enormous potential and the chance to pool resources, including data, funding, and expertise, to advance research. To advance the city's biomedical research ambitions, healthcare providers can provide anonymized data. The potential to develop solutions with applications beyond Hong Kong's domestic market is both significant and essential for the larger opportunities which are needed to encourage investment.

3. Solidify and Communicate the Opportunities of the GBA Initiative

The GBA Initiative offers the potential for Hong Kong to reinvigorate its role as a super connector and bridge between East and West, and will increase fluidity across the cities involved. Hong Kong will need to play its part in facilitating predictable and efficient ways for talent, resources, and ideas to cross borders, but some corporates and consumers are still unsure of the initiative.

Only by clarifying common goals and formulating policies underpinned by smarter, innovative solutions can industries and individuals comprehend and contribute to the GBA and Smart City initiatives wholeheartedly.

The government should do more to articulate Hong Kong's unique strengths, including championing intellectual property protection and the city's well established infrastructure such as a free and open Internet to facilitate the exchange of ideas. This can supercharge Hong Kong's development and realise the benefits for residents of Hong Kong and beyond, whether in healthcare, retail, or academia.

Ecosystem

1. Maintain Free and Open Internet

The provision of a free and open internet is critical in fostering curiosity and collaboration among all parties. Policymakers should maintain a free and open internet while incubating innovation by actively supporting entrepreneurs, corporates and startups looking to implement new technology and solutions that readily benefit the public. The maintenance and expansion of infrastructure, with particular attention to a free and open internet, should be seen as a foundation for a Smart City, including the city's desire to be an international data hub.

2. Facilitating Open Data

Only 21 percent of the Hong Kong public think 'open data' is currently a strength for Hong Kong. When enacted correctly, open data serves as a key ingredient for any digital transformation by enabling greater transparency and accountability while encouraging public participation. Such initiatives are now emerging to pave the way. For example, Stage Two of the Electronic Health Record Sharing System will support a broader scope of data sharing to make a real difference for patients and how they manage their healthcare experience. This model could be applied across other categories including transport and energy usage to drive innovation and help policymakers and businesses make more informed decisions.

3. Evolve Government E-services and Procurement

Hong Kong government can speed up and evolve the current e-services supported by a more integrated approach and cloud technology. The current e-services such as online tax filings, drivers license renewals, and digital requisition forms provide tangible benefits to citizens in managing their life in the city, and provide operational excellence. By providing a more reliable, integrated e-service platform, the citizens can enjoy a Smarter Living in Hong Kong, while the government will be more informed in resource and city planning.

The government can also consider creating an agency or revamping existing agencies to drive e-government initiatives, similar to the United Kingdom's Government Digital Service and the Australian Digital Transformation Agency. Besides accelerating the digital transformation of government, such an initiative can stimulate the development of digital talent in the city by creating digital job opportunities and defining a clear career path in the smart economy.

The government should also consider revamping its procurement process for digital procurement. Currently the process is designed for traditional infrastructure, where budget and procurement goals are set at the beginning of the process, when all stakeholders have the least information about the development process and, most importantly, user behavior. Even as user needs change or are discovered over the life of the procurement cycle, the project fails to adjust as its constrained by the original parameters. An agile and end-user-focused procurement process would allow the government to use its fiscal strength to stimulate a smarter digital ecosystem.

Education

1. Attract and Develop Global Tech and Data Analytics Talents

Developing a wellspring of homegrown talent is essential to sustaining digitisation in Hong Kong. Hiring and developing the right talent will be crucial to facilitate Hong Kong's development as a smarter digital city. Bursaries for skills development should be expanded.
In addition to developing a local talent pool and educating the public, the government can look abroad to attract international tech professionals and establish Hong Kong as an exciting and fast-growing technology and innovation destination.

2. Computational Thinking in Primary and Secondary School Curriculums

To support longer-term talent development, policymakers should consider embedding computational and design thinking techniques into both primary and secondary school curriculums to encourage more students to develop basic computer science (CS) skills studies. The method in which STEM fields are taught should be both expansive and inclusive in order to develop talent from all genders. Students must be proactively encouraged to pursue their interests in various creative, tech and design disciplines as they uncover them.

While making key skills like computational thinking a core component of the school curriculum could help to tackle Hong Kong's digital talent shortage in the longer-term, many teachers do not yet have the skills or experience required. More ambitious public-private partnerships, including those facilitating regular workshops with leading industry skills development programs, can help to bridge the gap and train enough teachers to inspire the next generation across a range of different industries and skill sets.

3. Develop Lifelong Technology Training Programs with Incentives

Government support is critical in building a pipeline of digital talent, regardless of industry sector. On the one hand, government and schools (including universities and high schools) could explore collaboration with industry leaders in curriculum design and organising bootcamps, as well as consider adopting industry certified programs into the existing curriculum. In the mid- to long-term, government can leverate and revamp current continuing education funding with a focus on AI, tech and innovation to encourage the current workforce to upskill; and consider cross-discipline research and professional development programs to prepare talent for the future.

To help Hong Kong's traditional IT staff prepare for upcoming technology infrastructure advancements, policymakers should support programs that help such staff transition from on-premise infrastructure management to off-premise, scalable, and secure technologies such as cloud services.

For Corporates

Corporates are positioned to take the lead in improving the overall digitisation of Hong Kong. They are increasingly likely to take on digitisation initiatives, with wider adoption of machine learning and artificial intelligence, improved cyber-security and more concerted app development. The majority of corporates are expecting fast or very fast digital transformation in their businesses, with many having higher planned investment in digitisation over the next two years. Even so, there are several gaps in specific industries and Hong Kong corporations risk being left behind by counterparts in other markets. Not only can corporates continue leading on digitisation of services, they are also positioned to improve the talent and education in Hong Kong related to technology.

Economy

1. Focus on Your Consumers

Understanding customer needs is the first step in providing the services they seek. Investing in deriving data-led insights into consumer needs and behaviours is critical for corporates to grow revenues and expand their offerings. With readily available technology, corporates have a tremendous opportunity to leverage data and derive insights that can guide the way forward for their business. In order to build a database, corporates must first address security concerns expressed by consumers by investing in data protection to assure the safety of data they are entrusted with. This customer-centric approach enables corporates to identify the best methodologies in which to conduct their business and deliver what their customer needs.

2. Improve Customer Experiences

While offline service and purchasing remains dominant in Hong Kong's retail environment, integrating key online practices can smooth the whole customer experience. Before a customer sets foot in-store, a corporate digital presence and online service tools like chatbots and customer reviews can help define their expectations and provide them with the necessary information needed to make an informed and quick purchase. The efficiency and time-saving gained from a smart and clear online offering can also help lessen the burden on in-store staff, thus improving the in-store experience for everyone.

3. Delivering and Evaluating Digital Transformation

Corporates would be well served to better understand how digital transformation is a vehicle to heighten their customer experience and evolve their offering to ultimately benefit all parties. With data and analytics, corporates can evaluate specifically defined criteria and realistically assess the tangible benefits of digital services on their business operations and bottom line. The constantly evolving and nimble nature of digital also pushes corporates to not only compete, but clearly differentiate by seeking out the latest innovative edge.

Ecosystem

1. Build Partner-read Platforms and Collaborate

As corporates invest in developing digital services and capabilities, they should embrace technologies and tools, from blockchain to APIs, to facilitate greater collaboration across the business and with external stakeholders. These technologies can speed up processes and ease pain points. Collaborating or co-creating with other enterprises and organisations can drastically reduce the time and funding required to launch new products or solutions. As it is not always feasible or beneficial to attempt digital transformation as a sole entity, it can often be better to leverage the expertise and resources of skilled partners to allow internal teams to focus on core business.

The ecosystem can become healthier with players growing together. Corporates, agencies, and distributors have to be working more closely than ever, given new emerging opportunities and the diverse and fragmented needs to meet in the digital business environment. As technology such as data analytics and machine learning applications further emerge as services that contribute to business success, corporates can leverage partnerships with experts to stay up-to-date.

## 2. Move from Big Data to Big Query

Gathering data and garnering top-level insights is the first step to activate the data and make it actionable. Data is rendered moot if corporates do not realise capabilities to analyse data in a timely manner and determine how best to apply it into a useful outcome for their users. Furthermore, as data becomes bigger and more complex, the need for more efficient ways of processing and interpreting large batches of data is magnified. Newer technologies such as machine learning are better equipped to harness data, particularly unstructured data, by creating models and simulating multiple outcomes to clarify the best course of action.

Education

1. Recruit, Train, and Retain Digital Talent

To support sustainable business growth and transformation, corporates must focus on securing, developing, and retaining the right talent. Investments in international talent will only be sustainable if proper time and resources are also devoted to upskilling of existing employees and local trainees. Making investments in the next generation, in parallel with current staff, will support sustainable business growth and offer chances for people to gain new skills and become more valuable and loyal employees.

By blending talent pools and fostering the digital community, Hong Kong's business landscape can be transformed through shared expertise and the exchange of ideas.
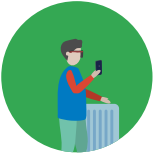
For Small and Medium-Sized Businesses

With only moderate and gradual transformation anticipated within their companies, Hong Kong SMBs have been slow to realise the possible impact of digitisation on their businesses. Digital has not been regarded as a fundamental part of their business to date, as evidenced by how many SMBs still struggle to utilise online tools to power basic business processes and marketing efforts. By contrast SMBs in China are more ambitious in seeking digital transformation and are actively pursuing digital solutions to improve their customers' experience and to bolster customer loyalty.

Economy

1. Think Online to Offline (O2O)

Investing in technology and encouraging digital interaction can help companies to better connect online and offline, creating a seamless experience for their customers. This, in turn, shortens the decision cycle, alleviating uncertainty around product choice, product availability, or concerns around quality and suitability. Simple steps can also be taken to produce and encourage online reviews, videos and other content to provide a more engaging experience, boosting satisfaction throughout the purchase process.

2. Expand Footprint on Digital

A basic digital presence is a must to ensure a business can easily be found by key audiences, from customers to potential collaborators. Registering the business location on digital maps, creating a mobile-friendly websites or apps, and informing business decisions with data analytics. Making good on these initial digital essentials will get businesses on the right track and expand their footprint without geographical constraints.

Ecosystem

1. Buy Don't Build

SMBs can experience immediate benefits from leveraging the plethora of readily available digital tools and platforms that have been designed and fine tuned to address business pain points. By fully utilising the capabilities of the existing digital services and platforms, SMBs can save considerable time and resources and jumpstart their digitisation by sidestepping the daunting task of starting from scratch. Furthermore, many existing digital services offer flexible plans and billing to make it easy for SMBs to experiment with products on a case-by-case basis. SMBs can often enjoy free trial of tools before purchase to see if they fit their business. With digital services actively catering to their needs and seeking their business, SMBs are in a buyer's market and have great ability to choose from the best available tools instead of having to digitise alone.

2. Get Access to Digital Expertise

In line with putting existing digital platforms to work for them, SMBs would be well served to seek out consultations with proven digital experts. Knowledgeable and tech savvy professionals can help SMBs navigate the different options available and advise them on how best to tackle their specific needs.

Education

1. Upskill by Leveraging Free Tools and Opportunities

Hong Kong SMBs also have relatively low priorities on building a digital workforce. They perceive soft skills such as selling to be more important to their businesses than skills such as numeracy or digital acumen. While some Hong Kong SMBs agree that digital marketing skills and data analytics can be useful, lack of resources form a barrier for them to acquire the right talent.

SMBs that are not digitally savvy must begin with the fundamentals of digitisation. Firstly, specific digital tools that can save time or labour should be fully explored to address operational inefficiencies. Secondly, free online courses covering vital digital skills, including digital marketing or running a business on the cloud, can help small business owners to catch up and achieve a competitive advantage.

Methodology

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

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

Step 1	Step 2	Step 3	Step 4	Step 5
Consumer Digital Index	Consumer Journey	Consumer Digital Behavior Deep Dive	Corporate and SMB Digital Behavior	Business and Industry Deep Dive
Quantitative Online surveys with 1,529 Hong Kong / Guangzhou / Shenzhen consumers	Quantitative Online surveys with 900 Hong Kong Consumers across travel, finance and retail sectors	Qualitative In-depth-interviews with 16 Hong Kong consumers across travel, finance, retail, and living sectors	Quantitative Online surveys with 301 Hong Kong corporates / SMBs and Guangzhou / Shenzhen SMBs.	Qualitative In-depth-interviews with 18 policymakers, business leaders, and experts across travel, finance, retail, living and Smarter People sectors.

Step 1: Consumer Digital Index Survey

Ipsos conducted a 25-minute online self-completion survey with 1,529 consumers, composed of:

- 1,219 Hong Kong residents
- 155 Shenzhen residents
- 155 Guangzhou residents

The following parameters were set for the consumer sample:

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

Step 2: Consumer Journey Surveys

Ipsos conducted a series of 20-minute online self-completion surveys with 300 participants for each of the following sectors: Finance, Travel, and Retail.

The Finance survey included 50 participants who had applied for a mortgage in the past year and another 50 who had applied for a loan in the same period. An additional 100 consumers were surveyed who had applied for a credit card, and another 100 who had sought insurance (both in the last 12 months).

Travel questionnaires were completed by 150 participants who had recently booked a flight and a further 150 who had recently booked a hotel.

The Retail questionnaire surveyed 100 low-value purchasers (who had recently bought an item worth HK$500-999); 100 mid-value purchasers (HK$1,000-9,999); and 100 high-value purchasers (HK$10,000+).

All participants were Hong Kong residents aged 18-64 with a demographic representation of the smartphone using population.

Step 3: Consumer Digital Behavior In-depth Interviews

Sixteen in-depth interviews were completed with Hong Kong consumers focused on the study's four key sectors, with four participants each questioned on Finance, Travel, Retail and Living (healthcare).

Participants for each of the four verticals included:
- One consumer from each of the following age groups: 18-24; 25-34; 35-54; and 55-64
- Two 'digitally savvy' and two 'less digitally savvy' participants

For the Finance-oriented interviews, all participants had experience of online banking or completing other personal finance transactions online. Participants included one individual who had sought insurance via a traditional channel (i.e. agent or bank branch), one who had applied for a credit card online and two who had applied for or taken out a loan (one personal loan secured online, one mortgage via an offline channel).

The interviews did not have controls on any particular brand name being represented.

Those interviewed regarding Travel had all traveled for leisure in the last six months, having arranged some or all of the trip themselves. Two of the participants professed to prefer booking flights and accommodation online, while the other two preferred using offline options.

For Retail, all participants had recent experience of making a purchase or shopping using e-commerce platforms. One participant had purchased a luxury item offline, two had purchased mid-value items (one online, one offline), and the fourth participant was reflecting on an item purchased online worth HK$500 - HK$999.

Given the healthcare-focused nature of this year's Smarter Living investigation, interviews were conducted with one participant suffering from a chronic condition, and three individuals who frequently accompanied immediate family members for clinic or hospital appointments.

Step 4: Corporate and SMB Quantitative Survey

Ipsos surveyed 301 business leaders from corporates and owners or senior managers from Small and Medium-Sized Business (SMB), to explore their experiences and perspectives on digitisation. Respondents were comprised of Ipsos and Google contacts who were willing to participate in the study.

The SMB sample comprised those solely or primarily responsible for applying digital and IT solutions within their organisations. The sample was split across the three key cities as follows:
- 101 from Hong Kong
- 50 from Guangzhou
- 50 from Shenzhen

Natural fallout resulted in the following representation for Hong Kong corporates:
- Representatives from all four sectors: Finance, Travel, Retail, and Living
- 25 C-level participants and 75 B-level participants

Step 5: In-depth Interviews with Policymakers, Corporate Leaders and Experts

Finally, 18 in-depth interviews were conducted with corporate leaders, policymakers, and other experts, many of which explored the findings and recommendations from Steps 1 to 4 in detail. Each of the one-on-one, in-person interviews lasted approximately 60 minutes.

The study's key areas of investigation were covered as follows:
- Four Finance interviews with two corporates and two policymakers
- Four Travel interviews with corporates
- Four Retail interviews with corporates
- Three Living interviews with policymakers
- Three Smarter People interviews with academics

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 behavior 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: Categorize Digital Activities

All 1,219 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 those 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 1,219 Hong Kong participants across the five levels.

Contributors

Google 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:

Key Contributors (in alphabetical order by surname)

Suresh Balaji, Global Head of Marketing, HSBC Insurance, Regional Head of Marketing, Asia Pacific, Retail Banking & Wealth Management, HSBC

Edward Bell
General Manager Brand, Insights and Marketing Communications, Cathay Pacific

Professor Dominic Chan, Associate Director, EMBA Program, CUHK Business School, The Chinese University of Hong Kong

Dr Cheung Ngai Tseung, Head of Information Technology and Health Informatics / Chief Medical Informatics Officer, Hong Kong Hospital Authority

Nelson Chow
Chief Fintech Officer, Fintech Facilitation Office, Hong Kong Monetary Authority

Chua Hoi Wai
Chief Executive, The Hong Kong Council of Social Service

Yoann Eljaouhari
Managing Director of HK, JC Decaux

Eric Gnock Fah
President & COO, Co-Founder, Klook

Akina Ho
Director of Technology and Business Solutions, The Great Eagle Company Limited

Professor W. John Kao
Vice-President and Pro-Vice-Chancellor (Global), Professor, Chair of Translational Medical Engineering, Li Ka Shing Faculty of Medicine and Faculty of Engineering, The University of Hong Kong

Dr The Honourable Ching-choi Lam
BBS, JP, Chief Executive Officer, Haven of Hope Christian Service and Member of the Hong Kong Government SAR Executive Council

Tat Lee
General Manager, WeLab

Janis Tam
Managing Director, Swire Resources Limited

Dr Winnie Tang
Honorary Professor, Department of Computer Science, The University of Hong Kong

Ricky Wong
Chairman, Hong Kong Television Network Limited

Damien Wu
Chief Information Officer, Link-REIT

Peter Yan
Chief Executive Officer, Cyberport

Richard Yeung
Chief Executive Officer, Convenience Retail Asia Ltd

Ipsos Hong Kong

Mick Gordon
Managing Director, Ipsos in Hong Kong

Silvia Herranz
APAC Managing Director, Market Strategy & Understanding

Mark Kidd
Director, Market Strategy & Understanding

Cheryl Thoo
Associate Director, Ipsos UU

Olive Wong
Project Director, Brand Health Tracking

Danny Cheng
Senior Research Manager, Market Strategy & Understanding

Shirley Chau
Research Manager, Brand Health Tracking

Joyin Lam
Senior Research Executive, Ipsos UU

Jacqueline Fung
Research Executive, Market Strategy & Understanding

Google

Leonie Valentine
Managing Director, Sales & Operations, Hong Kong

Hillary Nie
Head of Market Insights, Greater China

Yam Ki Chan
Head of Public Policy, Hong Kong

Betty Wong
Communications Lead, Hong Kong

Oscar Wong
Head of Large Customer Marketing,Hong Kong

Kiki Simonsen
Strategy & Insights Manager, Hong Kong

Iris Yang
Senior Strategy & Insights Manager, Hong Kong

Lucy Werner
Industry Leader Finance & Travel, Hong Kong

Eva Ng
Industry Leader, Tech, Telco, Luxury, CPG and Govt, Hong Kong

Ben Wong
Director of Marketing, Greater China

Richard Li
Country Marketing Manager, Taiwan & Hong Kong

Learn more:

October 2018

Google

Ipsos